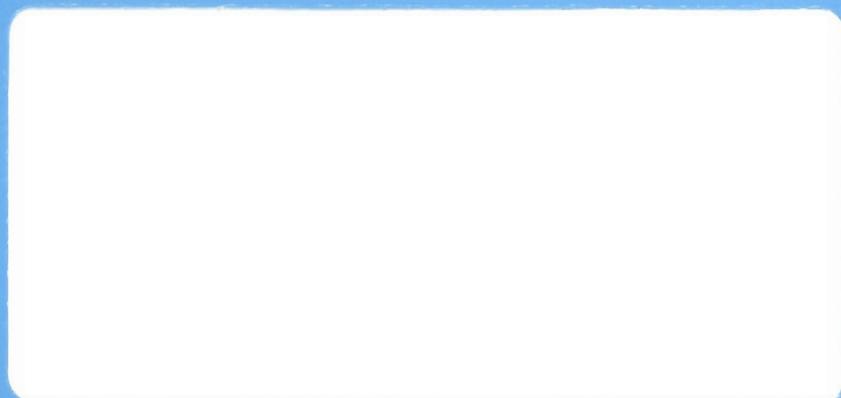




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Innocenti Occasional Papers

INNOCENTI OCCASIONAL PAPERS

NUMBER 13

SPECIAL SUBSERIES

FISCAL POLICY AND THE POOR

THE IMPACT OF ECONOMIC CRISIS AND ADJUSTMENT

ON HEALTH CARE IN MEXICO a/

by

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February 1991

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The views expressed in this paper are those of the authors and do not necessarily represent the views of UNICEF, the UNICEF International Child Development Centre, or any sponsoring organization.

The editor wishes to thank Beth Ebel and Robert Zimmermann, UNICEF International Child Development Centre, for the editing and preparation of the text.

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I. INTRODUCTION

This paper analyses the impact of economic crisis and adjustment on the quality and coverage of health care services in Mexico during the 1980s. Its basic premise holds that economic crisis and adjustment had a two-edged effect on the health of the population. First, living conditions deteriorated, and this was manifested differently in the epidemiological profiles of different population groups. Second, the budget for public health services was cut back. Thus, the analysis of the impact of economic crisis and adjustment has been carried out from two vantage points: the changes in the health status of the population and the changes in the organization of health care services.

The Conceptual Framework

Cornia (1984) has developed a systematic approach to the study of the impact of economic crisis and adjustment on the health status of a population. This approach is based on four types of indicators which help clarify the relationship between a given social-economic structure and the health-disease process. These four types of indicators are:

- Structural/Determinant Indicators, which describe a country's social-economic structure and the development model being followed.

- Process Indicators, which measure the volume of the goods and services directly related to the well-being of a population. Although these indicators are meaningful only within the context of a given social-economic structure, they may reduce or qualify the significance of the Structural/Determinant Indicators.

- Outcome Indicators are the best tools for judging the impact of economic crisis and adjustment on the well-being and health status of a population since they involve the measurement of changes in mortality rates, morbidity rates, the prevalence of malnutrition and so on.

- Behavioural Indicators, which measure the incidence of child labour, child abuse, delinquency and other negative social or behavioural responses to economic crisis.

Researchers studying the impact of economic crisis and adjustment on health generally rely on outcome and behavioural indicators, although some have used process indicators to help explain the time lags which have been noted between the onset of an economic crisis and the deterioration of the well-being of a population (Brenner 1973, Musgrove 1986, Rosero 1983, Raj 1984, McCord et al. 1980, Eyer and Sterling 1977).

As to process indicators, the operational diversity among the various

health care institutions in Mexico is substantial, and the approach each adopts to meet the demand for its services is therefore also distinct. This point will be explored in the paper.

The impact of economic crisis on the health status of the population in general and infants and children in particular in a medium-income country such as Mexico becomes apparent at different levels and at varying intensities. Thus, the effect on more vulnerable groups may be rapid and direct, especially in terms of rising mortality rates due to the health problems associated with inferior quality and quantity in family diets. Such problems are closely related to the lower standards of living resulting from diminishing incomes and increasing unemployment. They emerge when families are no longer able to compensate for losses in purchasing power by relying on savings, other reserves, or borrowing. The indicators used in this paper as evidence of deterioration in the well-being of infants and children in this area include mortality rates linked to malnutrition, vitamin deficiency and anaemia.

Similarly, the quality and accessibility of health care services may decline because of budget cuts, affecting such indicators as perinatal mortality rates. Although they may become apparent simultaneously, this phenomenon often occurs following drops in food consumption.

Eventually, overall health conditions may also deteriorate as the standard of living of the entire population is altered and the social environment is modified. At this point, the crisis has become structural and is no longer a cyclical, purely economic episode. A slowdown in the decline of mortality rates linked to ailments such as dysentery, gastroenteritis, acute respiratory infections and pneumonia marks the beginning of this "structural phase", which ushers in a process of social breakdown.

Mortality rates may subsequently exhibit periods of stability or even further declines. However, among the poorest and most marginal groups in society, the impact of economic crisis is constant. Among these groups, mortality rates rise for all ages and for practically all possible causes. This is one of the hallmarks of epidemiological polarization, which is characterized by increases in the number of deaths due to infectious diseases considered "almost under control", such as tuberculosis, outbreaks of measles, pertussis and hepatitis and a slowdown or stabilization in the decline in the number of deaths due to pneumonia and gastroenteritis.

Source Materials and Methodology

This paper relies on primary records and official secondary sources,

such as the annual reports of the Banco de México and government statistics, both economic and epidemiological in nature. Information published by health care institutions is supplemented through the use of specialized studies, journals and books, documents produced for limited circulation and the findings of epidemiological surveys.

Information is included on the principal public health care institutions in the Federal District (Mexico City) and the 32 states of the Republic. Unfortunately, because of the paucity of complete and reliable data, the examination of private sector health care is not as complete. For the same reason, morbidity indicators have not been analysed, and the ability to draw general conclusions has been limited in some instances. Finally, since most studies of the effects of economic crisis on health and health care have focused on either the poorest or the richest countries, some of the indicators used in this paper have not been substantiated elsewhere.

The data which have been found to be suitable have been analysed in accordance with the theory of epidemiological transition, using the systematic approach developed by Cornia. For example, mortality rates among infants (children under 1 year of age) and preschoolers (children 1 to 4 years of age) and changes in the financing and operations of health care services have been employed to describe the health status of the population and the provision of health services in Mexico up to the 1980s, thus establishing reference values for the period of crisis and the period of adjustment.

II. STRUCTURAL INDICATORS

During the years immediately preceding the crisis of the 1980s, it became clear that "stable development", the model which had been adopted to guide economic development within the country, had failed. This failure, coupled with the crisis in international trade and finance, triggered a decade of economic troubles in Mexico.

Between 1970 and 1976, agricultural production stagnated and then fell, reaching a rate of decline of 3 percent per year in per capita food production. The country's foreign debt grew from \$4.5 billion in 1970 to \$29.5 billion in 1976. This was critical since the foreign debt had been contracted short term at high interest rates (Gribomont and Rimez 1977). Simultaneously, industrial production also stagnated and then dropped. These problems led to higher prices because of the scarcity of goods or the higher

unit costs due to idle capacity. The annual inflation rate rose from 5.3 percent in 1971 to 15.8 percent in 1976 (Presidencia de la República 1988). Unemployment also went up, and the public sector deficit grew from 2.5 percent of GDP in 1971 to 9.9 percent in 1976.

The new Administration which took office in 1976 was faced with a recently devalued peso, soaring inflation, declining real wages, a significant flight of capital and, consequently, the decapitalization of the economy. In addition, imports had declined 7.9 percent, private investment had plummeted and the foreign debt had doubled.

