

# **The Distribution of Health Care Resources in Egypt: Implications for Equity**

## **An Analysis Using a National Health Accounts Framework**

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## Abstract

National health accounts combined with data from a nationally representative household survey of health care utilization and expenditures are used to compile a description of the distribution of all health expenditures across a national population. This approach extends the earlier tradition of benefit-incidence studies by using NHA data to constrain the levels of public and private expenditures to allow a true direct comparison of the distributions of each. It overcomes earlier problems in comparing public and private expenditures on health, when information is derived from non-comparable data sources, and also deepens the analysis by using additional secondary data to account for differences in spending levels within the public sector by geographical area and facility type and level. This is a refinement on the approach used in the COMAC-HSR studies of European and US health care spending.

The methodology requires a comprehensive, nationally representative data set on actual utilization and expenditures. The utilization data are used to allocate public subsidy expenditures for non-market services, while the household expenditure data are used to distribute private expenditures, the total of which is derived directly from the more reliable NHA estimate. The data can be combined with NHA and other public budgetary information in a data set that allocates all known health expenditures across the whole population using appropriate assumptions. The resulting data set, containing 50,000 observations, is then used to directly quantify the distribution of any component of health spending according to the household demographic or socioeconomic characteristics measured in the original survey.

The results indicate that the incidence of overall health expenditures rise with increasing income level. This is due to a distribution of private expenditures which increases with income, as well as a distribution of public expenditures which more modestly also increases with rising income level. The bias in public expenditures in favor of higher income groups is found to be primarily due to the distribution of revenue financing through the social insurance program, as well as through revenue spending at higher quality urban academic hospitals in the public sector, which largely serve higher income urban households owing to reasons of better access through proximity, as well as the charging of user fees which discourages use by poorer households. In conclusion, the social insurance programs in Egypt and the use of cost recovery in some public sector institutions combine to greater inequality in access to health care resources, both when evaluated from the level of income levels, as well as by gender.

The 1994-95 expansion of social health insurance coverage to children has not improved the distribution of health care spending in favor of lower income households. It is argued that if policy-makers wish to improve the targeting of public expenditures in the health care sector, they should refocus efforts on the main public sector delivery system run by MOHP, and be cautious about expanding financing and delivery through other means. MOHP services while relatively equally distributed across income levels, do contribute significantly to the welfare of lower-income households, adding more than 10% to the net income of the poorest quintile, compared with only 2% for the richest household quintile.

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## Acronyms

ADL	Activities of Daily Living
BTS	Budget Tracking System
CAPMAS	Central Agency for Public Mobilization and Statistics
CCO	Curative Care Organization
CDC	Cairo Demographic Center
COMAC-HSR	Commission of the European Communities – Health Services Research
DDM	Data for Decision Making Project, Harvard School of Public Health
DOP	Department of Planning, Ministry of Health
FP	Family Planning
FY	Fiscal Year
GDP	Gross Domestic Product
GNP	Gross National Product
GOE	Government of Egypt
HIO	Health Insurance Organization
LE	Egyptian Pound
MCH	Maternal and Child Health
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
MOSA	Ministry of Social Affairs
NHA	National Health Accounts
NHHEUS 95	National Household Health Utilization and Expenditure Survey 1994-95
NCMC	National Child and Motherhood Council
NODCAR	National Drug Control and Regulation Agency
NPC	National Population Council
OECD	Organization for Economic Cooperation and Development
PIO	Pensions and Insurance Organization
SMIP	Student Medical Insurance Program
SIO	Social Insurance Organization
THIO	Teaching Hospitals and Institutes Organization
USAID	U.S. Agency for International Development
na	Not available/not applicable

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## Background

Equity in access to and use of health services is a common goal for policy-makers in most countries. Poverty alleviation through the re-distributive effect of public health spending is another important welfare goal in many countries. However, assessment of the extent to which these goals are achieved in reality is rare, outside the developed world. This study examines the distribution of public and private health spending across households and individuals in Egypt, their relationship to the utilization of health services and illness, the impact of public spending on health services on net household income, and the implications for equity.

Although much of the pattern of equity found in a particular health system is a function of the pre-existing patterns of social and economic equity, as they are found outside the health system itself, it is generally presumed that the structure and organization of the delivery and financing of health care itself can play a significant role in determining the pattern of equity in access to and use of health services. However, with the exception of the COMAS-HSR study in OECD countries, there has been little systematic study of the equity characteristics of alternative health care financing and delivery systems (van Doorslaer, Wagstaff and Rutten, 1993). In this context, Egypt offers a particularly interesting case, as its health system comprises most of the major health care financing and delivery mechanisms found in developing countries. This study therefore also uses its results to assess the different health care programs existing in Egypt from the perspective of equity between different social groups.



## Approach

Equity is a stated goal for policy-makers in the health care systems of most countries, and in the agenda of many international organizations (Whitehead, 1990). Equity as a goal can be contrasted with efficiency, and in essence relates to a concept of social justice. Equity as an evaluative concept can also be applied both to the financing of health care, as well as its delivery. However, there is no agreed definition of what constitutes equity with respect to health systems. This lack of an agreed and consistent definition stems from underlying differences in philosophical approach.

Two generally dominant approaches to discussing equity are the egalitarian and libertarian approaches. Egalitarians would judge equity by assessing the extent to which health care is distributed in practice according to need, and in practice financing according to ability to pay. Libertarians, in contrast, would focus attention on the extent to which people are free to purchase the health care they want, subject to the proviso that the poor and sick are adequately provided for. In practice, in most countries, policy makers are probably concerned with an egalitarian approach to equity. That is they are concerned with ensuring equality in access to health care. However, there tends to be some confusion even in this, with some understanding this to be equivalent to equity in access to treatment, and others understanding this as equity in receipt of treatment. Nevertheless, the most common interpretation of equity of access to health care is equity in receipt of treatment, that is that health care should be distributed according to need (van Doorslaer, Wagstaff and Rutten, 1993). When looking at financing, most policy makers and analysts appear to accept the principle that equity means that payments for health care should be according to ability to pay rather than in relation to the amount of medical care received.

In all these approaches, the goal of equity is being applied only with respect to distribution of health services. A variant on the egalitarian approach should be noted. In this the concern is not with the distribution of health services as such, but with the distribution of income within society. In this variant, reduction in inequality of "final" incomes is regarded as the equity goal. Van Doorslaer et al. (1993) argue that in developed countries this type of equity goal is rarely used in argument with respect to health services. However, it may be more important in developing countries, where public spending is more constrained, and where poverty alleviation may have a higher ranking in priorities than other social objectives.

In this study of Egypt's health care system, the focus is on the equity of distribution of health services, for reasons discussed later. There are two major approaches to estimating the distributional outcomes of public spending (van de Walle, 1996). The longest-established is represented by benefit-incidence studies, which assume that the value of the benefits of a public service to the individual equals the unit cost of providing the service. Benefit incidence studies examining health services have been carried out in developing countries for at least two decades. Examples include Malaysia (Meerman, 1979), Colombia (Selkowsky, 1979), Sri Lanka (Alailima and Mohideen, 1983), Chile (Foxley, 1979), Ghana (Demery, Chao, Bernier, and Mehra, 1995), Côte d'Ivoire, Jamaica, Peru and Bolivia (Baker and van der Gaag, 1993).

Benefit incidence studies are methodologically simple, but have faced two sets of problems. The first relates to availability of accurate data on the welfare ranking of individuals and households, the utilization of services, and variation in unit costs of services within a health system, particularly in the context of geographically differentiated services. Lack of disaggregation in available data, and other inaccuracies in measurement, for example of household income, can lead to significant biases and errors in the estimations. The unit costs of services may vary, with lower level services or services in certain parts of the country being less well-funded. Then assuming that unit costs of a service are the same across a country would lead to a bias in the results, if households use of the different levels of services is non-uniform. However, often researchers make such assumptions because of lack of more detailed data. For example, in the

COMAC-HSR study of equity in financing of health care in nine European countries and USA, the majority of national studies assumed that the unit cost of publicly-financed services was the same across a country and at all levels of a health system (van Doorslaer, Wagstaff, and Rutten, 1993). Similarly, data on utilization of services come typically from special household surveys, but these often contain inadequate measurements of household income, which do not permit accurate ranking of households according to current welfare. This problem is particularly common in developing countries, with large non-formal sector workforces, significant subsistence production, and where high rates of tax evasion may be prevalent.

The second set of problems relates to the inherent conceptual limitations of the approach. Benefit incidence studies assume that the value of public spending to a household is equivalent to the monetary value of the expenditures used to produce the consumed services. However, household welfare may benefit in other ways. For example, health status may improve, and the valuation of this by the individual or by society may differ from the value of the expenditures. In the absence of working insurance markets, risk-averse households may derive welfare from the provision of implicit insurance coverage against catastrophic illness in the form of free public inpatient provision, and the value of these welfare gains are likely to vary by income, since lower-income persons may find it harder to obtain actuarially-fair insurance in a private market. Another problem relates to second-round indirect benefits of public spending. For example, immunization services or TB chemotherapy may provide protection to those who are not recipients by reducing the overall risk of infection. These indirect benefits are in practice difficult to predict or to evaluate, and most studies usually ignore them.

The second approach to estimating the distributional outcomes of public spending involves so-called “behavioral approaches” (van der Walle, 1996). These approaches attempt to model behavioral responses of households to public programs, and explicitly examine the marginal impact of program changes. They address a more basic problem of the conventional benefit incidence studies, which is that they do not tell us necessarily what the net impact of public spending is, since they do not compare the distribution of welfare with what would have happened in the absence of public spending. To know this requires that we understand the behavioral response of households in order to be able to predict their economic behavior and consumption in the absence of the public program under examination. However, experience to date with modeling such behavioral responses is quite limited, and where such studies have been done, they have usually failed to generate different qualitative conclusions (Ravallion, van de Walle, and Gautam, 1995). In this context, the value or additional information gained from these studies remains questionable (van de Walle, 1996).

This study of the distribution of health care resources in Egypt uses the first approach, and is in the classical benefit incidence tradition. However, unlike most previous studies, it attempts to examine the distribution of resources within the context of an available set of national health accounts, and attempts to account for intracountry geographical variations in the level of budgetary funding for public services, as well as differences in the amount of funding for different levels in the public health sector. This was made possible by the availability of a set of national health accounts, high quality budgetary data and costing studies from previous work conducted by colleagues and associates of the authors, as well as the availability of data from a specially designed national household survey of health care utilization and expenditures.

One other distinctive and important feature of this study relates to its treatment of private expenditures. Most studies examining the distribution of private expenditures use unadjusted data from household surveys, although evidence from most countries indicates that there always differences between the level of household expenditures on health reported in national surveys, and that derived from more comprehensive national health accounts estimates of household spending, which take into account other data on private spending (Rannan-Eliya and Berman, 1993). This study uses Egypt’s National Health Accounts to constrain the level of expenditures reported in the household survey, in order make them fully comparable to the data on public and

institutional expenditures. In addition, all other known health expenditures in Egypt are distributed according to the presumed beneficiaries. The resulting estimates of the distribution of health care expenditures are thus fully consistent with the official national health accounts for Egypt, and in fact describe the distribution of all health care spending in Egypt. The availability and use of national health accounts data finally make it possible to treat the eventual results as applicable to the totality of health care delivery in Egypt, and not just to one or more individual components of the health care system.

Ideally, this analysis should have used the full methodology as used by the authors in the COMAC-HSR study (van Doorslaer, Wagstaff, and Rutten, 1993). The COMAC-HSR study involved ten case studies, each looking at the equity in financing and delivery of health care in different OECD economies. The COMAC-HSR methodology is again in the benefit incidence tradition, but developed a comprehensive standard methodology for its comparative national studies. This methodology involved three elements:

- (1) Measuring the equity of financing by estimating the contribution made by each income group to each of the identified financing mechanisms, including general revenue taxation, social insurance premiums and out-of-pocket financing.
- (2) Measuring the distribution of health care delivery by imputing the financial cost of the health care services utilized by each income group.
- (3) Measuring the distribution of need by quantifying the distribution of acute and chronic illness in each income group using self-reported sickness data.

The methodology in this study attempts to replicate those elements of the COMAC-HSR study that were feasible given available data. In practice this meant only the second element *in toto*. Measuring equity of financing was not feasible for the most part, as studies and data are not available giving the fiscal incidence of taxes and social insurance premia in Egypt.

Similar data to those used in the COMAC-HSR study were available for looking at the distribution of self-reported sickness. However, there are much greater differences between income groups in Egypt in their apparent tolerance of sickness and likelihood to self-report sickness than observed in developed countries. This results in a situation in Egypt, where the rich are more likely to report illness than the poor, despite the objective evidence indicating that the burden of illness and mortality is greater in the poor. For this reason, although some of the data on reported sickness rates are reported here, they are not used to control the distribution of health care expenditures as in the COMAC-HSR study.

## Egypt's Health Care System

Egypt is a low-income developing country; per capita GNP was US\$ 790 in 1995. Health conditions are comparatively poor, with life expectancy reported as 65.3 years at birth in 1992, and the infant mortality rate as 42.5 per 1000 in 1991 (National Institute of Planning, 1995). The health care system is pluralistic with several public health programs and considerable private sector provision. In 1995, approximately 25% of financing came from general revenue sources, 20% from social insurance financing, and 55% from private, mostly out-of-pocket household spending. Total health care spending was estimated to be equivalent to 3.7 % of GDP in 1994/95 (Rannan-Eliya and associates, 1998).<sup>1</sup>

The major provider of care is the Ministry of Health, which runs a nationwide system of health services, ranging from outpatient clinics to large urban-based hospitals, and providing a mix of inpatient and outpatient care. These services are administered on a decentralized basis, with most service facilities run by Egypt's 27 governorates, which are the major sub-national governmental authorities in Egypt. The governorates are funded through a decentralized health budget provided by the Ministry of Finance. MOH services are subsidized, and provided largely free to all citizens.

The second major public financier and provider of care is the Health Insurance Organization (HIO). This is a compulsory social insurance agency, which levies mandatory payroll contributions on all formal sector workers and their employers, and public pensioners. HIO was established in 1964 with the intention of eventually covering the whole population. However, as with similar programs in other low-income to lower-middle income countries, universal coverage has remained elusive, and coverage has remained restricted to the small urban, formal sector. From 1965 to 1995, the number of beneficiaries increased from 140,000 to 5,851,549 (9.7% of the national population).

Premiums range from two to five per cent of assessed salaries. Widows are covered under a separate program, but do not make premium payments. Small co-payments are required of some workers, but these are quite small in relation to benefits provided. Coverage applies only to the enrolled worker, and does not extend to dependents. Although, HIO operates as an insurance agency, in practice its annual expenditures are greater than its income from premiums. Consequently, it receives ad hoc subsidies from the Egyptian government in order for it to pay unpaid creditors, and occasionally for capital expenditures. HIO can thus be regarded as a funding mechanism combining features of both social insurance as well as general revenue financing. During the 1994/95 fiscal year, HIO expenditures in its main workers and pensioner and widows programs amounted to LE 635 millions, but total revenues from premium payments were only LE 408 millions. The deficit was not funded in that year, but was carried forward to the future accounting periods, when it would typically be paid off by general revenue contributions.

A separate HIO program introduced in 1993, known as the Student Medical Insurance Program (SMIP), provides insurance coverage to over 7 million students. SMIP is financed by a mix of individual premiums paid by enrolled students (LE 4 per child), a special ear-marked cigarette tax of 10 piastres per packet, and a contribution from general revenues of LE 4 per child. Only registered students are eligible to enroll. Children who are not going to school, typically those from the poorest families, are not eligible. SMIP combines elements of social insurance and general revenue financing, but it can be characterized as a general revenue funded program with a modest insurance element. During the 1994/95 fiscal year, SMIP's funding was derived 76% from general revenue contributions by GOE, and only 14% from premiums by students. Taking

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1 Estimates are for GOE Fiscal Year, July 1, 1994 to June 30, 1995.

both SMIP and the general programs together, HIO in 1994/95 was more than 50% funded from government revenues other than the mandatory payroll taxes levied in the form of premiums.

Public funding in the form of general revenues is also used to finance several other public providers of health services. The Health Ministry runs a small number of specialized national teaching hospitals, which provide largely free care. The Education Ministry through its budget supports twenty university hospitals, with over 15,000 beds. These provide a higher quality of care than MOH facilities, and receive a higher level of government subsidies per unit of service. The university hospitals are linked to the universities, but they are open to all patients. They charge user fees from patients, although they remain largely subsidized. Finally, other ministries, including Transport and the Armed Forces, run their own facilities for staff and their dependents, and in some cases these facilities are also available for use by the general public.

While public provision dominates inpatient care services, Egyptians make considerable use of private ambulatory services. These are provided mostly in private clinics, but include pharmacies and non-governmental clinic services. Private clinics are staffed for the most part by government doctors, who are allowed to work privately in their off-duty hours. There is a small private hospital sector which is concentrated in the Cairo-Giza metropolitan area.

Egyptian doctors are not legally permitted to dispense drugs, and this restriction is generally adhered to. Households make substantial use of pharmacies for obtaining drugs, and in some cases treatment advice. These private services are all funded by private out-of-pocket spending, supplemented by a very small amount of private insurance.

## **Methodology of Study**

The primary objective of this study is to examine the distribution of health care resources in Egypt by estimating or imputing the value of health care services delivered to different population subgroups. To do this requires two types of information:

- (1) Data on the expenditures incurred in delivering each type of health service examined
- (2) Data on the proportional utilization of each type of health service by different population subgroups

If the utilization of health services is known, then the share of medical expenditures received by each population subgroup can be simply estimated by assuming that there are no differences in the intensity of resource use per treatment episode across population subgroups, and by multiplying the utilization data into the data for medical expenditures.

A major additional concern of this study, which is a methodological one, is that the expenditures distributed across each population subgroup should be derived from those estimated in the Egypt's national health accounts. This provides an overall framework for the estimations which will ensure full comparability in the levels of expenditures incurred in each health care program.

## ***Data and variable definitions, and assumptions***

### *National Health Accounts*

The central source of data for this study is the National Health Accounts (NHA) of Egypt for 1994/95. Other reports give detailed information on the compilation and structure of Egypt's NHA, which are the official estimate of national health expenditures in Egypt (Rannan-Eliya and associates, 1998). Egypt's NHA provide the most accurate available estimates of total health care spending in Egypt, and of the structure and the flow of funds between financing agents and health care providers. The NHA are organized in a matrix format, which ensures internal

consistency, as all funds provided by funding agents must balance with the funds received by providers. The NHA database which supports estimation of the NHA includes multiple data sources, including the MOF audited accounts of government agencies and departments, and survey data from autonomous government health care providers, private insurance companies, employers and pharmaceutical companies. In the case of government sector organizations, the NHA typically includes only audited expenditures, while private expenditures are based on estimates derived from reconciling information from a combination of household and provider surveys and other secondary data.

For this study, the 1994/95 NHA database provided the following data:

- (i) MOF audited expenditure figures for all governorate health departments
- (ii) MOF audited expenditure figures for MOH, HIO and teaching hospitals and several specialized health agencies

According to the NHA, total national health expenditures in Egypt in 1994/95 were the equivalent of 3.7% of GDP. Tables 1 and 2 provide an overview of the flow of funds within Egypt's health care system as estimated in the NHA. Table 1 shows the flow of funds from the ultimate sources of financing to financing intermediaries or final providers, when the funds do not pass through intermediaries. Table 2 shows the flow of funds from financing intermediaries to actual providers of health care services.

As can be observed, the NHA identifies the following providers of health care in Egypt:

- (i) MOH facilities and services
- (ii) Teaching hospitals
- (iii) University hospitals
- (iv) Other national health agencies
- (v) Other public medical providers (including Defense Ministry hospitals)
- (vi) Health Insurance Organization
- (vii) Private hospitals
- (viii) Private clinics
- (ix) Pharmacies
- (x) Traditional providers
- (xi) Others

This study distributes all expenditures for services provided by each of these provider types across the population.

**Table 1: Financing flows in health system, Egypt FY 1994/95 - Sources to financing intermediaries (LE millions)**

	<b>Sources</b>						<b>TOTAL</b>
	<b>MOF/NIB</b>	<b>SIO</b>	<b>Donors</b>	<b>Firms</b>	<b>Syndicates</b>	<b>Households</b>	
<i>Transferred to intermediaries</i>							
MOH	1,337		142				<b>1,479</b>
THIO	97						<b>97</b>
MOE	517						<b>517</b>
MOSA	6						<b>6</b>
Other ministries	190						<b>190</b>
HIO	434	448	12			39	<b>933</b>
Firm schemes				364			<b>364</b>
Syndicate schemes					26		<b>26</b>
Private insurers				17			<b>17</b>
<b>Subtotal</b>	<b>2,581</b>	<b>448</b>	<b>154</b>	<b>381</b>	<b>26</b>	<b>39</b>	<b>3,629</b>
<i>Not transferred to intermediaries</i>							
MOF/NIB	46						<b>31</b>
SIO		0					<b>0</b>
Donors			61				<b>61</b>
Firms				0			<b>0</b>
Syndicates					0		<b>0</b>
Households						3,780	<b>3,780</b>
<b>Subtotal</b>	<b>46</b>	<b>0</b>	<b>61</b>	<b>0</b>	<b>0</b>	<b>3,780</b>	<b>3,887</b>
<b>TOTAL</b>	<b>2,627</b>	<b>448</b>	<b>215</b>	<b>381</b>	<b>26</b>	<b>3,819</b>	<b>7,516</b>

Source: Egypt National Health Accounts (Rannan-Eliya et al., 1998)

**Table 2: Financing flows in health system, Egypt FY 1994/95 - Financing intermediaries to providers (LE millions)**

	<i>Public Financing</i>							<i>Donors</i>	<i>Private financing</i>				<i>TOTAL</i>
	<i>MOH</i>	<i>THIO</i>	<i>MOF</i>	<i>MOE</i>	<i>MOSA</i>	<i>Others</i>	<i>HIO</i>	<i>Foreign Donors</i>	<i>Firms</i>	<i>Syndicates</i>	<i>Private insurers</i>	<i>Households</i>	
MOH facilities	1,305						17					80	<b>1,402</b>
Teaching hosps	14	97					3	2	2			1	<b>118</b>
Univ. hosps.	30			517			30	26	1		1	2	<b>606</b>
NPC			20					5				2	<b>27</b>
NCMC			1									1	<b>2</b>
NODCAR			5										<b>5</b>
Vacsera			5										<b>5</b>
Other public	4					190	6						<b>200</b>
HIO	1						530					49	<b>580</b>
CCOs	11		15				28	3	221			49	<b>330</b>
Private hosps.	42						71		23	20	5	120	<b>281</b>
Private Clinics									57	5	5	670	<b>737</b>
Pharmacies	17						237		60	1	5	2,396	<b>2,716</b>
NGOs	3				6		6	25				70	<b>110</b>
Traditional												8	<b>8</b>
Others												332	<b>332</b>
Foreign providers	52						5						<b>57</b>
Administration of private insurance											1		<b>1</b>
<b>TOTAL</b>	<b>1,479</b>	<b>97</b>	<b>46</b>	<b>517</b>	<b>6</b>	<b>190</b>	<b>933</b>	<b>61</b>	<b>364</b>	<b>26</b>	<b>17</b>	<b>3,780</b>	<b>7,516</b>

Source: Egypt National Health Accounts (Rannan-Eliya et al., 1998)