However, these problems were offset by the discovery of important new oil reserves, which allowed the country to become a net oil exporter in a very short time and introduced a brief period of economic recovery. Between 1977 and 1981, oil exports increased from 22.3 percent to 75 percent of the total exports of goods and services, and GDP rose at more than 8 percent per year. This had a favourable effect on employment and public and private investment.

Nonetheless, because of structural imbalances in the economy, inflation continued to soar, reaching 26 percent per year in 1980. By 1981, the public sector deficit had grown to 14.8 percent of GDP (Presidencia de la República 1988). The fall in oil prices during that year and the accumulated overvaluation of the peso triggered a new round of capital flight. This was cushioned by more foreign loans, causing debt service payments to grow. By 1982, the foreign debt had risen to \$84 billion (86.9 percent of GDP), and the public deficit had hit a record high of 17.6 percent of GDP despite efforts at budget restraint. At the same time, private firms were forced to pay more for imports because of the series of peso devaluations.

During the last quarter of 1982, the atmosphere of crisis became acute with the announcement that the private banking system would be nationalized. The credibility of the Government fell, and confusion and mistrust spread as the required financial measures were implemented. Prices rose, and the purchasing power of the public was reduced, leading to changes in consumer buying and income distribution, which, in turn, adversely affected business activity, spurred more capital flight and caused a series of bankruptcies.

Basic Economic Indicators

1. Gross Domestic Product. GDP rose at an average annual rate of more than 8 percent between 1978 and 1981. Then, in 1982, it registered a negative growth of -0.6 percent, which represented a real decline of -3.2 percent since the population had been expanding 2.6 percent per year. It fell to an all-

time low of -4.2 percent in 1983 and then recovered before dropping significantly in 1986 (Table 1).

2. Foreign Debt. Mexico's foreign debt grew from \$29.5 billion in 1976 to \$100.4 billion in 1988, a threefold increase over a period of 12 years. This naturally implied a substantial increase in debt service payments. In 1982 alone, for example, the principal on the debt increased by \$5.9 billion, and the equivalent of 43.6 percent of the country's total export earnings was remitted abroad in the form of interest payments.

TABLE 1: MACROECONOMIC INDICATORS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Global GDP a/	3311.5	3423.8	3730.4	4092.2	4470.1	4862.2	4831.7	4628.9	4796.1	4920.4	4732.2	4802.4	4857.2
Change in GDP b/	N/A	3.4	8.2	9.2	8.3	8.8	-0.6	-4.2	3.6	2.5	-3.7	1.5	1.1
Foreign Debt c/	29.4	32.3	36.4	41.1	49.0	74.3	92.4	93.7	96.6	96.5	100.9	107.4	100.4
Employment d/	15.5	16.2	16.8	17.6	20.2	21.5	21.4	20.9	21.4	21.9	21.5	23.7	26.0
Unemployment e/	N/A	N/A	N/A	N/A	4.5	4.2	4.2	6.3	5.7	4.3	4.2	3.9	3.5
Inflation f/	27.2	20.7	16.2	20.0	29.8	28.7	98.9	80.8	59.2	63.7	107.0	159.2	51.7
CPI g/	44.2	56.9	66.9	79.1	100.0	128.0	203.3	410.5	679.2	1071.5	1995.4	4266.0	9907.2
Expenditure h/	123.7	96.0	1097.2	1277.2	1495.7	1900.3	2143.7	1787.6	1706.6	1735.6	1781.4	1878.3	1563.5
Exchange Rate i/	N/A	46.5	0.7	0.0	0.7	6.7	257.9	71.5	23.2	70.3	102.2	120.1	62.8
Population d/	N/A	N/A	N/A	N/A	69.3	71.2	73.1	74.9	76.7	78.5	80.1	81.7	83.2
Real Wage j/	124.0	102.6	102.5	101.2	92.9	97.7	107.6	73.1	69.6	69.8	76.1	85.2	47.6

Source: Banco de México (1978) to (1988), "Indicadores financieros". Mexico City: Banco de México.

a/ Billions of pesos (rounded).

b/ Percent, at constant 1980 prices.

c/ Billions of dollars (rounded).

d/ Millions of individuals (rounded).

e/ Percent of population.

f/ Percent.

g/ Consumer price index (rounded); 1980 = 100.

h/ Public expenditure in 1980 pesos (rounded).

i/ For pesos, percentage change in free rate (rounded).

j/ Minimum (rounded); 1978 = 100.

3. Currency Devaluation. One of the effects of the growing foreign debt was devaluation. Prior to 1976, the peso had been stable for two decades. In 1976, the first devaluation occurred, and this initiated a period of instability in the currency. Devaluations were particularly severe during four separate years: The peso was devalued by 47 percent in 1977, 258 percent in 1982, 102 percent in 1986, and 120 percent in 1987. Devaluation has led to serious consequences in exchange and financial markets and provoked contractions in the volume of foreign transactions. It has also been fundamental in fanning the fires of inflation.

4. Inflation. Inflation varied between 16 percent and 30 percent per year

from 1976 to 1981 (Banco de México 1983). It then grew to 99 percent in 1982, dropped to 59 percent in 1984 and rose again to an all-time high of 159 percent in 1987. This "hyperinflation" was directly responsible for the increase from an already substantial 47.7 percent in 1985 to 66.4 percent in 1986 in the nominal interest which the Government was obliged to pay on the country's peso debt. During the same period, the nominal interest paid on foreign currency debt fell from 9 percent to 7.1 percent.

An anti-inflationary programme was implemented by the Government in 1987 in cooperation with labour and industry to combat the hyperinflation. Called the Economic Solidarity Pact, this programme succeeded in reducing inflation to 51.7 percent by the end of 1988 without seriously restricting productive activity. To put this effort into context, it is significant to note that the Mexican population had grown from 69.4 million inhabitants in 1980 to 83.2 million in 1988.

5. Real Wages. Pegged on the consumer price index for 1978, real wages rose moderately from 1980 to 1982, when they reached a peak index value of 107.61. They then fell steadily. Toward the end of 1987, real wages touched a critical low following the implementation of the Economic Solidarity Pact, which included the application of strict wage and price controls. They hit the lowest level in 1988, when they were only one-half their value in 1978. This clearly shows the deterioration in the purchasing power of the population.

6. Unemployment. Linked to the decline in real wages, unemployment rose from 4.3 percent between 1980 and 1982 to its highest rate, 6.3 percent, in 1983. It declined steadily thereafter, reaching 3.5 percent in 1988.

An indirect indicator of employment growth is the number of individuals registered with the Mexican Social Security Institute, which serves private sector employees. Registrations grew by 4.9 percent in 1984, 8.5 percent in 1985 and 4.6 percent in 1988 (Banco de México 1986). In absolute terms, employment increased from 15.5 million in 1976 to 26 million in 1988. The unemployment rate did not reflect the nominal increase in employment since the rise in the number of economically active individuals was not sufficiently offset by the creation of new jobs.

7. Public Expenditure. Public expenditure increased steadily until 1983, when it was reduced by 16.6 percent following the application of strict budget restraints. The sale of non-strategic, low priority public enterprises heated up, and a full-fledged restructuring of the parastatal enterprise system was

well under way by 1986. As a result of these reforms, the public expenditure budget fell by 6.7 percent in real terms, public investment by 17 percent, and current expenditure by 4 percent in 1986 (Banco de México 1987).

There were several notable changes in public expenditure between 1982 and 1987: Personal services, which represented 8 percent of GDP in 1982, had fallen to 6.1 percent of GDP by 1987, and current transfer payments, which were 4.1 percent of GDP in 1980, had fallen to the lowest level of the previous 10 years by 1987 (Banco de México 1987).