**Table 3: Key to categorization of expenditures for equity analysis**

	Public financing							Donors	Private financing				TOTAL
	MOH	THIO	MOF	MOE	MOSA	Others	HIO	Foreign Donors	Firms	Syndicates	Private insurers	Households	
MOH facilities	A						E					G	1,402
Teaching hosps	C	C					E	C	H			G	118
Univ. hosps.	C			C			E	C	H		H	G	606
NPC			B					H				G	27
NCMC			B									G	2
NODCAR			B										5
Vacsera			B										5
Other public	D					D	E						200
HIO	E						E					G	580
CCOs	D		D				E	D	H			G	330
Private hosps.	A						E		H	H	H	G	281
Private Clinics									H	H	H	G	737
Pharmacies	A						E		H	H	H	F	2,716
NGOs	A				B		E	H				G	110
Traditional												G	8
Others												G	332
Foreign providers	A						E						57
Administration of insurance											H		1
<b>TOTAL</b>	<b>1,479</b>	<b>97</b>	<b>46</b>	<b>517</b>	<b>6</b>	<b>190</b>	<b>933</b>	<b>61</b>	<b>364</b>	<b>26</b>	<b>17</b>	<b>3,780</b>	<b>7,516</b>

**Key to allocation of expenditures in analysis**

A	GOE funded Ministry of Health budget expenditures	E	HIO spending funded by mandatory insurance premiums and other taxes
B	GOE funded national agencies providing collective health services	F	Household spending on drugs
C	GOE health care subsidies through university/teaching hospitals	G	Household spending on non-drug health care services and products
D	GOE personal health care subsidies not otherwise categorized	H	Private expenditures not directly by households

### *Household Survey Data*

The source of household data used in this analysis is the National Household Health Utilization and Expenditure Survey carried out during 1994-95 (NHHEUS 95). This was a national survey designed by Harvard University and Cairo Demographic Center (CDC) in collaboration with the Ministry of Health to accurately measure utilization of health services during 1994-95. The survey took a self-weighting stratified sample of 21 governorates. Five governorates (Matrouh, Red Sea, North Sinai, South Sinai, New Valley) were not included in the sample on grounds of cost, but these account for only 1.2% of Egypt's total population. The survey covered 10,664 households, of which 9,931 were successfully interviewed giving a response rate of 93.1%. Of the 55,824 individuals living in the interviewed households, 50,984 were actually interviewed, giving a response rate of 94.7%. The overall response rate was thus 88.2%. The survey was conducted in two national rounds in order to control for seasonal variations. The first round was held during November 1994 to February 1995, and the second round was during July 1995 to August 1995. All adult members of the sampled households were administered the survey instrument separately, and children were interviewed using adult proxies. The survey instrument used different schedules for adults and children, and for inpatient and outpatient utilization.

Respondents were asked about utilization of ambulatory care services in the past two weeks, and inpatient services in the previous 12 months. The survey instrument differentiated between different types of public facilities (MOH urban hospitals, MOH rural hospitals, MOH MCH centers, MOH urban health centers, MOH rural health units), as well as between public and private providers.

Questions about outpatient utilization of health care providers were contingent on individuals reporting an illness episode during the previous two weeks, and for each illness episode respondents were allowed to name up to six different providers, in the order in which they were used. For each of these different provider episodes, respondents were asked about the associated expenditures. In the case of inpatient use, respondents were asked about any inpatient episodes during the previous 12 months, and they were allowed to list up to 4 successive episodes each, with details requested on the name and type of inpatient provider, associated expenses and length of stay.

NHHEUS 95 provides data on the consumption level of each household based on a detailed schedule which enquired after household expenditures. The information on total household expenditures was used to rank households into quintiles on the basis of mean total household expenditures per capita for each household. For the purposes of analysis, adults were treated as being equal to children in this calculation. It is not possible to independently verify the accuracy of the average household expenditures reported, as Egypt does not publish detailed data on the distribution of household income. However, comparison of the average household expenditure per capita with that implied by the National Income Accounts, and other published income distribution data (World Bank, 1999), suggests that NHHEUS 95 recorded relatively accurate data on the levels and distribution of household expenditures. Table 4 shows the distribution of expenditure in the sample, compared with estimates published by the World Bank. It should also be noted that there is a discrepancy between the average level of household expenditures reported in NHHEUS and that implied in Egypt's national income accounts. Household expenditures in NHHEUS are some 30-40% lower than private consumption as given in the national income accounts. This is not surprising as the survey concentrated on health care utilization and expenditures, and used only a short schedule for recording other household consumption. Thus some underestimation of overall household consumption would have been expected and did occur, but is assumed not to have biased the relative ranking of households.

**Table 4: Estimates of distribution of per capita household expenditures in Egypt**

	<i>Expenditure quintiles</i>					<i>Gini</i>
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	
NHHEUS (1994/95)	6.3	10.0	14.0	20.2	49.5	0.420
World Bank (1991)	8.7	12.5	16.3	21.4	41.1	0.320

*Note:* Parentheses indicate year which estimate applies to. World Bank from World Bank (1999). Quintiles arranged from poorest to richest, with I the poorest.

### *Budget Tracking System*

In any benefit-incidence study, one of the problems is how to allocate government health expenditures between types of facility and service. In most cases, including Egypt, this cannot be done through examination of the official accounts. In the Egyptian government's official accounting system, all expenditures are classified and recorded under four categories only: Chapter 1 (personnel salaries and benefits), Chapter 2 (non-salary recurrent expenditures, including drugs, supplies, utilities, etc.), Chapter 3 (capital purchases and investments), and Chapter 4 (debt repayments and other investment transfers). This system does not permit analysis of expenditures by end-use. To overcome this problem, the Health Ministry is currently developing a separate Budget Tracking System (BTS).

The BTS is a management information system designed to allow tracking of all health ministry expenditures according to various classifications of their ultimate use. These classifications include type of health care unit, location (urban-rural, district, governorate), and medical function. The BTS has been developed by carrying out detailed studies of actual expenditure patterns in a large number of representative facilities in three governorates: Alexandria, Beni Suef and Port Said. Alexandria and Beni Suef were chosen as being representative of urban and rural governorates respectively. Based on the observed variation in spending patterns between individual facilities of the same type, estimating procedures have been defined which allow annual estimation of spending breakdowns at the governorate level, based on returns from a statistically representative number of facilities.

The BTS is currently being expanded from the original three pilot governorates to all governorates. While this is occurring, accurate data on spending patterns in the three pilot governorates are available, and these were used in this study to estimate the distribution of spending in all governorates across different facility types through a process of extrapolation.

### *Facility Costing Studies*

Salah and associates have carried out a number of detailed costing studies in a large sample of MOH facilities (Salah, Walsh and Nandakumar, 1997a, 1997b, 1997c). These studies are an accurate and reliable source of data on the allocation of expenditures in sampled facilities between capital and recurrent uses, between individual departments, and between inpatient and outpatient use. These studies have been carried out in the same three governorates as the pilot phase of the BTS (Alexandria, Beni Suef and Suez), but were considered representative of the distribution of costs within MOH facilities in other governorates.

### *Expenditure Definitions*

Public subsidies for health services were valued at the actual cost to the government of producing the services. They were not valued at the market price of such services. The cost to the government was taken as the net cost, excluding any income that the public facilities received as user fees from patients as official payment. To avoid double counting of expenditures, the data for MOH expenditures in each governorate were adjusted by the amounts recorded in user fees in that governorate.

Inpatient services were defined as any services which involved the patient staying overnight in a facility. Outpatient services were defined as all services which involved individual contacts with providers, and did not involve an overnight stay. Public collective services were defined as those services whose benefits could not be attributed to any individual, and which benefited groups of individuals within the population; examples include vector control, drug regulatory functions exercised by central agencies, and health education.

The population surveyed in the NHHEUS 95 was categorized into urban and rural according to the official GOE classification of the areas in which households were located. Reported household consumption was used as the measure of the welfare ranking of households. Total annual expenditures were divided into the number of persons in the household to obtain a per capita expenditure figure, which was then used rank households into deciles and quintiles. In other studies conducted in developed countries, an adult equivalence scale is often used to take into account the fact that children require a lower level of consumption (van Doorslaer et al, 1993). This was not done in this case, as there was no such scale validated for use with Egyptian household survey data. Expenditure was used throughout as a proxy for household income.

Private health expenditures in this study largely relate to household out-of-pocket spending. Household health expenditures were defined as including all expenditures by households for directly purchasing medical services or supplies, whether the purpose was curative, preventative or rehabilitative. This definition excluded household expenditures on travel to and from health care providers. Payments for private health insurance by individuals and by firms are ignored in this analysis, as the data are not sufficient to enable an analysis of their distribution. However, it should be noted that very few people in Egypt are enrolled in private health insurance schemes, with most recent estimates putting the numbers at less than 50,000 individuals, or 0.1% of the national population.

### ***Choice of Illness and Need Measures***

Many policy makers would accept the objective that health care ought to be distributed according to need and not according to ability to pay. This can be expressed in the principle of horizontal equity: that persons in equal need ought to be treated the same irrespective of ability to pay. The extent to which this occurs can provide one yardstick of the equity in a health care system. Need can be correlated directly with sickness or illness requiring medical treatment or action by the health system.

Assessment of the distribution of need, or sickness in a population ideally requires objective clinical information. However, this type of data is not normally available, and instead analysts are left with measures of the reported sickness of individuals. In this case, NHHEUS 95 provides data on reported sickness of individuals. All individuals in the survey were asked a series of questions about whether they had experienced acute symptoms of illness during the past two weeks, as well the presence of longer-lasting symptoms which had persisted for more than three months. These two sets of questions were used as measures of acute sickness and chronic sickness respectively. It should be emphasized that both of these are perceptions of illness, and therefore are related to actual clinically recognized illness only through the medium of the individual's subjective perceptions.

In addition to these questions on the presence of acute and chronic symptoms, individuals were also asked to rate their general health status in comparison with others of their same age group. They were allowed to choose from five responses, which ranged from "excellent" to "poor".

A somewhat more objective measure of ill-health or disease is to ask about inability to perform normal tasks. NHHEUS 95 included a series of questions which enquired about the ability to undertake normal day to day tasks, such as bathing, walking, etc., based on the 'Activities of daily living' used in U.S. surveys. The summed responses to this set of questions provides an ordinal measure of relative disability. This ADL (Activities of Daily Living) measure was also examined as a possible measure of relative ill-health.

### ***Method of Analysis***

This analysis of health expenditures in Egypt is designed to distribute national health expenditures as estimated in Egypt's NHA for 1994/95 (Tables 1 and 2). The NHA provides the overall framework and constraints within which allocations are determined. This implies the following principles:

1. All expenditures calculated must sum to the corresponding totals in the rows and columns of the NHA matrices.
2. The total of public subsidy expenditures and private expenditures must equal total national health expenditures as given in the NHA.
3. All expenditures must be distributed; if no information is available to do so, then expenditures should be distributed conservatively, i.e., equally across all individuals who are identified beneficiaries.

To ensure complete compatibility with the NHA estimates, the following methodology was employed, treating public subsidy expenditures separately to private expenditures. In doing so, the study explicitly ignores external assistance from foreign donors as a separate source of financing in the health care system. Estimated foreign donor support is aggregated with the relevant public funding for each type of organization.

The following section describes in detail how the each item of expenditure was treated in the analysis. Table 3 provides an overview of how expenditures were categorized and grouped for the purpose of analysis.

### *Public Expenditures*

All national totals for particular program subsidies were derived from the relevant cells of the 1994/95 NHA matrix (Table 2). Information from the NHA database was then used to distribute expenditures of individual public programs or activities by governorate or by appropriate population sub-group.

If  $C_X$  is total national expenditure by the government on a particular provision program X,  $C_{XG}$  is the government's expenditure on program X in governorate G. Then total national expenditures by the government on program X are given by

$$C_X = \sum_G C_{XG}$$

Table 5 lists the programs and governorates which were separately considered in the analysis. Note that four Frontier governorates were not included as they were not represented in the NHHEUS 95. Adjustment was made for this omission in the analysis, and in the presentation of results.