Summary: The Effect of Adjustment Policies in 1988

In 1988, the goal of checking inflation while not seriously restricting the rhythm of productive activity was achieved. Prices climbed at the slowest rate since 1982. Although the national consumer price index shot up 51.7 percent, this was over 100 percentage points less than the figure registered in 1987. Private investment jumped 10.1 percent in real terms, 5.8 percentage points more than the gain in 1987. GDP rose 1.1 percent in constant prices. The U.S. border-area assembly industry grew 14.3 percent, accounting for approximately one-fifth of the boost in industrial production. The total number of man-hours expended in manufacturing advanced 1.5 percent in 1987 and 3.6 percent in 1988. Likewise, the number of individuals employed in manufacturing increased by 1.7 percent in 1987 and 2.1 percent in 1988. Affiliations in the Mexican Social Security Institute expanded by 4.6 percent, although this figure may reflect the addition of workers who were already employed (Banco de México 1989).

Unfortunately, these notable achievements were offset by a sharp drop in real wages. In other words, most of the burden of adjustment was borne by blue-collar workers.

III. PROCESS INDICATORS: THE HEALTH CARE SYSTEM

The national health care system was consolidated within the framework of national social policy during the 1980s in order to (Soberón 1987a):

- Eliminate disparities in the quality and range of the health care provided through social security services and of that available to the general public.

- Strengthen the administrative and operational capacity of health care services in the states.

- Link health care service planning and overall national planning.

In terms of coverage, the consolidation has involved two principal goals: service expansion in order to reach the entire population, with emphasis on services for marginalized urban and rural areas, and improvements in service quality so that a foundation is established for future development. The strategies which have been implemented to achieve these goals include a sectoral approach, decentralization, the modernization of the Secretariat (ministry) of Health, intersectoral coordination and community participation (Soberón 1987b).

The process of consolidation has embraced the reorganization of all public health care institutions. This has been carried out in order to address problems, define areas of action, implement programmes and apply resources in a coordinated fashion. The structural reorganization has been realized within the framework of the Federal system, thus ensuring that both the Federal Government and the states jointly fulfil their tasks in the provision of health care services. It has entailed changes in the Secretariat of Health, the creation of state health care systems and efforts to combine the approaches taken by the various sectors in health care (de la Madrid et al. 1986).

One of the most important initiatives was the 1983 amendment to Article 4 of the Mexican Constitution. The amendment guarantees the right of the public to health care and specifically mentions the right to access to health care services. The General Health Law of 1984 was enacted to implement the constitutional amendment. The new law defined the scope of the rights outlined in the amendment, established the legal instruments to protect these rights, fixed the responsibilities of government and the private sector under the amendment, created the operational basis of the national health care system, framed regulations for the provision of services and set general standards for health care.

Despite these initiatives, during the economic crisis and the period of restructuring, health care services were adversely affected by the fall in GDP, the growing diversion of funds to meet foreign debt payments, inflation, increased unemployment and the swelling poverty among vast sectors of Mexican society, both in relative and absolute terms.

Although the process indicators in the analysis which follows refer mainly to the most important institutions of the national health care system, they reflect the response of society as a whole to the health needs of the public. The institutions include those which furnish public welfare

assistance, such as the Secretariat of Health, the National System for Integral Family Development and the Programme of Coordination of the National Plan for Depressed and Marginal Areas (IMSS-Coplamar), and those which provide social security, such as the Mexican Social Security Institute and the Institute of Social Security and Services for Government Employees.

1. The Health Care Budget. From 1976 to 1981, the budgets of health care institutions grew steadily in real terms, gaining 70 percent overall. As a result of the economic crisis, they began a drastic slump in 1982 and, by 1987, equalled only 47 percent of the 1981 total. A recovery occurred in 1988, when the budgets rose 115 percent. However, this represented a mere 1.25 percent increase over the figures for 1981. Thus, for seven years, the economic crisis caused stagnation in the development of the financial resources available to the health care system (Table 2).

Nonetheless, whether providing welfare assistance or social security services, the institutions in the national health care system were affected by the economic crisis in varying ways and to different degrees. For example, while the 1987 budget of the Secretariat of Health was equivalent in constant

TABLE 2: ANNUAL BUDGETS IN THE NATIONAL HEALTH CARE SYSTEM
(In Billions Of Pesos a/, By Institution, 1976-1988)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
<u>Institutions Serving the General Public</u>													
SSA <u>b/</u>	11477	17712	19487	21020	19486	22092	16952	11791	12111	13526	9378	11470	20011
DIF <u>c/</u>	N/A	1104	3165	3544	3385	3394	2357	968	1902	2348	1869	873	2864
SMDDF <u>d/</u>	N/A	N/A	N/A	3632	1281	1273	822	814	N/A	N/A	N/A	N/A	N/A
COPLAMAR <u>e/</u>	--	--	--	1180	1712	3519	1283	2485	1365	1879	1429	938	2551
Subtotal	<u>11478</u>	<u>18816</u>	<u>22652</u>	<u>29376</u>	<u>25864</u>	<u>30278</u>	<u>21414</u>	<u>16059</u>	<u>15378</u>	<u>17749</u>	<u>12676</u>	<u>13281</u>	<u>25427</u>
<u>Institutions Serving Affiliates Only</u>													
IMSS <u>f/</u>	74066	80387	84727	91458	99448	111584	92138	75102	73172	77171	64221	56790	125211
ISSSTE <u>g/</u>	25882	28837	29899	34319	35091	43251	24485	16868	19551	18346	19618	19128	41116
ISSFAM <u>h/</u>	N/A	N/A	N/A	2176	1666	805	497	814	N/A	N/A	N/A	N/A	N/A
PEMEX <u>i/</u>	N/A	N/A	N/A	2657	2388	3407	3358	2557	1659	N/A	N/A	N/A	N/A
Subtotal	<u>99948</u>	<u>109224</u>	<u>114626</u>	<u>130610</u>	<u>138592</u>	<u>159092</u>	<u>120478</u>	<u>95342</u>	<u>94381</u>	<u>95517</u>	<u>83839</u>	<u>75918</u>	<u>166327</u>
Total	<u>111426</u>	<u>128040</u>	<u>137278</u>	<u>159986</u>	<u>164456</u>	<u>189370</u>	<u>141892</u>	<u>111401</u>	<u>109759</u>	<u>113265</u>	<u>96515</u>	<u>89199</u>	<u>191754</u>

Sources: López Portillo (1982); de la Madrid (1985), (1988); ISSSTE (1982), "Anuario estadístico". Mexico City: ISSSTE.

a/ In constant 1980 prices (rounded).

b/ SSA = Secretariat (ministry) of Health.

c/ DIF = The National System for Integral Family Development.

d/ SMDDF = The Office of Medical Services of the Municipal Government of Mexico City.

e/ IMSS-Coplamar = The Programme of Coordination of the National Plan for Depressed and Marginal Areas; initiated in 1979, it is now also known as the National Programme of Social Solidarity.

f/ IMSS = The Mexican Social Security Institute.

g/ ISSSTE = The Institute of Social Security and Services for Government Employees.

h/ ISSFAM = The Social Security Institute of the Armed Forces.

i/ PEMEX = Petrólios Mexicanos.

1980 prices to only 52 percent of the 1981 budget, the 1987 budgets of the National System for Integral Family Development and the IMSS-Coplamar Programme dropped much more severely, to a mere 26 percent and 27 percent of their respective 1981 levels. It should be pointed out that these two programmes are designed to deal directly with the alleviation of the problems of marginalized groups. However, social security institutions were not spared: In constant terms, the 1987 budget of the Mexican Social Security Institute amounted to 51 percent of the 1981 budget, while the figure for the Institute of Social Security and Services for Government Employees was 44 percent. The budgets of these two entities account for 80 percent of the total resources available to the public health care system. The individual budgets of the institutions in the system thus fell 50 percent to 75 percent during these years.