**Table 5: Governorates and programs separately considered in analysis**

<b><i>Governorates</i></b>	<b><i>Public provision programs</i></b>
Cairo	Ministry of Health
Alexandria	Health Insurance Organization (General)
Port Said	Health Insurance Organization (SMIP)
Suez	University hospitals
Damietta	Teaching hospitals
Daqahlia	Defense and other ministries
Sharqia	
Qalyoubia	
Kafr El Sheikh	
Gharbia	
Menoufia	
Beheira	
Ismailia	
Giza	
Beni Suef	
Fayoum	
Minya	
Assiut	
Sohag	
Qena	
Aswan	

In the case of MOH services, the BTS and facility costing studies were used to distribute governorate expenditures firstly by level of facility and secondly by inpatient and outpatient services (Table 6). In doing so, it was assumed that the expenditure patterns in Alexandria and Beni-Suef were representative of urban and rural governorates respectively, except for Suez, where the Suez results were used. The BTS provided data which allowed allocation of

expenditures within a governorate according to the following categories: public collective services, urban hospitals, rural hospitals, urban health units, rural health units, and MCH centers. Expenditures within types of facilities were then further allocated to inpatient and outpatient services according to the patterns observed in the facility costing studies. Again as with the BTS data, the patterns in Alexandria and Beni-Suef were assumed to be representative of urban and rural governorates respectively, except for Suez. If H refers to the expenditure category within a governorate, and I refers to whether services are inpatient or outpatient, then

$C_{XGHI}$  = Total expenditure in program X in governorate G for category H and service I.

For most other public sector providers, such detailed costing information was not available, and expenditures were allocated to types of service, assuming that their expenditure allocations were similar to those observed in similar MOH facilities. This procedure produces governorate-level estimates of expenditures on inpatient and outpatient services for each major public provision program, and in some cases disaggregated by level of facility.

Utilization data from the NHHEUS was then used to allocate these global amounts at the governorate level across individuals in the NHHEUS data set according to their reported levels of utilization of those specific services, assuming that each unit of service utilized within a governorate cost the same amount. The units of service used were outpatient visits and inpatient bed-days. If  $u_{XGHI_n}$  is the number of units of service I, provided by facility type H, used by the nth individual in a particular governorate G, then the average public subsidy per unit of service consumed,  $c_{XGHI}$ , is calculated as:

$$c_{XGHI} = \frac{C_{XGHI}}{\sum_n u_{XGHI_n}}$$

From this, the average subsidy received by each individual in the survey was obtained by multiplying the average subsidy per unit of service by the total number of units of service utilized by that individual. This is equivalent to:

$$u_{XGHI} \left( \frac{C_{XGHI}}{\sum_n u_{XGHI_n}} \right)$$

Note that in doing this we are allocating the actual national expenditure on a program not across the whole national population, but over the individuals in the survey. This procedure thus produces an estimate of subsidies received per individual which is greater than the corresponding real level in the same ratio that the national population is greater than the number of respondents in the survey. This ratio, or sampling fraction, is 1049 at the national level, although it varies around this number in each governorate. If the estimated subsidy per individual is then divided by these ratios, it yields a direct estimate of the per capita subsidies received in reality by any individual or any group of individuals. On the other hand, simply summing the subsidies received by any group of individuals in the data set yields a direct estimate of the total subsidies received by that section of the national population which that group is representative of.

This is possible, because the survey sample was selected to be a self-weighting representative sample of the whole Egyptian population.<sup>2</sup> For example, if the total subsidies received by all the

<sup>2</sup> Although the sample in the survey was a self-weighting sample representative at both national and regional levels, the resulting sampling fractions at the governorate level were not the same. For this reason, when preparing tabulations, the appropriate governorate-specific sampling weights were used.

females in the sample are summed, it yields a total which is an estimate of the total subsidies received by the whole female population of Egypt. Similarly, if the average subsidy received by all females in the sample is divided by 1049, this yields a direct estimate of the per capita subsidy for females in the national population.<sup>3</sup>

This procedure was repeated for all public programs, disaggregating the expenditures as much as possible given the availability of relevant data. Table 6 gives the elements of disaggregation used for each major public program. For example, MOH expenditures were first disaggregated by governorate. Then within each governorate, MOH spending was disaggregated by level of facility and then the facility amounts were further disaggregated into spending on outpatient and inpatient services.

**Table 6: Elements of disaggregation used in estimating public program expenditures**

<i>Public program</i>	<i>Steps in disaggregation</i>
MOH	(i) Governorate, (ii) level of facility, and (iii) inpatient and outpatient services
HIO (General)	(i) Governorate, and (ii) inpatient and outpatient
HIO (SMIP)	(i) Governorate, and (ii) inpatient and outpatient
University hospitals	(i) Inpatient and outpatient
Teaching hospitals	(i) Inpatient and outpatient
Other ministries	(i) Inpatient and outpatient
National health agencies	Distributed equally across national population
MOH national treatment programs	Distributed one third to Cairo population, and two thirds to remaining national population
Other MOH national programs	Distributed equally across national population
Governorate-level collective services	Distributed equally across relevant governorate population

#### *Private Expenditures*

The totals for private expenditures are derived from the NHA, and distributed according to information available from the NHHEUS. NHHEUS recorded out-of-pocket spending on medical goods and services by households. However, the average level of expenditure reported was considerably higher than was consistent with other information about private spending. The Egypt 1995 NHA estimate of household expenditures incorporates information not only from NHHEUS but from other sources too, and so is considered more accurate than the figure reported in NHHEUS. Nevertheless, while over-reporting in the NHHEUS was significant, the survey is believed to have collected accurate data on the distribution of spending across households.

NHHEUS was used to distribute household spending as estimated in the NHA across households. To ensure consistency between the NHA estimates and NHHEUS data, two different adjustments were made. All drug expenditures reported by individuals were scaled downwards

<sup>3</sup> The estimates are not strictly representative since 1% of the population living in the Frontier governorates were excluded. If the distribution of expenditures or utilization differ significantly in these omitted governorates from that of the remaining population, then this would lead to a misestimation. However, it should be emphasized that even in the most extreme scenario, such a bias in the results is likely to be insignificant and less than 1%.



by 36%, and all other non-drug expenditures by individuals were scaled downwards by 19%. The evidence indicates that expenditures on drugs were over-reported in NHHEUS to a greater degree than other non-drug expenditures. These adjustments produce a data set, in which per capita expenditures on health are consistent with the NHA estimates. Since the survey sample itself is representative of the whole national population, the average per capita expenditure of any group of individuals in the data set is also a direct estimate of the average per capita expenditure of that section of the national population which that group is representative of. This feature of the data set lends itself to rapid estimation of the per capita expenditures of any population group.

Other private expenditures on health in Egypt are very small, consisting mainly of spending on private health insurance, spending by syndicates, which are professional associations, and some employer spending on health services for private sector employees. It is estimated that these other expenditures account for less than 10% of total national private health expenditures. As data are not available to examine the distribution of such expenditures, it is assumed that these expenditures are distributed equally across the whole population. Since most of these expenditures will be associated with higher income and formal sector employment, this assumption would have the effect of marginally understating any bias in expenditures towards the upper income groups.

## Results

The methodology described above created a data matrix containing information on the distribution of health expenditures across individuals in a representative national sample of Egyptians. The matrix consists of estimates of the health care resources received by each individual in the data set through each health program or type of health service. Derivation of per capita expenditure levels and aggregate spending levels for sub-national population groups is then relatively simple by a process of tabulation.

Tables 7 - 8 present the results of the analysis, tabulating results according to income group, age and sex categories, and governorates.

### ***Distribution of Need***

Four indicators are available to assess need, as described above: reported acute illness, chronic illness, days of restricted activity (RAD), and perception of relative general health status. Table 7 shows the distribution of reported morbidity by income quintiles.

**Table 7: Distribution of morbidity by income quintiles**

<b><i>Income quintile</i></b>	<b><i>Acute illness (%)</i></b>	<b><i>Chronic illness (%)</i></b>	<b><i>RAD (Annual days per capita)</i></b>	<b><i>Percentage perceiving own health poor (%)</i></b>
Poorest	39.0	13.7	9.6	6.8
2nd	40.8	13.6	10.1	6.0
3rd	42.5	14.9	10.5	6.3
4th	46.2	17.8	12.3	7.0
Richest	48.9	21.3	14.7	8.2
Average	43.5	16.3	11.5	6.9

*Note:* Acute illness ratio is the percentage of individuals reporting one or more symptoms of illness in previous two weeks. Chronic illness ratio is percentage of individuals reporting any persistent health problems for at least 3 months during the previous 12 months. RAD is the annualized number of restricted activity days per capita, based on the reported number of days off work/school/housework during previous 6 months.

In most countries, including Egypt, actual ill-health is concentrated amongst the poorer groups in the population. However, when self-reported rates of illness are examined, acute illness, chronic illness, restriction of activity and general perceptions of ill-health are all greater at higher income levels. This apparent contradiction parallels trends seen in most other high mortality countries, where wealthier (and healthier) individuals generally report higher levels of morbidity in surveys. The explanation lies in the fact that higher mortality in poorer countries is also related to a lower level of sensitivity to illness, and willingness or ability to take action when illness is recognized. In a few poor countries, such as Sri Lanka or Jamaica, poorer people do report higher rates of morbidity than rich people as is also the case in developed countries. But this behavior may itself be associated with their better health performance (Caldwell et al., 1989).

In Egypt's case, there is a clear gradient in sensitivity to illness, with poorer people being less likely to recognize illness or report being ill. That this is also directly related to actual morbidity and mortality, and is not a simple effect of income can be seen when differences in reported illness by governorate are examined. Table 8 gives reported rates of illness, having grouped all the governorates in the sample into three groups of seven, according to their levels of infant mortality rate in 1991. Those governorates which are known to have the worst health indicators also have the lowest levels of perceived poor health status. When reported rates are examined for children in the lowest income quintile, there is an even more marked inverse relationship between rates of reported illness and actual mortality rates. Children belonging to households in

the poorest income quintile, and living in the seven governorates with lowest IMR, are more than three times as likely to be reported to be having generally poor health status as children belonging to households at the same income level living in the highest mortality governorates.

**Table 8: Reported ill-health by region, and for children in lowest income quintile**

<i>Governorate mortality group</i>	<i>IMR (1991)</i>	<i>Acute illness (%)</i>	<i>Poor health status (%)</i>	<i>Children &lt;5 years and in lowest national income quintile</i>	
				<i>Acute illness (%)</i>	<i>Poor health status (%)</i>
Highest IMR	57	35.8	5.3	29.9	3.1
Intermediate IMR	39	41.0	6.3	33.7	4.3
Lowest IMR	31	50.8	8.4	43.0	9.8
Average		43.5	6.9	33.6	4.8

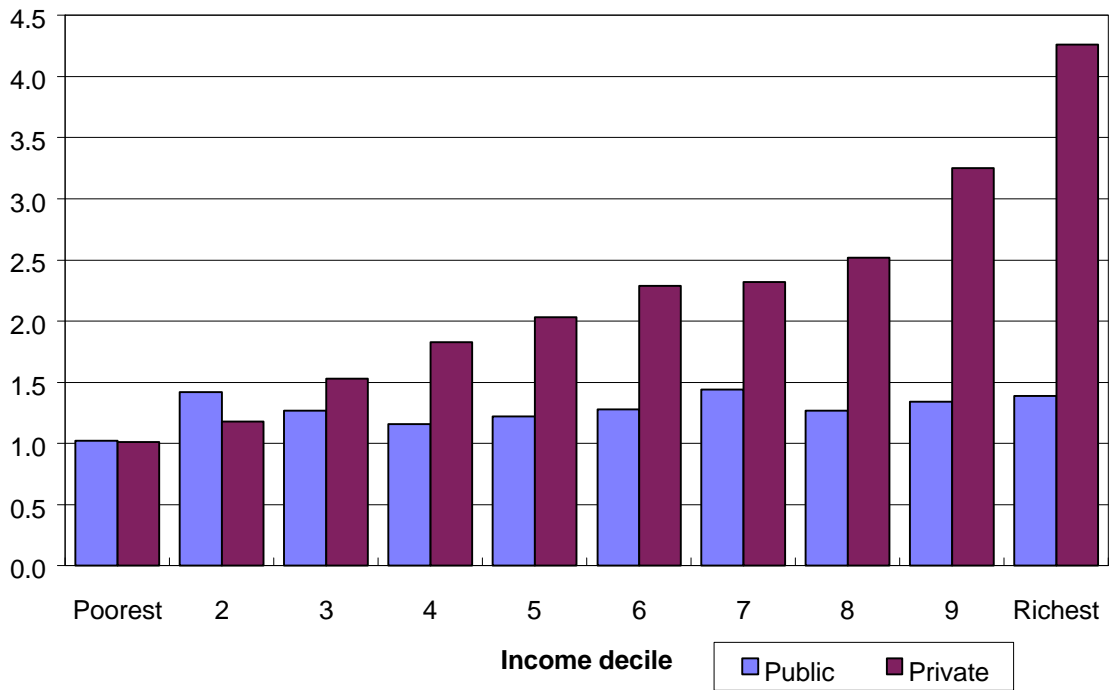
*Note:* Acute illness ratio is the percentage of individuals reporting one or more symptoms of illness in previous two weeks. Highest IMR group consists of Menia, Assiut, Beni Suef, Qena, Sohag, Fayoum and Aswan. Intermediate IMR groups consists of Giza, Qalyoubia, Suez, Menoufia, Sharkia, Ismailia, and Gharbia. Lowest IMR group consists of Cairo, Damietta, Beheira, Daqahlia, Alexandria, Port Said and Kafr El-Sheikh.