Curative activities were given the highest priority in the composition of the programme budget of the national health care system throughout the period, absorbing between 59 percent and 75 percent of the total budget. Expenditure for these activities tended to increase from 1978 to 1983 and to decline from 1984 to 1987. Meanwhile, the expenditure on preventive programmes grew steadily from 1978 to 1986, rising from 2.7 percent of total expenditure to 9.3 percent, but then dropped sharply to 3.8 percent in 1987. The boost in expenditure on preventive programmes reflected a decision of the Government to broaden its support for prevention that, in practice, was translated into more emphasis on primary health care programmes, vaccination campaigns and other important preventive measures.

Depending on the year, the "administration" item absorbed between 13 percent and 32 percent of the programme budget. This drastic year-to-year variation highlights a lack of continuity in the criteria used in apportioning funds between initiatives and administration within the various programmes. It may also reflect the practical impact of the decision to cut back on administrative expenditures in order to eliminate redundancy and increase efficiency: In budgetary terms, the bureaucracy may have been "streamlined" by artificially shifting administrative costs to substantive or support items. This hypothesis merits further research.

Support activities attracted a very low share of available resources. This is evidence of the low priority assigned to basic, clinical and applied health care research and human resource development and training. Clearly, if a major objective of the national health care system is to modernize the health care sector and render it more efficient, more financial resources must be forthcoming for research and training.

Finally, the budgetary item "investment" began to rise in 1985 due to the costs of reconstruction following the earthquake in September of that year.

2. Financing. A characteristic of the financial framework of health care services is the permanent presence of the Federal Government, either directly, or through fiscal measures. The Government is thus provided with an important means of redistributing resources through selective health care allocations among the various institutions and programmes.

In financial terms, health care services are organized into three types: public sector assistance, medical insurance (social security) schemes and private sector services (Abel-Smith 1978).

Four institutions provide public sector assistance: the Secretariat of Health, the National System for Integral Family Development (DIF), the Office of Medical Services of the Municipal Government of Mexico City (SMDDF) and the Programme of Coordination of the National Plan for Depressed and Marginal Areas (IMSS-Coplamar). Each of these institutions offers health care services to the general public, that is, to economically disadvantaged individuals who do not otherwise benefit from social security. Public sector assistance is financed entirely through budgeted Federal resources.

As has already been pointed out, the 1987 budgets of DIF and IMSS-Coplamar represented only 26 percent and 27 percent of their respective 1981 levels. Thus, despite the substantial population growth registered during those years and the increase in the demand for public assistance because rising unemployment had deprived many of their right to social security, the resources allocated to these two institutions, which serve the needs of the poorest of Mexico's inhabitants, had plummeted by nearly 75 percent. Meanwhile, the data available on the SMDDF budget show that it dropped 37 percent between 1981 and 1983 alone.

On the other hand, the Secretariat of Health was able to compensate somewhat for the 48 percent decline in its budgets between 1981 and 1987 through more reliance on its other source of financing, the fees paid by the users of its services. According to Secretariat policy, these fees must be set according to the ability of each user to pay. Depending on the type of service requested, the health care centre involved and the locality, five different levels of fees have been established. However, a study of public hospitals found that this policy was not strictly nor equitably applied: 67 percent of users had been arbitrarily classified as belonging to the highest income level and had thus been charged the highest fees, while patients had

been charged extra fees equivalent to an average of 109 percent of the established rate. The share of fees in the budgets of these hospitals had jumped from 23 percent in 1986 to 34 percent in 1987 (Cruz 1989).

The economic crisis clearly affected the financing structure of medical services in the hospitals operated by the Secretariat of Health. The cycle of inflation, expenditure cuts and growing needs was the direct cause of an increase in fees that worked against the policy of subsidizing the health care services available to the poorest groups.

The three principal institutions providing medical insurance (social security), the second type of health care services in Mexico, are the Mexican Social Security Institute (IMSS), which serves a large majority of the salaried employees in the private sector, the Institute of Social Security and Services for Government Employees (ISSSTE) and the Social Security Institute of the Armed Forces (ISSFAM). The following analysis will concentrate on the first two entities.

The IMSS is financed by the Government, employers and employees according to a scale of payments laid down by law. For example, employees in specified sectors must contribute a percentage of their weekly salaries. In constant 1980 prices, overall payments to the IMSS rose until 1981 and then fell sharply in 1982; less drastic drops were registered between 1983 and 1987. Government financial support declined steadily during the period, from 17 percent of the institution's total budget in 1978 to only 6 percent 10 years later, a reduction of nearly two-thirds. This was offset by employer contributions, which increased from 62 percent to 72 percent of the total. Meanwhile, employee contributions remained fairly constant at approximately 21 percent. These changes are significant in that they are evidence of the privatization of the financing of the social security system (Table 3).

Funding for the ISSSTE comes from two major sources: the Government and public sector employees (Valdéz 1978). The Government's real contribution fell by 48 percent between 1981 and 1982 and, in percentage terms, dropped below the level of participation of employees in 1983 and 1984. This marked an important change in the financing scheme of the institute. Moreover, the share of the contribution of employees also fell in absolute terms from 1983 to 1987.

Finally, private sector services, the third type of health care services in Mexico, are indirectly supported by the Government in that medical expenses are tax deductible. However, since this form of subsidy is available only to individuals who submit tax declarations, middle- and upper-income groups tend to benefit to the exclusion of those most in need.

TABLE 3: SOURCES OF FINANCING: IMSS, ISSSTE AND THE SOCIAL SECURITY SYSTEM */
(In Millions of 1980 Pesos And Percentages, 1977-1988)

	IMSS		Government		ISSSTE				Social Security System			
	Employees	Employers	Employees	Employers	Employees	Government	Employees	Employers	Gov't			
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
1977	--	--	--	--	--	--	9986	37.50	16642	62.50	--	--
1978	11471	20.49	34773	62.12	9731	17.38	10842	39.64	16508	60.36	26.78	41.73
1979	14380	20.67	44834	64.43	10368	14.90	12197	38.74	19286	61.26	26.30	44.36
1980	20370	21.57	63097	66.80	10989	11.63	11543	38.71	18277	61.29	25.68	50.77
1981	29231	22.06	90982	68.65	12308	9.29	15252	39.27	23591	60.73	25.96	53.09
1982	18254	21.52	57078	67.29	9490	11.19	11231	49.60	11410	50.40	27.44	53.11
1983	14892	21.45	46415	66.86	8115	11.69	8767	56.77	6677	43.23	27.88	54.69
1984	15075	21.49	46676	66.54	8397	11.97	9499	50.62	9265	49.38	27.64	52.50
1985	15740	21.38	49277	66.94	8592	11.67	8660	48.88	9058	51.12	26.72	53.96
1986	13112	21.67	42403	70.08	4994	8.25	6394	37.42	10695	62.58	25.14	54.64
1987	11541	21.63	38774	72.68	3034	5.69	6180	35.17	11392	64.83	24.99	54.67
1988	26180	21.54	87951	72.38	7383	6.08	9989	30.31	22965	69.69	23.42	56.94

Sources: López Portillo (1981), (1982); de la Madrid (1985), (1988).

*/ IMSS = The Mexican Social Security Institute, ISSSTE = The Institute of Social Security and Services for Government Employees.

3. Coverage. In 1982, service coverage was estimated at 81.2 percent; close to 14 million of the country's total population of 73.2 million thus had no access to formal health care. By 1987, coverage had increased to 91 percent, while the population had grown to 81.2 million; the number of inhabitants without access had therefore fallen to approximately 7.3 million. Of the 73.9 million Mexicans who were covered, 53.6 percent were affiliated with a social security institution, 33 percent benefited from public assistance, and 4.4 percent relied on private medical services (Fundación Mexicana para la Salud et al. 1988).