This lack of correlation between perceived health status and actual levels of morbidity and mortality places considerable doubt on the validity of these indicators as measures of need. Therefore, they are not used in the analysis for this purpose. Nevertheless, it illustrates one important issue. Poorer people are presumably sicker in Egypt than richer people, but their perception of ill-health is lower. This reduced sensitivity to illness may be one of the mechanisms which ensure that poorer people in Egypt experience substantially higher rates of mortality than the rest of the population, despite the actual widespread nominal availability of modern medical services to the whole population. It also represents one area in which public intervention may be needed to in order to reduce mortality rates, perhaps by reducing the access costs of public services for the poor and encouraging them to use modern services more frequently and rapidly.

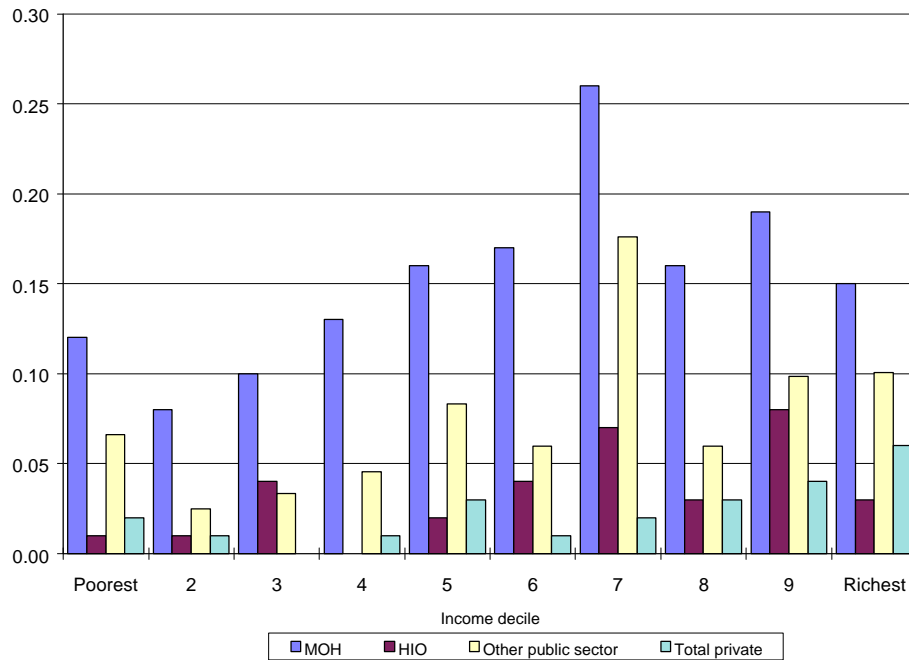
### ***Distribution of health care utilization by income level***

Figures 1 to 2 give the distribution of utilization of health care services by income level, separately for outpatient and inpatient services (further details given in tables in Statistical Annex). As can be observed, utilization of both public and private health care services show a significant income gradient, with richer Egyptians using higher volumes of both inpatient and outpatient services, with the exception of MOH outpatient services which are used more by poorer Egyptians. If it can be assumed that poorer Egyptians are sicker than richer Egyptians, and are thus in greater need of health care, then this distribution does not indicate that access to health care is equal for those of equal need.

**Figure 1: Outpatient visits per capita per year**



**Figure 2: Inpatient bed-days per capita per year**



### ***Distribution of health care expenditures by income level***

Table 9 shows the distribution of public health expenditures by income quintile. Table 10 compares the distribution of public and private health expenditures, and gives the distribution of total health expenditures. More details are given in the tables in the Annex.

The higher utilization rates of most public services by higher income groups translates into an expenditure pattern in which public subsidies increase with income. Only MOH expenditures are equally distributed across income groups, and that is largely due the higher use of MOH outpatient services by the poor, which compensates for the higher use of MOH inpatient services by richer Egyptians.

**Table 9: Distribution of public health expenditures by income quintile (%)**

<b><i>Income quintile</i></b>	<b><i>MOH</i></b>	<b><i>HIO (General)</i></b>	<b><i>HIO (Students)</i></b>	<b><i>Other Ministry</i></b>	<b><i>Total</i></b>
Poorest	19.4	14.5	17.5	13.0	<b>16.4</b>
2nd	20.3	16.1	17.6	14.4	<b>17.5</b>
3rd	20.1	15.7	20.9	19.5	<b>19.1</b>
4th	21.9	20.5	23.9	28.2	<b>23.5</b>
Richest	19.3	33.6	20.3	25.3	<b>23.6</b>
<b>Total (%)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Average per capita	LE 24.1	LE 10.4	LE 5.5	LE 15.4	<b>LE 55.9</b>

Note: Total for public health expenditures includes an additional LE 0.63 per capita of government health spending on national regulatory agencies, public administration, and support for charities which was allocated equally across the whole population.

**Table 10: Distribution of public and private health expenditures by income quintile (%)**

<b><i>Income quintile</i></b>	<b><i>Public</i></b>	<b><i>Private</i></b>	<b><i>Total</i></b>
Poorest	16.4	9.2	11.3
2nd	17.5	12.6	13.6
3rd	19.1	15.3	15.8
4th	23.5	20.1	20.5
Richest	23.6	42.8	33.2
<b>Total (%)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Average per capita	LE 55.9	LE 71.5	LE 127.4

Note: Private expenditures refer to household out-of-pocket spending mostly, plus LE 7.40 per capita, which consists of private insurance, syndicate and employer spending, which was allocated equally across all groups.

Public health programs exhibit somewhat different patterns of distribution. The one which favors the poor the most are MOH outpatient services. These are utilized by all income groups to some extent, but the poorest quintiles receive slightly more benefits than the richer groups. However, in the case of MOH inpatient services, these are almost equally distributed across all income groups. This apparent equal distribution of public spending by MOH is however countered by public health expenditures through HIO, the university hospitals and other ministries, which all favor the higher income groups. In the case of HIO, the richest quintile captures more than 36%

of HIO spending, compared with 12% in the case of the poorest quintile. A similar pattern is observed in the case of spending through other public sector facilities.

Overall, the distribution of combined health expenditures favors the higher income groups. This is a consequence of a distribution of private health expenditures which is skewed towards the highest income groups, and a distribution of public health expenditures which moderately favors the higher income groups.

#### *Expenditures through HIO*

The bias in HIO spending towards the higher income groups is not surprising, given that HIO membership is largely restricted to the urban formal sector workforce. The student program of HIO (SMIP) does not display as much an unequal distribution as the main program. This is related to the fact that membership in SMIP isn't restricted to formal sector employees. However, the fact that only school-going children are permitted to enroll means that the poor do not benefit as much as the richest households. In Egypt not all children attend school, and non-enrollment is highest in poorer families. In total, the poorest quintile receives only 16% of SMIP expenditures compared with 19% in the richest quintile, and 25% in the case of the second richest quintile. It should be noted that these figures do not take into account varying family sizes at different income levels. Poorer families in Egypt tend to have more children, and so a per child distribution of SMIP spending reveals a more inequitable distribution than this per capita analysis. While on a per capita basis, the richest quintile of households receives only one fifth more than households in the poorest quintile, the difference is almost two fold when compared on a per child basis (Table 11).

**Table 11: Distribution of HIO SMIP subsidies per capita compared with per child (LE)**

<i>Income quintile</i>	<i>Per capita basis</i>	<i>Per child basis</i>
Poorest	4.8	13.0
2nd	4.8	13.9
3rd	5.7	17.5
4th	6.5	22.4
Richest	5.6	23.6
Total (%)	100.0	100.0
Average per capita	LE 5.5	LE 17.4

*Note:* Private expenditures refer to household out-of-pocket spending mostly, plus LE 7.40 per capita, which consists of private insurance, syndicate and employer spending, which was allocated equally across all groups.

#### *Other ministries and University and teaching hospitals*

University hospitals on the other hand are available to all Egyptians, but in practice their urban location and their practice of charging modest user fees would discourage or prevent most poorer people and rural residents from benefiting from their services. Since HIO, SMIP, university and other ministry spending accounts for more than half of all GOE health spending, the net impact of government health expenditures favors the richest groups most. Table 9 combines expenditures through university and teaching hospitals with those through facilities run by other ministries, including Defense. As data for accurate distribution of these expenditures were limited, the figures given actually underestimate any bias in spending in favor of higher income groups. Overall, the richest quintile receives 25% of these government health subsidies provided through these non-MOH facilities compared with only 13% received by the poorest quintile.

### *Private Expenditures*

When private spending and overall utilization rates are taken into consideration, it is apparent that the equal distribution of MOH spending is due to self-selection by higher income groups of private provision. Higher income groups use all health services in greater quantities, but higher income is associated with greater utilization of private providers and greater out-of-pocket spending on health. As richer households switch to private services, it allows a greater share of MOH spending to be captured by the poorer households. The availability of private services, particularly in the ambulatory sector, therefore contributes to a more equitable distribution of government health subsidies.

### ***Comparison with other countries***

Data for the distribution of public health expenditures by income group are limited for most developing countries. Table 12 compares the distribution of public health subsidies as found in Egypt with data for some other developing countries.

Egypt's performance is comparable with many developing countries. Although equity is a stated concern of policy makers in most developing countries, when providing government health services, most developing countries display considerable inequity in their public funding of health care services. This is in contrast with developed countries, including the USA, where utilization of health care services tends to be more equitably distributed across all income groups, and public spending better targeted on poorer households.

Although Egypt's performance cannot be characterized as exceptionally poor in comparison with other developing countries, there is considerable room for improvement. Countries such as Malaysia and Sri Lanka show that it is possible to target health care subsidies effectively to the poor, without extensive means testing or explicit targeting. The pattern of spending in Egypt confirms what is evident from studies in OECD, and other developing countries. Public funding for health care services through free publicly provided health care services tends to be more equitable than through social insurance funding. Private spending, particularly out-of-pocket spending, tends to be related to income, and wealthier households are able to spend more in absolute terms than poorer households, although as a proportion of household income, richer households may spend less than poorer ones.

In fact, the performance of Egypt's MOH services in equity terms is better than for most public systems, although still far short of the superior performers. The major reason for the pro-rich distribution of government health care subsidies is their distribution through university hospitals and HIO services, rather than poor targeting of MOH services. If the distribution of public health care subsidies in Egypt more closely resembled that of MOH services, then Egypt would be performing better than most developing countries, although failing far short of countries such as Malaysia, Sri Lanka and Jamaica, which manage to ensure the poor use MOH services considerably more than wealthier households.

**Table 12: The incidence of public health spending in selected countries**

		<i>Share of subsidy (%)</i>	
		<i>Poorest quintile</i>	<i>Richest quintile</i>
Sri Lanka	1979	30	9
Jamaica	1989	30	9
Malaysia	1989	29	11
Brazil	1985	17	42
Tanzania	1992/93	17	29
<b>Egypt</b>	<b>1995</b>	<b>16</b>	<b>24</b>
South Africa	1994	16	17
Kenya	1993	14	24
Vietnam	1992	12	29
Indonesia	1989	12	29
Ghana	1992	11	34

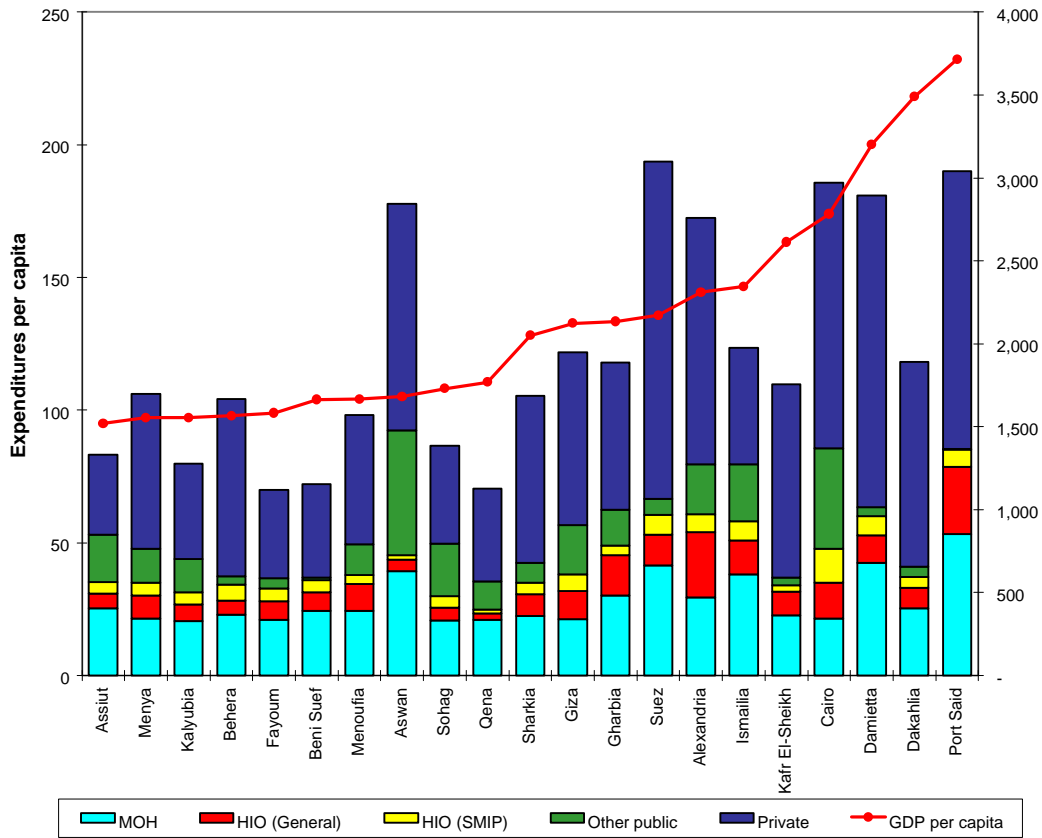
*Source:* Authors estimates based on Alailima and Mohideen, 1983, Demery et al 1995, Grosh 1994, Castro-Leal et al., 1999, and authors' estimates.

### ***Distribution of utilization and expenditures by governorate***

The pro-rich distribution of government health expenditures is paralleled by the distribution of government health expenditures across districts. Figures 3 and 4 show the distribution of health expenditures across governorates, arranged first according to income and then according to the infant mortality rate (Statistical Annex gives more details).

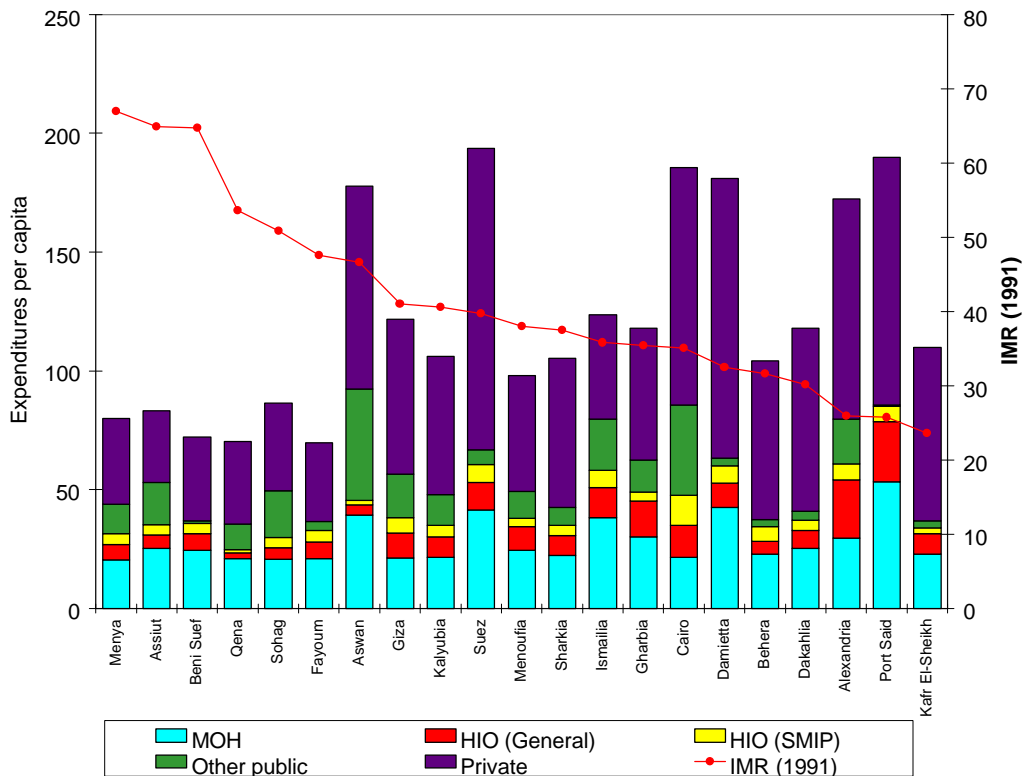


**Figure 3: Per capita health expenditures by governorate, ranked from poorest to richest, Egypt 1994/95**



MOH allocations to governorates do not appear to be related in any apparent way to overall

**Figure 4: Per capita health expenditures by governorate, ranked according to infant mortality rate, Egypt 1994/95**



levels of health status or income. Most of the poorest governorates with the greatest health problems in fact receive below-average levels of MOH spending, e.g., Menia, Fayoum, Sohag and Qena. The governorates which receive less MOH spending also tend to be the ones which benefit least from government health spending through other programs or ministries. If MOH spending is a government intervention designed to promote health in those areas, where other government services are least active and where the need is greatest, there is no evidence that MOH spending is currently allocated to achieving this. For example, per capita MOH spending in two of the poorest governorates with the worst health indicators, Sohag and Menia, averages less than LE 21 per capita, while MOH spending in Port Said averages almost LE 55 per capita. This pattern of geographical spending contributes to the poor targeting of MOH health care subsidies to the poor.

As is the case with spending across income groups, HIO and university hospital spending is mostly concentrated in the better-off governorates, particularly the urbanized governorates, and in Lower Egypt more than Upper Egypt. Again the distribution is much more skewed than MOH spending, with levels of spending varying more than seven fold between governorates.

### ***Distribution of utilization and expenditures by age-group and gender***

The methodology used permits an assessment of the distribution of health expenditures by age groups and gender. Tables 13 and 14 show the distribution of outpatient health care utilization by demographic groups. Figures 5 and 6 give the estimated distributions for health care spending.

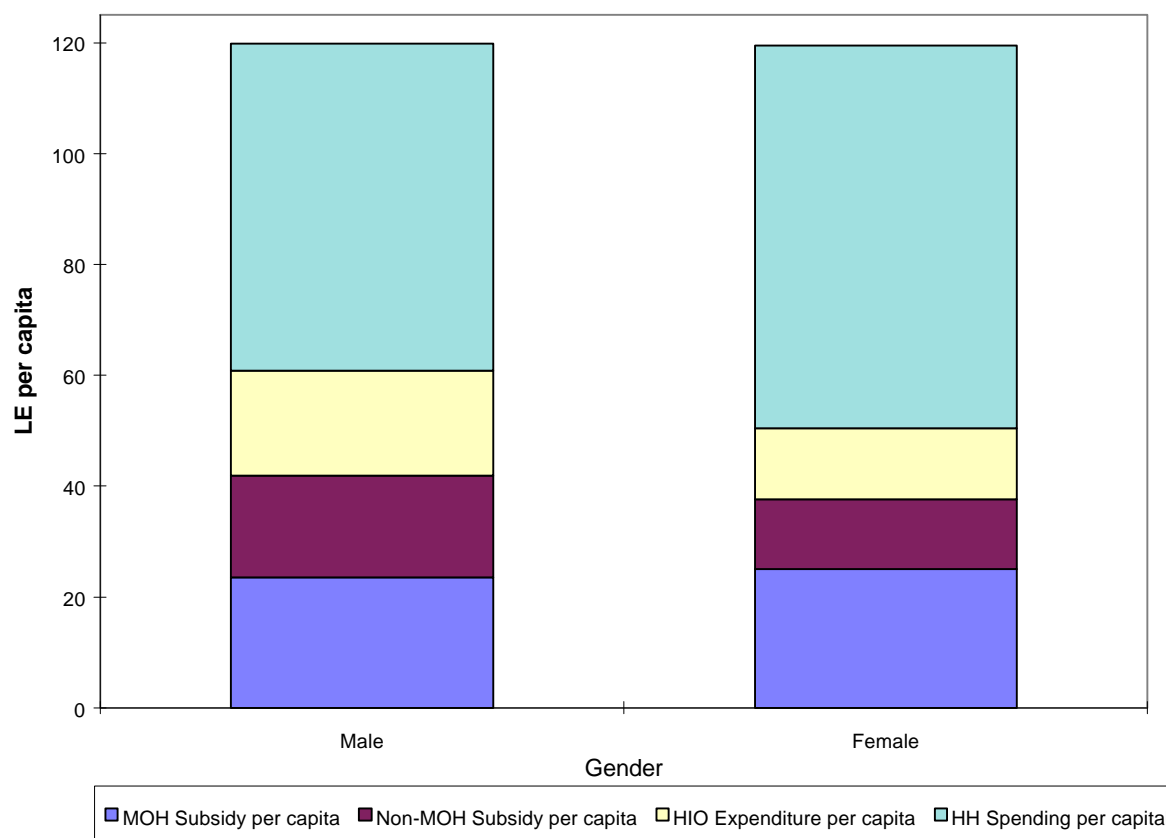
**Table 13: Use of public outpatient health services by gender and age group (annual visits per capita)**

<b><i>Demographic group</i></b>	<b><i>MOH</i></b>	<b><i>HIO (General)</i></b>	<b><i>HIO (Students)</i></b>	<b><i>University Hospitals</i></b>	<b><i>Other Ministries</i></b>	<b><i>Total</i></b>
Female	0.77	0.16	0.19	0.12	0.17	<b>1.23</b>
Male	0.62	0.36	0.26	0.08	0.27	<b>1.30</b>
0-4	1.08	0.00	..	0.09	0.04	<b>1.21</b>
5-15	0.55	..	0.23	0.03	0.39	<b>1.20</b>
16-29	0.58	0.12	..	0.12	0.11	<b>0.93</b>
30-39	0.83	0.39	..	0.14	0.17	<b>1.54</b>
40-49	0.85	0.66	..	0.12	0.25	<b>1.88</b>
50-59	0.70	0.43	..	0.19	0.28	<b>1.60</b>
60-69	0.63	0.28	..	0.25	0.10	<b>1.27</b>
70-98	0.60	0.32	..	0.28	0.09	<b>1.29</b>
Average per capita	0.70	0.26	0.23	0.10	0.22	<b>1.27</b>