Some studies report that 35 percent of all medicine sold each year is provided in the public sector and the remainder in the private sector. The sale of medicine generally represents approximately 38 percent of all health care expenditures (Giral 1988). According to other studies, the private sector furnishes 20 percent of the health care facilities, one-third of the general hospitals and 20 percent of the hospital beds in the country and serves from 10 percent to 15 percent of the population (Soberón et al. 1985). However, the results of private sector studies contradict official figures, which indicate that the percentage of individuals relying on private medical services is small. While it highlights the need for more accurate information, this discrepancy has led to a debate on the importance, coverage and function of these services and the potential for coordination of private and public initiatives. The questions being raised in the debate are among the most significant in the health care sector and merit further research.

In the public system, the number of individuals covered by the IMSS rose from 17 million to 36 million between 1976 and 1988. This represented an increase from 28 percent to 41 percent of all social security affiliates, the most important growth in coverage in the public system during the period. Meanwhile, the Secretariat of Health registered a slight gain, from 41 million to 43 million individuals, in the number of people targeted by its services. However, because of the expansion of the country's population and the swell in IMSS coverage, the share of the Secretariat in the overall public health care umbrella actually fell from 66 percent to 50 percent (Table 4).

	Millions of Individuals			% Share of Target Population		
	SSA	IMSS	ISSSTE	SSA	IMSS	ISSSTE
1976	40.69	16.89	3.92	65.83	27.73	6.44
1977	41.22	17.66	4.37	65.17	27.92	6.91
1978	40.80	19.79	5.00	62.21	30.17	7.62
1979	41.44	20.99	4.88	61.57	31.18	7.25
1980	36.54	24.13	4.99	55.66	36.75	7.59
1981	38.97	26.92	5.32	54.73	37.80	7.47
1982	41.57	26.89	5.47	56.24	36.37	7.40
1983	39.54	26.98	5.61	54.82	37.40	7.78
1984	40.32	29.39	6.08	53.20	38.78	8.02
1985	41.13	31.53	6.45	51.99	39.86	8.15
1986	41.94	31.06	6.96	52.45	38.85	8.70
1987	42.75	34.34	7.36	50.63	40.66	8.71
1988	43.20	35.87	7.67	49.80	41.35	8.85

Source: de la Madrid (1988).

*/ Welfare assistance: SSA (Secretariat of Health); social security: IMSS (Mexican Social Security Institute) and ISSSTE (Institute of Social Security and Services for Government Employees).

Total public expenditure on health care fell 43 percent during the period, while the number of health care centres jumped 130 percent and the population grew 29 percent (Table 5). One might expect the mushrooming number of health care centres to have helped boost coverage considerably despite the appreciable increase in population; however, although the decline in expenditure may have improved resource efficiency, it may also have involved cutbacks in basic inputs, thus adversely affecting service quality. This should be kept in mind. Although inefficiency and waste are clearly substantial in the health care system, no studies have been undertaken to

TABLE 5: BUDGET EXPENDITURE, HEALTH CARE CENTRES AND POPULATION GROWTH
(1976-1986)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Budget Expenditure a/	14,057	14,548	14,909	16,315	17,070	17,732	15,184	12,423	11,749	11,842	8,009
Health Care Centres b/	4,802	5,062	5,044	7,175	8,384	9,441	9,649	10,233	10,015	10,954	11,262
Population c/	61,979	63,813	65,658	67,513	69,393	71,249	73,122	74,981	76,792	78,524	80,169

Sources: Soberón (1987b); SSA (1980), Cuaderno de Información Oportuna, Number 2, 1978-1980. Mexico City: The Secretariat of Health; SSA (1980-1985), Boletín de Información Estadística, Numbers 2, 4 and 5. Mexico City: The Secretariat of Health; INEGI, Conapo and Celade, publishers (n.d.), México: Estimaciones y proyecciones de población, 1950-1980. Mexico City.

a/ In millions of 1970 pesos.

b/ Number of health care centres in the National Health System at year-end.

c/ In thousands. The figures for 1976-1980 are estimates; those for 1981-1986 are projections.

measure these problems. On the other hand, the budget cuts were deep and were not necessarily carried out in those areas in which the greatest inefficiency existed. Especially since the spending reductions were not applied on the basis of thorough economic analysis, it is thus reasonable to assume that the effect was a loss of service quality.

4. Resources and Productivity. The number of physicians employed in the principal health care institutions rose from 38,429 in 1976 to 58,772 in 1988, a gain of 53 percent (Table 6). The Secretariat of Health and the ISSSTE

TABLE 6: PHYSICIANS IN PUBLIC ASSISTANCE AND SOCIAL SECURITY
(1976-1988)

	Number of Physicians			Patient Visits per Physician		
	SSA	IMSS	ISSSTE	SSA	IMSS	ISSSTE
1976	12,774	20,128	5,527	1,260	2,430	2,030
1977	13,739	19,803	5,514	1,330	2,610	2,180
1978	11,427	21,132	6,358	2,200	2,680	1,970
1979	13,666	25,389	7,336	1,650	2,140	1,171
1980	19,720	25,445	7,686	690	2,220	1,640
1981	15,918	29,635	8,125	890	1,980	1,530
1982	10,396	24,054	9,015	1,680	2,490	1,430
1983	12,630	29,699	9,252	1,290	2,230	1,560
1984	15,428	23,325	10,488	1,090	3,060	1,420
1985	17,263	22,045	10,772	1,090	3,250	1,350
1986	18,453	23,922	11,559	1,270	2,990	1,460
1987	20,296	25,587	11,480	1,320	2,990	1,530
1988	20,498	26,604	11,620	1,430	2,850	1,690

Sources: López Portillo (1982); de la Madrid (1985), (1988).

reported the largest increases: 60 and 110 percent, respectively. The number of physicians per 10,000 inhabitants advanced in public welfare assistance (the Secretariat of Health) from 3.19 to 4.75. This was the result of a policy aimed at providing more physicians for the poor. However, the policy failed to achieve even the lowest rates registered by social security institutions during the period: from 11.92 to 7.42 for the IMSS (which was rapidly expanding its target population: see earlier) and from 14.10 to 15.14 for the ISSSTE. Meanwhile, the number of patient visits per physician per year varied between 690 and 2,200 in the Secretariat of Health, 1,980 and 3,250 in the IMSS, and 1,350 and 2,180 in the ISSSTE. However, because of the economic constraints in the health care system, this is a poor indicator of productivity improvements: more visits per doctor may have occurred from one year to the next, but they may also have been carried out within a degraded structural environment.

From 1976 to 1988, the number of nurses per physician in public welfare assistance varied between 1.15 and 1.91, and, in social security, between 1.5 and 2.37 for the IMSS and between 1.04 and 1.68 for the ISSSTE (López Portillo 1982, de la Madrid 1985, 1988). No major institution was able to attain the generally recommended level of three nurses for each doctor. Only the IMSS came close. This points to the need to modify the current approach to the use of human resources in health care in order to take advantage of paramedics, who are less costly to train but can be equally effective.

A recent study of employment in the medical field in urban areas has revealed that, in the private sector, only 28 percent of all physicians have a single salaried position (Alagón et al., forthcoming). The majority of the rest have a private practice (17 percent), both a salaried position and a private practice (18 percent), or two or three salaried positions and perhaps a private practice as well (6 percent). Other employment patterns discussed in the study include doctors who maintain one job which is in medicine and one which is not (6 percent), doctors who have two jobs in medicine and one which is not (1 percent), doctors whose only job is not in medicine (5 percent), doctors who are taking advanced courses in university (11 percent), and doctors who are unemployed (8 percent).

The total number of hospital beds rose by 42 percent between 1976 and 1988. Public welfare assistance (the Secretariat of Health) showed the largest increase, registering a 52 percent jump, while, in social security, the figures were 26 percent (IMSS) and 49 percent (ISSSTE). In 1988, the distribution by institution was: the Secretariat of Health, 57 percent of all available beds; the IMSS, 35 percent, and the ISSSTE, 8 percent (Table 7).