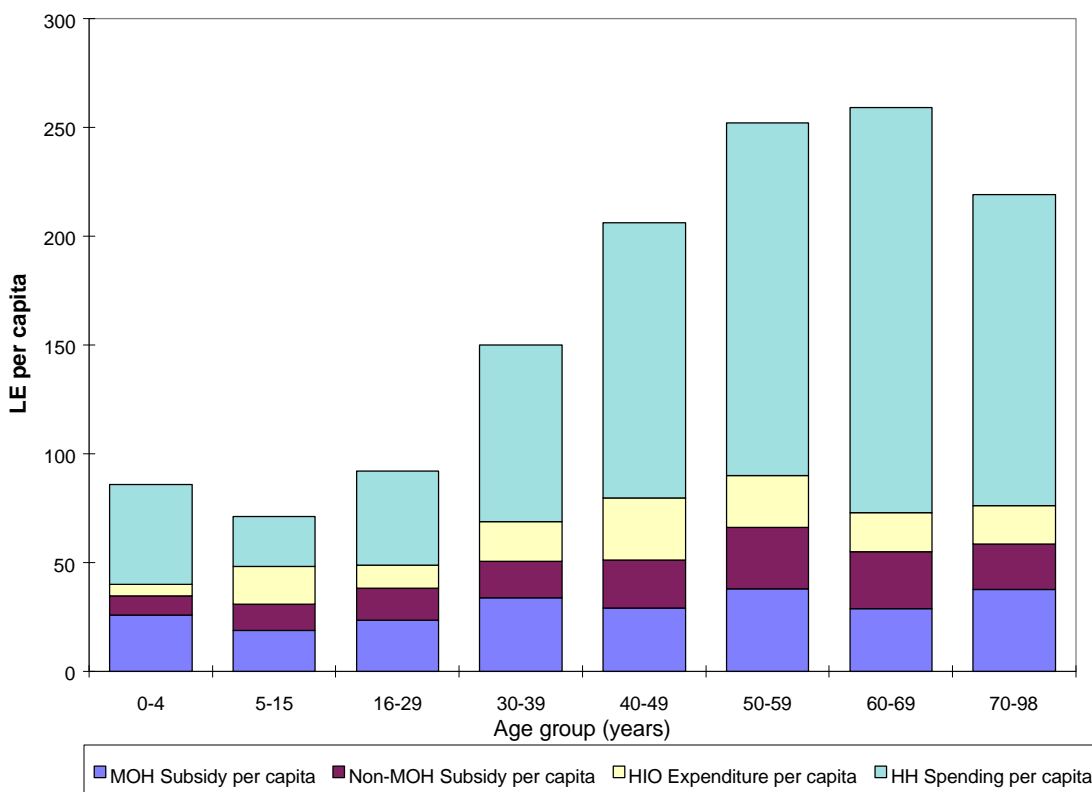
**Table 14: Use of all outpatient services by gender and age group (annual visits per capita)**

<i>Demographic group</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Female	1.21	2.36	<b>3.58</b>
Male	1.28	1.82	<b>3.13</b>
0-4	1.21	3.08	<b>4.29</b>
5-15	1.20	1.12	<b>2.29</b>
16-29	0.93	1.81	<b>2.70</b>
30-39	1.54	2.57	<b>4.13</b>
40-49	1.88	2.67	<b>4.53</b>
50-59	1.60	3.12	<b>4.68</b>
60-69	1.27	3.45	<b>4.81</b>
70-98	1.29	3.03	<b>4.30</b>
Average per capita	1.27	2.09	<b>3.34</b>

**Figure 5: Health expenditures by gender**



**Figure 6: Health expenditures by age group**



Public spending in total is strongly biased towards males (LE 61 per capita in comparison to LE 50 per capita). This is largely due to the pronounced pro-male bias in HIO spending. In the main HIO program for adults, males receive almost three times the level of benefits as women. This is not that surprising, because female labor-force and in particular formal labor-force participation rates are lower than for men. However, it should be noted that HIO's programs receive considerable general revenue subsidies, which are paid for ultimately by all Egyptians through taxation. Spending by other government programs is more equally balanced, with a slight bias towards females in most cases. However, even with SMIP, there is a slight bias in favor of male students, which may reflect higher school enrollment rates amongst male children.

This strongly pro-male bias in government health spending is not related to higher utilization rates by males. In fact as in most countries, Egyptian females exhibit higher overall utilization rates for health services than males. But this is funded largely by out-of-pocket spending, which is higher for females than men. What public services females do use, tend to be less resource intensive than those used by male Egyptians.

### ***Income transfers from health expenditures***

The analysis so far has demonstrated that the poor in Egypt do not receive an equal or the larger share of public health expenditures. Inequity in the publicly funded health care system generally favors richer households. Despite this, public health expenditures may still be equity enhancing if they serve to improve the net welfare of the poor.

Table 15 shows the level of public health expenditures as a share of total household expenditures. As noted above, household consumption was probably under-reported in

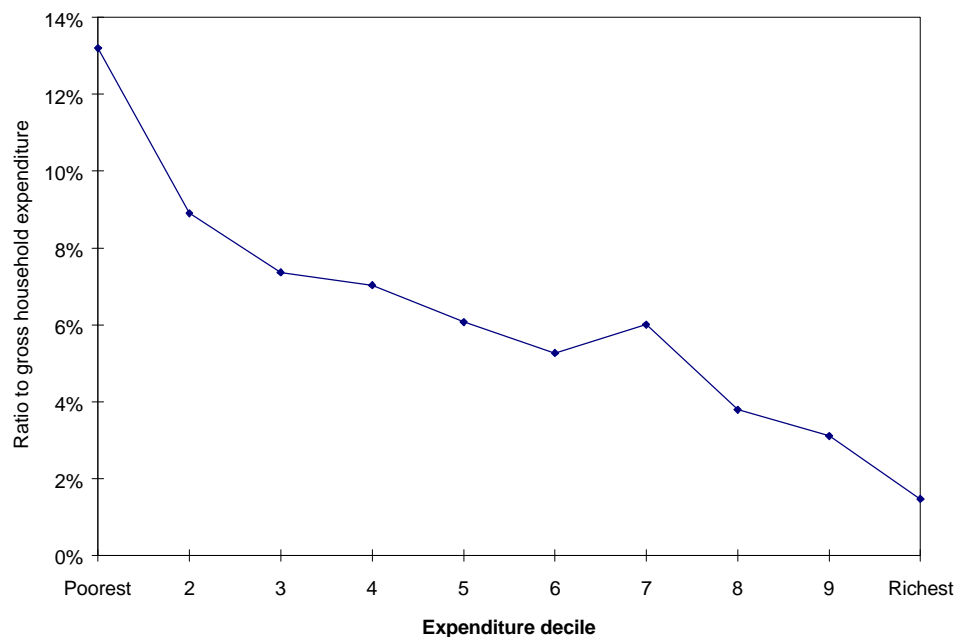
NHHEUS, so these figures exaggerate the importance of health subsidies. Nevertheless, public health expenditures, despite their pro-rich distribution, do amount to a significant source of consumption for poorer households. It would be wrong to conclude that simply because government health programs do not target the poor effectively that they are of no value to the poor. Government health subsidies, particularly through MOH, account for a substantial proportion of total household consumption, and presumably contribute to a substantial increase in overall welfare.

**Table 15: Public health expenditures as a share of household consumption**

<i>Income quintile</i>	<i>Mean household income per capita (LE)</i>	<i>Public health expenditures as a share of household spending</i>
Poorest	428	10.8%
2nd	680	7.2%
3rd	947	5.6%
4th	1,370	4.8%
Richest	3,356	2.0%
Total	1,356	100 %

*Note:* Public expenditures are the sum of expenditures through MOH, HIO, university hospitals and other public sector agencies and facilities.

**Figure 7: Public health expenditures as a share of gross household consumption**



## Implications

It is not possible to obtain health status indicators for different income levels, but it would be reasonable to assume that overall health status is worse at lower income levels. If need is defined in terms of the burden of morbidity and mortality, then the lower income groups would have greater need for health services. Yet the distribution of overall health expenditures in Egypt evidently favors the wealthier sections of the population. This is the consequence of both the manner in which health care in Egypt is financed and differences in health behavior. On the expenditure side there is a pattern in private spending which is regressive, and which favors higher income groups, and a public spending profile which does little to compensate for this. On the behavior side, there is some evidence in this study, that the poor, who are presumably sicker and in greatest need, also have a lower level of sensitivity to sickness, and therefore make less use of available health services.

The bias in public spending towards higher income groups occurs for several reasons. The most important ones are:

- (i) A substantial proportion of government health spending through several large programs other than MOH, which receive substantial government subsidies, but which by their very nature tend to benefit only the urban and formal sector populations.
- (ii) Lack of any apparent mechanism to use MOH geographical allocations as a method of counteracting the geographical imbalance in health care resources due to private spending and other government programs.
- (iii) Public spending on health through social insurance programs is in practice a regressive mechanism of funding health services, as observed in other countries with large rural populations and informal sectors.
- (iv) Lower utilization rates of all health services by lower income groups, which ensures that they utilize fewer resources than might be expected from government health programs.
- (v) Lack of significant concern with equity as a major policy goal in the health sector, which manifests itself in little discussion of distributional issues, or with high priority being attached to the distributional consequences of government health policies.

In the short run, there is little that GOE could do to alter the distributional impact of government health spending, if it wanted to. MOH budgets at the governorate level are largely dictated by existing staffing levels, and reallocations would be difficult to achieve. Nevertheless, MOH services are the major source of health care services for the poor, and for most rural Egyptians may be the only source of publicly-funded health care readily available. They are also a major source of household consumption, and act to improve overall living standards of the very poorest. Given that the Egyptian economy is now experiencing modest economic growth and government tax revenues are increasing each year, there is a strong case to use additional government resources that become available to expanding or improving MOH services. If any such increase in resources can be made selectively available to the poorer and least healthy governorates, this might be expected to have a greater impact on the poor.

Non-MOH health expenditures may be difficult to address directly as they are used to fund health services for the more politically vocal sections of society. However, at the very least GOE might seriously reconsider any steps to expand non-MOH health programs to first take into account equity implications. Although there are problems in the distribution of MOH spending, it is the least regressive of the major government health programs. Social insurance, including the SMIP,

does not contribute to a more progressive distribution of health care resources. This reflects the fact that it is a contributory scheme, with eligibility based on contributions from the wages of those in formal sector employment. Social insurance expenditures in Egypt, as elsewhere, benefit primarily richer households, but also favor men instead of women, and urban areas instead of rural areas. It could be argued that the distribution of HIO expenditures should not be of particular concern, as it involves an insurance mechanism where the recipients pay premiums. However, there is evidence of a significant cross-subsidy from general revenue and this subsidy is not being used in a progressive way, but is benefiting a more advantaged population, when it may be more needed by the poor. To this extent the regular and ad-hoc general revenue subsidies extended to HIO constitute a regressive method of financing.

The most recent GOE reform in the health sector was to establish an insurance program for children to deal with what was considered a major gap in provision. However, as shown even this program largely fails to provide substantial benefits to the poorest and most vulnerable children who are most in need of such additional service provision. This particular program should be of concern, as the results given here suggest that SMIP as a program fails to make a significant impact on the utilization of health services in the child age-groups; only 0.23 visits per capita were reported to be at HIO/SMIP providers, compared with an overall utilization of 1.20 outpatient visits per capita at all providers for the 5-15 year age group. It also benefits the poorest children significantly less than the richer children, since most poor children do not attend school. The average child in the poorest quintile receives only half the subsidy expenditure through SMIP that the average child in the richest quintile receives. If the objective of SMIP is to reduce disparities in access to health care resources between children in poor and rich households, then this is not currently being met by SMIP.

More importantly, expansion of non-MOH programs might be additionally detrimental for other reasons to the interests of the poor. NHA data for Egypt show that the share of government health spending accounted for by MOH declined from the 1970s to 1990, and then again from 1990 to 1995. As the utilization data indicate, MOH is largely utilized by the poor, and non-MOH services account for the bulk of health service provision for upper income and urban groups. Given this pattern, it is likely that political support for MOH services is less than for other non-MOH public health services, and this may be part of the reason for the relative decline in MOH spending. There is considerable evidence from Latin America, where social insurance programs such as in Egypt are common-place, that these programs have reduced political support for those government programs which assist the very poorest, who are not in formal employment.

In the longer run, GOE should give serious consideration to allocating any new increments in government health care spending to the MOH budget and not to further expansion of university and teaching hospitals and the various social insurance programs. Although this is likely to lead to little initial change, it may be more feasible political than the alternative of radical reallocation.

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## Statistical Annex

**Table A1: Use of public outpatient health services by income decile (annual visits per capita)**

<i>Income decile</i>	<i>MOH</i>	<i>HIO (General)</i>	<i>HIO (Students)</i>	<i>University Hospitals</i>	<i>Other Ministries</i>	<i>Total</i>
Poorest	0.78	0.10	0.11	0.07	0.07	<b>1.02</b>
2nd	0.97	0.26	0.27	0.09	0.09	<b>1.42</b>
3rd	0.82	0.23	0.15	0.09	0.16	<b>1.27</b>
4th	0.67	0.23	0.15	0.11	0.17	<b>1.16</b>
5th	0.78	0.14	0.13	0.11	0.18	<b>1.22</b>
6th	0.67	0.20	0.26	0.11	0.28	<b>1.28</b>
7th	0.63	0.21	0.23	0.13	0.39	<b>1.44</b>
8th	0.58	0.28	0.35	0.11	0.28	<b>1.27</b>
9th	0.51	0.36	0.58	0.07	0.34	<b>1.34</b>
Richest	0.47	0.50	0.12	0.13	0.38	<b>1.39</b>
Average per capita	0.70	0.26	0.23	0.10	0.23	<b>1.28</b>

Note: HIO rates are for specific age groups and not for whole population. HIO (General) gives the rates for children aged less than 5 years, and adults aged over 15 years. Other Ministries refers to other government agencies which provide health services, including Defense Ministry, Interior Ministry and Curative Organizations.

**Table A2: Use of all outpatient services by income decile (annual visits per capita)**

<i>Income decile</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Poorest	1.02	1.01	<b>2.04</b>
2nd	1.42	1.18	<b>2.60</b>
3rd	1.27	1.53	<b>2.81</b>
4th	1.16	1.83	<b>3.00</b>
5th	1.22	2.03	<b>3.25</b>
6th	1.28	2.29	<b>3.57</b>
7th	1.44	2.32	<b>3.76</b>
8th	1.27	2.52	<b>3.80</b>
9th	1.34	3.25	<b>4.59</b>
Richest	1.39	4.26	<b>5.65</b>
Average per capita	1.28	2.22	<b>3.51</b>

Note: Total utilization rates are the sum of public and private utilization rates, plus "Don't knows".

**Table A3: Use of public inpatient health services by income decile (bed-days per capita per year)**

<i>Income decile</i>	<i>MOH</i>	<i>HIO (General)</i>	<i>HIO (Students)</i>	<i>Other public sector</i>	<i>Total</i>
Poorest	0.12	0.01	0.00	0.07	<b>0.19</b>
2nd	0.08	0.01	0.01	0.03	<b>0.12</b>
3rd	0.10	0.04	0.05	0.03	<b>0.17</b>
4th	0.13	0.00	0.01	0.05	<b>0.18</b>
5th	0.16	0.02	0.02	0.08	<b>0.26</b>
6th	0.17	0.06	0.00	0.06	<b>0.27</b>
7th	0.26	0.08	0.04	0.18	<b>0.50</b>
8th	0.16	0.04	0.00	0.06	<b>0.24</b>
9th	0.19	0.10	0.03	0.10	<b>0.37</b>
Richest	0.15	0.04	0.01	0.10	<b>0.28</b>
Average per capita	0.15	0.04	0.02	0.07	<b>0.26</b>

**Table A4: Use of all inpatient services by income decile (bed-days per capita per year)**

<i>Income decile</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Poorest	0.19	0.02	<b>0.22</b>
2nd	0.12	0.01	<b>0.13</b>
3rd	0.17	0.00	<b>0.18</b>
4th	0.18	0.01	<b>0.19</b>
5th	0.26	0.03	<b>0.29</b>
6th	0.27	0.01	<b>0.28</b>
7th	0.50	0.02	<b>0.52</b>
8th	0.24	0.03	<b>0.27</b>
9th	0.37	0.04	<b>0.41</b>
Richest	0.28	0.06	<b>0.34</b>
Average per capita	0.26	0.02	<b>0.28</b>

**Table A5: Distribution of public health expenditures by income decile (%)**

<i>Income decile</i>	<i>MOH</i>	<i>HIO (General)</i>	<i>HIO (Students)</i>	<i>Other Ministry</i>	<i>Total</i>
Poorest	10.7	5.8	6.7	7.5	<b>8.4</b>
2nd	8.7	8.7	10.9	5.2	<b>7.8</b>
3rd	9.6	8.0	7.9	6.3	<b>8.1</b>
4th	10.7	8.1	9.7	7.9	<b>9.2</b>
5th	10.6	6.6	8.1	10.1	<b>9.4</b>
6th	9.6	9.0	12.7	9.3	<b>9.6</b>
7th	12.7	9.7	7.8	19.2	<b>13.4</b>
8th	9.3	10.7	16.1	9.6	<b>10.1</b>
9th	9.6	13.9	14.3	11.0	<b>11.1</b>
Richest	9.6	19.7	5.9	14.0	<b>12.2</b>
<b>Total (%)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Average per capita	LE 24.07	LE 10.4	LE 5.5	LE 15.4	<b>LE 55.9</b>

Note: Total for public health expenditures includes and additional LE 0.63 per capita of government health spending on national regulatory agencies, public administration, support for charities which was allocated equally across the whole population.

**Table A6: Distribution of public and private health expenditures by income decile (%)**

<i>Income decile</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Poorest	8.4	4.4	6.1
2nd	7.8	4.9	6.2
3rd	8.1	6.0	6.9
4th	9.2	6.6	7.8
5th	9.4	7.8	8.5
6th	9.6	7.5	8.4
7th	13.4	9.2	11.1
8th	10.1	10.9	10.5
9th	11.1	16.4	14.1
Richest	12.2	26.4	20.2
<b>Total (%)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Average per capita	LE 55.9	LE 71.5	LE 127.4

Note: Private expenditures refer to household out-of-pocket spending mostly, plus LE 7.40 per capita, which consists of private insurance, syndicate and employer spending, which was allocated equally across all groups.

**Table A7: Distribution of public health expenditures by governorate (per capita)**

<i>Governorate</i>	<i>MOH</i>	<i>HIO (General)</i>	<i>HIO (Students)</i>	<i>Other Ministry</i>	<i>Total</i>
Cairo	21.4	13.4	12.8	37.8	85.5
Alexandria	29.5	24.6	6.7	18.9	79.7
Port Said	53.3	25.3	6.6	0.3	85.5
Suez	41.5	11.5	7.5	6.2	66.6
Damietta	42.4	10.5	7.2	3.2	63.3
Daqahlia	25.3	7.6	4.2	3.8	40.9
Sharkia	22.4	8.1	4.5	7.4	42.4
Kalyoubia	21.5	8.7	4.8	12.7	47.8
Kafr El-Sheikh	22.7	8.8	2.4	2.9	36.9
Gharbia	30.2	15.1	3.7	13.4	62.4
Menoufia	24.3	10.2	3.3	11.5	49.3
Beheira	22.9	5.4	6.0	3.1	37.4
Ismalia	38.2	12.6	7.2	21.5	79.6
Giza	21.2	10.4	6.5	18.4	56.5
Beni-Suef	24.3	7.1	4.5	1.1	36.9
Fayoum	20.9	6.9	5.0	3.9	36.7
Menia	20.5	6.3	4.5	12.5	43.9
Assiut	25.3	5.7	4.3	17.9	53.1
Suhag	20.7	4.9	4.3	19.7	49.6
Qena	21.0	2.3	1.4	10.6	35.4
Aswan	39.3	4.3	1.7	47.0	92.4
Red Sea	80.8	..	..	..	..
New Valley	122.7	..	..	..	..
Matrouh	53.9	..	..	..	..
North Sinai	74.9	..	..	..	..
South Sinai	333.4	..	..	..	..
Average per capita	25.54	10.46	5.57	15.27	56.83

Note: Figures for MOH and HIO expenditures derived directly from administrative records. Figures for "Other ministry" derived from survey estimates as described in text. Total for public includes expenditures for various public collective services.

**Table A8: Income, health status, and distribution of total health expenditures by governorate (1994/95 in LE)**

<i>Governorate</i>	<i>GDP per capita 1992</i>	<i>IMR (adjusted) 1991</i>	<i>Public expenditures per capita</i>	<i>Private expenditures per capita</i>	<i>Total expenditures per capita</i>
Cairo	2,782	35.1	86	107	193
Alexandria	2,310	25.9	80	100	180
Port Said	3,715	25.7	85	112	197
Suez	2,170	39.7	67	134	201
Damietta	3,201	32.5	63	125	188
Daqahlia	3,489	30.1	41	85	125
Sharkia	2,050	37.5	42	70	113
Kalyoubia	1,554	40.6	48	66	113
Kafr El-Sheikh	2,612	23.6	37	80	117
Gharbia	2,133	35.4	62	63	125
Menoufia	1,666	38.0	49	56	106
Beheira	1,566	31.6	37	74	111
Ismalia	2,345	35.8	80	51	131
Giza	2,123	41.0	57	73	129
Beni-Suef	1,663	64.7	37	43	79
Fayoum	1,581	47.6	37	40	77
Menia	1,554	67.0	44	43	87
Assiut	1,519	64.9	53	37	91
Suhag	1,729	50.8	50	44	94
Qena	1,768	53.6	35	42	78
Aswan	1,680	46.6	92	93	185
Red Sea	..	51.9	..	..	..
New Valley	..	41.4	..	..	..
Matrouh	..	40.2	..	..	..
North Sinai	..	64.8	..	..	..
South Sinai	..	119.7	..	..	..
<b>Egypt</b>	<b>2,176</b>	<b>42.5</b>	<b>LE 56.8</b>	<b>LE 55.6</b>	<b>LE 112.4</b>

Source: GDP per capita and IMR from National Institute of Planning (1995).

**Table A9: Distribution of public health expenditures by gender and age group (LE per capita)**

<i>Demographic group</i>	<i>MOH</i>	<i>HIO (General)</i>	<i>HIO (Students)</i>	<i>Other Ministry</i>	<i>Total</i>
Female	25.1	7.9	5.0	12.5	50.4
Male	23.5	12.8	6.0	18.4	60.8
0-4	25.7	5.1	..	9.0	39.9
5-15	18.8	..	17.4	12.0	48.3
16-29	23.6	10.7	..	14.6	48.9
30-39	33.7	18.4	..	16.7	68.8
40-49	29.0	28.5	..	22.2	79.6
50-59	37.7	23.7	..	28.3	89.8
60-69	28.6	17.9	..	26.5	72.9
70-98	37.6	17.8	..	20.7	76.1
Average per capita	24.1	10.3	5.5	15.4	55.9

**Table A10: Distribution of public and private health expenditures by gender and age-**

<b>group (LE per capita)</b>			
<b><i>Demographic group</i></b>	<b><i>Public</i></b>	<b><i>Private</i></b>	<b><i>Total</i></b>
Female	50.4	76.5	<b>126.9</b>
Male	60.8	66.4	<b>127.2</b>
0-4	39.9	53.2	<b>93.0</b>
5-15	48.3	30.2	<b>78.5</b>
16-29	48.9	50.6	<b>99.5</b>
30-39	68.8	88.5	<b>157.3</b>
40-49	79.6	133.8	<b>213.4</b>
50-59	89.8	169.7	<b>259.5</b>
60-69	72.9	193.5	<b>266.4</b>
70-98	76.1	150.2	<b>226.4</b>
Average per capita	LE 55.9	LE 71.5	<b>LE 127.4</b>