TABLE 7: HOSPITAL BEDS IN PUBLIC ASSISTANCE AND SOCIAL SECURITY
(1976-1988)

	Total Hospital Beds			% Change			Patients Per Bed		
	SSA	IMSS	ISSSTE	SSA	IMSS	ISSSTE	SSA	IMSS	ISSSTE
1976	29,445	22,222	4,178	52.73	39.79	7.48	18.92	56.34	48.11
1977	30,062	23,231	4,276	52.22	40.35	7.43	18.89	58.03	50.28
1978	24,043	25,495	4,529	44.47	47.15	8.38	33.36	55.23	47.69
1979	24,704	26,671	4,721	44.04	47.55	8.42	26.96	55.34	47.45
1980	20,216	22,334	5,315	42.24	46.66	11.10	22.11	70.65	44.59
1981	12,655	23,123	5,257	30.84	56.35	12.81	35.32	71.36	47.18
1982	15,251	24,644	5,477	33.61	54.32	12.07	30.03	70.08	48.20
1983	11,768	31,268	5,615	24.19	64.27	11.54	54.21	54.05	50.93
1984	18,169	31,318	6,133	32.67	56.31	11.03	24.11	62.20	50.55
1985	17,296	26,828	6,135	34.41	53.38	12.21	28.33	70.60	48.90
1986	17,206	26,851	6,148	34.27	53.48	12.25	32.90	65.73	45.06
1987	44,350	26,657	6,198	57.44	34.53	8.03	14.88	67.19	49.21
1988	44,793	28,110	6,244	56.59	35.52	7.89	16.21	64.43	57.01

Sources: de la Madrid (1988); SSA (1980), (1982), Cuaderno de Información Oportuna. Mexico City: The Secretariat of Health.

Measured by calculating the number of patients treated and released per bed per year, the "productivity" of public welfare assistance in this case was a very low 18.92 in 1976 and an even lower 16.21 in 1988. The corresponding figures for the IMSS were 56.34 and 64.43. Although the data are not reliable and more research is needed, it is clear that public welfare assistance lags behind social security in this area and that the efficiency and effectiveness of the inpatient care provided by the Secretariat of Health must be improved.

The number of outpatient consultation offices shot up 183 percent during the period (Table 8). Within the social security system (IMSS), the rise was constant and considerable until 1984, reaching a peak of 13,683 offices. Because of the earthquake, many IMSS offices were closed in 1985, and the number fell to 9,862. Meanwhile, between 1978 and 1988, the number of such offices within the public welfare system grew 143 percent. Despite budget reductions, an upward trend was also apparent in the number of individuals treated at these facilities. The total climbed from 76.1 million in 1976 to 124.9 million in 1988, an increase of 64 percent. Calculated by dividing the overall expenditure by the number of visits, the cost per visit in constant 1980 pesos dropped by 53 percent, from 2,880 pesos in 1977 to 1,331 pesos in 1987, before rising once more in 1988. Two factors were responsible for the decline: first, the budget cuts caused by the economic crisis, and, second, the improved efficiency of several institutions. However, the effect of the

TABLE 8: PUBLIC OUTPATIENT CONSULTATION SERVICES
(1976-1988)

	Number of Offices				Number of Visits <u>a/</u>				Cost per Consultation <u>b/</u>			
	SSA	IMSS	ISSSTE	Total	SSA	IMSS	ISSSTE	Total	SSA	IMSS	ISSSTE	Total
1976	--	7,231	2,032	9,263	16,078	48,860	11,193	76,131	--	--	--	--
1977	--	7,374	2,099	9,473	18,269	51,602	11,994	81,865	969	1,558	352	2,880
1978	5,070	7,753	2,056	14,859	25,124	58,639	12,511	96,274	773	1,445	311	2,528
1979	8,228	6,276	1,788	16,292	22,614	54,303	12,522	89,439	930	1,684	384	2,997
1980	8,411	11,316	1,883	21,610	13,591	56,568	12,575	82,734	1,359	1,758	424	3,541
1981	8,499	13,053	1,941	23,493	14,140	58,764	12,439	85,343	1,562	1,899	507	3,968
1982	7,620	13,727	1,989	23,336	17,430	59,834	12,875	90,137	973	1,540	272	2,784
1983	8,182	13,715	1,635	23,532	16,355	66,263	14,393	97,011	721	1,133	174	2,028
1984	8,420	13,683	2,135	24,238	16,796	71,416	14,844	103,056	721	1,025	190	1,935
1985	9,905	9,862	2,197	21,964	18,888	71,687	14,575	105,150	716	1,077	174	1,967
1986	11,113	10,413	2,540	24,066	23,415	71,579	16,899	111,893	400	897	175	1,473
1987	12,224	10,638	2,875	25,737	26,748	76,391	17,572	120,711	429	743	158	1,331
1988	12,346	10,964	2,901	26,211	29,374	75,921	19,586	124,881	681	1,649	329	2,658

Sources: de la Madrid (1985), (1988); SSA (1980), (1982), Cuaderno de Información Oportuna, Mexico City: The Secretariat of Health.

a/ In thousands.

b/ In constant 1980 pesos, rounded.

crisis on service quality has never been thoroughly investigated.

The number of individuals treated by the principal health care institutions grew from 2.1 million in 1976 to 2.9 million in 1988 (Table 9). Sixty-three percent (IMSS) and 12 percent (ISSSTE) of these totals were treated in the social security system, and 25 percent in the public welfare system. Calculated by dividing total expenditure by the number of patients,

TABLE 9: PATIENTS TREATED IN PUBLIC ASSISTANCE AND SOCIAL SECURITY
(1977-1988)

	Number of Patients (000's)				Expenditure per Patient (1980 Pesos)			
	SSA	IMSS	ISSSTE	Total	SSA	IMSS	ISSSTE	Total
1977	568	1,348	215	2,131	31,181	59,634	13,532	104,347
1978	802	1,408	216	2,426	24,209	60,175	12,324	96,709
1979	666	1,476	224	2,366	31,562	61,963	14,505	108,030
1980	447	1,576	237	2,260	41,311	63,101	15,527	119,938
1981	447	1,650	248	2,345	49,423	67,626	18,444	135,493
1982	458	1,727	264	2,449	37,013	53,351	9,998	100,362
1983	638	1,890	286	2,814	18,480	39,737	5,994	64,210
1984	438	1,948	310	2,696	27,651	37,562	7,251	72,464
1985	490	1,894	300	2,684	27,602	40,745	6,835	75,182
1986	566	1,765	277	2,608	16,567	36,386	7,522	60,475
1987	660	1,791	305	2,756	17,379	31,709	6,940	56,027
1988	726	1,811	356	2,893	27,563	69,139	14,212	110,914

Source: de la Madrid (1988).

the average expenditure per treatment was relatively stable between 1977 and 1982 and then dropped sharply between 1983 and 1987, clearly reflecting the impact of the economic crisis.

The number of surgical operations rose dramatically during the period, from 650,000 in 1976 to 1,455,000 in 1988 (Table 10). The rate of increase was steady in the IMSS but more moderate in the Secretariat of Health and the ISSSTE. Of the total number of surgical operations in 1988, 67 percent were performed in the IMSS, 22 percent in the Secretariat of Health, and 11 percent in the ISSSTE. Indicating a more efficient use of resources, the number of operations per operating room also climbed in both the IMSS and the Secretariat of Health starting in 1982; however, no change was registered in the ISSSTE. One result of these trends was a reduction in the average cost of

TABLE 10: SURGERY IN PUBLIC ASSISTANCE AND SOCIAL SECURITY
(1976-1988)

	Surgical Operations							Expenditure per Operation			
	Number in 000's				Per Operating Room			(1980 Pesos, rounded)			
	SSA	IMSS	ISSSTE	Total	SSA	IMSS	ISSSTE	SSA	IMSS	ISSSTE	Total
1976	81	490	79	650	248	996	767	--	--	--	--
1977	94	586	89	769	253	1,116	864	188,415	137,179	37,498	363,092
1978	275	630	94	999	751	1,133	810	70,604	134,487	29,929	235,020
1979	236	640	96	972	608	1,145	787	89,068	142,903	35,307	267,278
1980	138	674	100	912	360	948	758	133,812	147,547	38,476	319,835
1981	182	727	109	1,018	409	992	1,363	121,385	153,484	42,486	317,355
1982	195	777	110	1,082	411	1,013	663	86,933	118,580	22,629	228,143
1983	200	873	119	1,192	398	1,102	881	58,950	86,027	14,151	159,129
1984	194	918	127	1,239	480	1,171	852	62,428	79,707	15,779	157,914
1985	226	922	128	1,276	498	1,344	831	59,845	83,700	14,377	157,922
1986	224	928	137	1,289	447	1,329	811	41,862	69,204	15,219	126,284
1987	288	953	150	1,391	559	1,344	802	39,826	59,591	13,751	113,168
1988	317	974	164	1,455	610	1,272	841	63,126	128,553	28,258	219,937

Source: de la Madrid (1985), (1988).

a surgical operation. In constant 1980 prices, the cost in the IMSS fell from 153,484 pesos in 1981 to 59,591 pesos in 1987, a 61 percent decrease. The public welfare system reported a 67 percent drop, from 121,385 pesos in 1981 to 39,826 pesos in 1987. These declines were due to budget cuts but also to productivity improvements.

5. Private Sector Costs. Because of a scarcity of cost data, prices have been used to measure costs for private health care services. According to this proxy indicator, the jump in costs in the private sector between 1983 and 1987 was enormous. This clearly reflected the impact of the crisis and the high

rates of domestic inflation but was even more critical than it appears because a high proportion of the inputs in private health care are imported, and, during the period, the peso was frequently devaluated (Table 11).

	1983	1985	1987
General medical services	179.2	450.5	2,234.0
Outpatient consultation	171.7	453.4	2,215.0
Dental care	191.3	424.5	1,944.6
Ophthalmological care	189.1	464.8	2,072.0
Surgery	185.1	482.8	2,549.5
Hospitalization	174.1	440.1	2,423.1
Clinical analyses	183.0	449.9	2,172.9

Sources: Banco de México (various issues), Indices de precios; Ruiz de Chávez et al. (1988).

6. The Earthquake Disaster. Adding to the problems of prolonged economic crisis, two major earthquakes shook Mexico in September 1985. The public health care infrastructure was one of the principal victims of these quakes. Of the capacity equivalent to 5,625 hospital beds that was either damaged or destroyed, 3,467 were in social security institutions and 2,158 were in public welfare assistance (Table 12). The total loss to the system has been valued at \$300 million, and the Government was forced to undertake an intensive reconstruction programme. The significant damage revealed the extreme vulnerability of a system which relied heavily on geographical and technological centralization.

	Before the Quake	Damaged	Destroyed	Total Lost
SSA	5,010	1,300	858	2,158
IMSS	8,326	0	2,600	2,600
ISSSTE	2,863	431	436	867
Total	16,199	1,731	3,894	5,625

Source: SSA (1986).

IV. OUTCOME INDICATORS: INFANT AND CHILD MORTALITY

The Pre-crisis Years

Many recent studies have called attention to the "singular" behaviour of infant mortality rates in Mexico, and, in almost every case, these studies have described two characteristics of these rates: their inverse relationship within population groups to indicators of social and economic well-being and their tendency to decline over time.

Infant mortality rates (the annual number of deaths among children under one year of age per 1,000 live births) fell by one-half between 1950 and 1960. Although the most significant declines were registered in the Federal states in which the rates had been the highest, these same states continue to exhibit the highest rates today (Cordero 1982).

Heredia-Duarte (1972) has pointed out that the rise in infant mortality rates in the early 1970s was generally due to differences in the level of economic development within the country:

"The differences in infant and preschool mortality rates coincide with the differences observed through other indicators used to measure standards of living and highlight the fact that economic, social and cultural development since industrialization has been so unequal among the various regions of the country... that it seems one is talking about completely separate countries."

Furthermore, Heredia-Duarte found no positive correlation between the extent of health care coverage and mortality rates. He argued that this was because most of the health care services offered in Mexico relied on curative rather than preventive treatment.

A study which was based on the National Demographic Survey involved an exhaustive typological classification in order to determine the distribution of infant mortality rates by social class prior to the 1980s (Bronfman and Tuiran 1984). The study found that a relationship appeared to exist between the size and the mortality level of a locality, and mortality rates tended to fall as the quality of housing and standards of living rose. Moreover, variations in social class affected the overall equation. Thus, the infant mortality rate was 104.2 per 1,000 live births among the families of farm labourers, 100.1 among those of peasant landholders and 64.9 among those of urban workers. Among the segments of the population registering the highest infant mortality rates, rural inhabitants were 64 percent more at risk than were city dwellers. However, the infant mortality rate among those most at risk in rural areas was three times the rate among those least at risk in

urban areas. Finally, the study found that the average national infant mortality rate in the years just prior to the 1980s was 36 per 1,000 live births.

More recently, Bobadilla and Langer (1989) have carried out an analysis of historical trends in infant (under one year of age) and "under-5" (less than five years of age) mortality within the conceptual framework of epidemiological transition. They point out that infant and under-5 mortality as proportions of overall mortality have declined steadily during this century. While deaths of children under 5 accounted for 49 percent of all deaths in 1930, the figure had dropped to 25 percent by 1975-1980. The reduction was also evident in the child mortality rate, which plunged from 84 per 1,000 in the 1950s to 28 per 1,000 in the 1980s. The analysis showed that neonatal mortality rates (infant deaths under 28 days of age) have tended to climb as infant mortality rates in general have fallen. For example, the data on Mexico City reveal that neonatal deaths rose from 40 percent to 60 percent of all infant deaths over a 17-year period.

On the causes of death among the infant population, the study states:

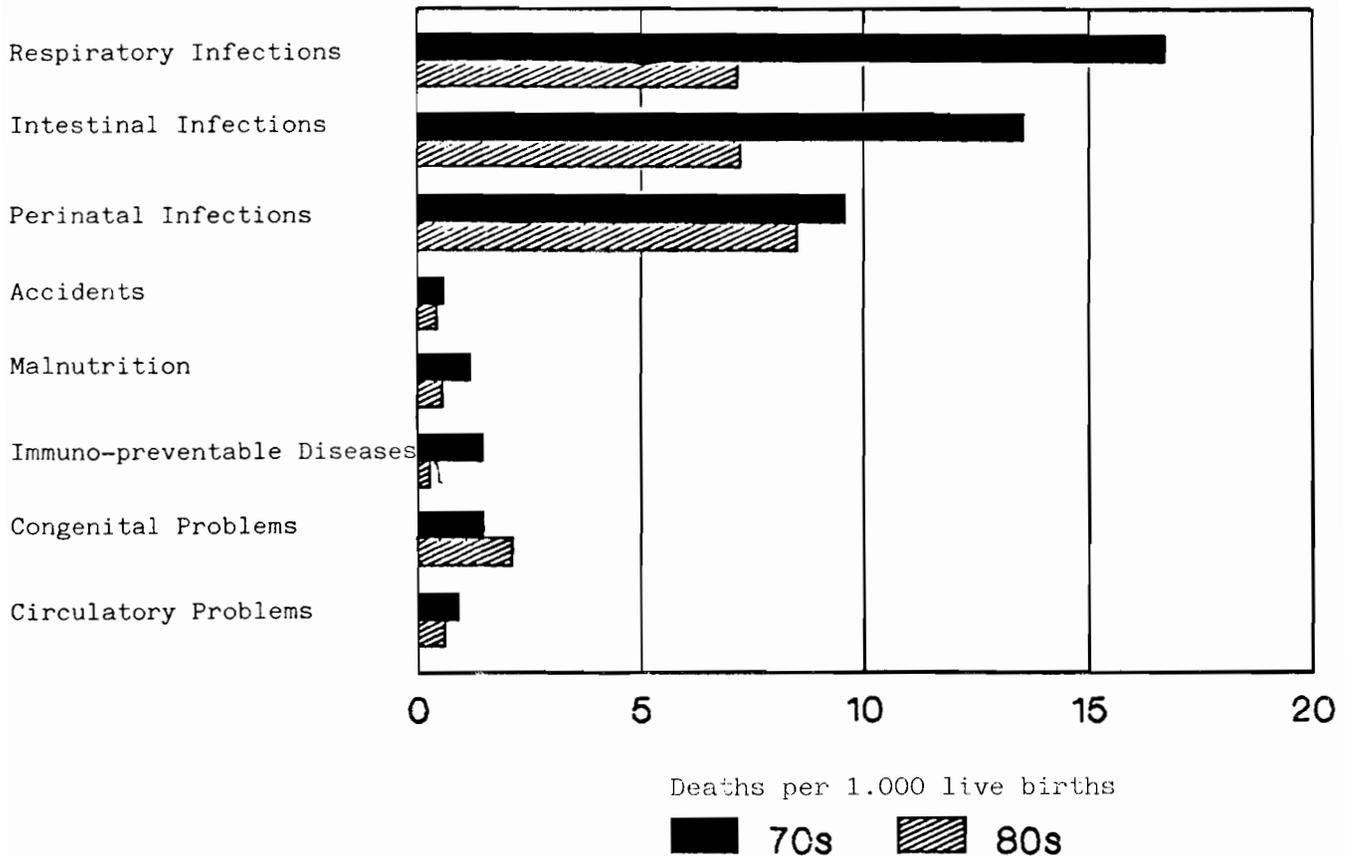
"Over the course of the century, the causes of infant mortality have changed substantially. Infectious epidemics have been practically eradicated. The incidence of immuno-preventable diseases has diminished considerably. Gastroenteritis and pneumonia have shown less drastic, yet still significant declines. Perinatal mortality has tended to fall, although its relative importance will likely increase in coming years... demonstrating that... the factors which combine to reduce overall infant mortality rates affect each of the major causes of child death in quite distinct ways...."

The Years of Crisis

Infant mortality rates fell from 36.5 (per 1,000 live births) toward the end of the 1970s to 29.3 in the latter half of the 1980s, a 20 percent drop. In schematic form, Figure 1 shows this "singular" and "paradoxical" plunge in infant mortality rates during the years of the economic crisis by comparing two transitional periods: 1971-1975 and 1981-1985. As the Figure makes clear, a considerable decline occurred not only in the overall infant mortality rate (-47.5 percent) but also in the rates associated with the principal causes of infant death. A major exception was the rate for deaths due to congenital problems which increased both in absolute terms and in relative significance. As Bobadilla and Langer point out (1989, page 14), this rate has reached a lower limit which will be difficult to reduce. Finally, between 1980 and 1985, perinatal complications (in first week of life) led to 27 percent of all infant deaths, surpassing acute diarrhoeal diseases and respiratory infections in importance.

The economic crisis did not brake the decline in mortality rates among

FIGURE 1: THE PRINCIPAL CAUSES OF INFANT MORTALITY
(1971-1975 And 1981-1985)

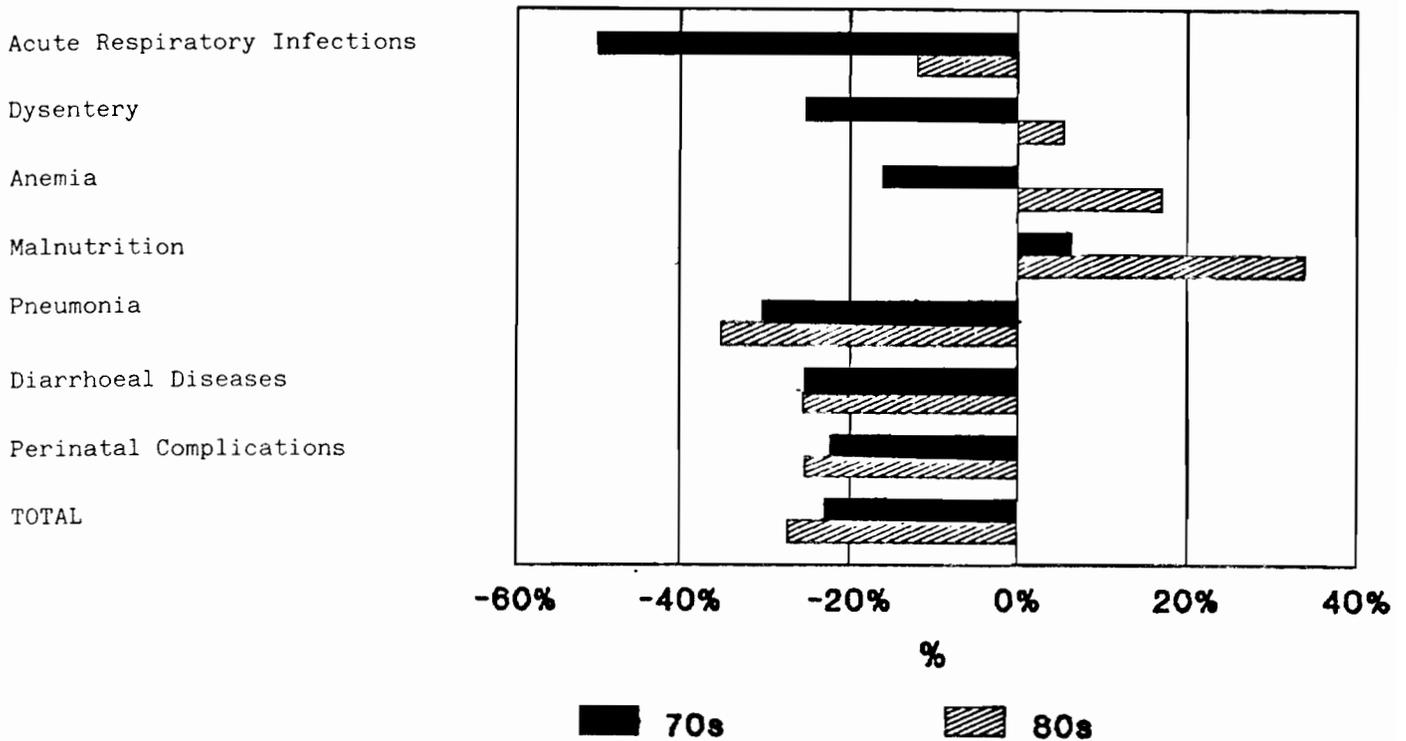


children more than that in mortality rates among adults, as Rosero (1983) has found in the case of Costa Rica. However, an impact was apparent among children between 1 and 5 years of age (Child Mortality Rate, CMR) relative to infants under 1 year of age (Infant Mortality Rate, IMR). The infant mortality rate sank by 20 percent from 1978 to 1984, while that among preschoolers fell only 4 percent. This supports data reported for Brazil. According to Possas (1989), children between 1 and 5 years in Brazil are more susceptible to infectious diseases, accidents and malnutrition than are small infants.

Although the economic crisis did not brake the overall decline in infant mortality, it did lead to changes in the "velocity" of the declines and even to increases in the mortality rates associated with some of the major causes of infant deaths. This is clear from a comparison of percentage changes in the principal cause-related infant mortality rates during the two transitional periods already mentioned, 1971-1975 and 1981-1985. As shown in Figure 2, these rates may be divided into two groups: those which registered "natural" or "anticipated" declines during the two periods and those which registered "unexpected" changes during the second period and thus may have been affected

FIGURE 2: PERCENT CHANGES IN CAUSE-RELATED INFANT MORTALITY RATES
(1971-1975 And 1981-1985)

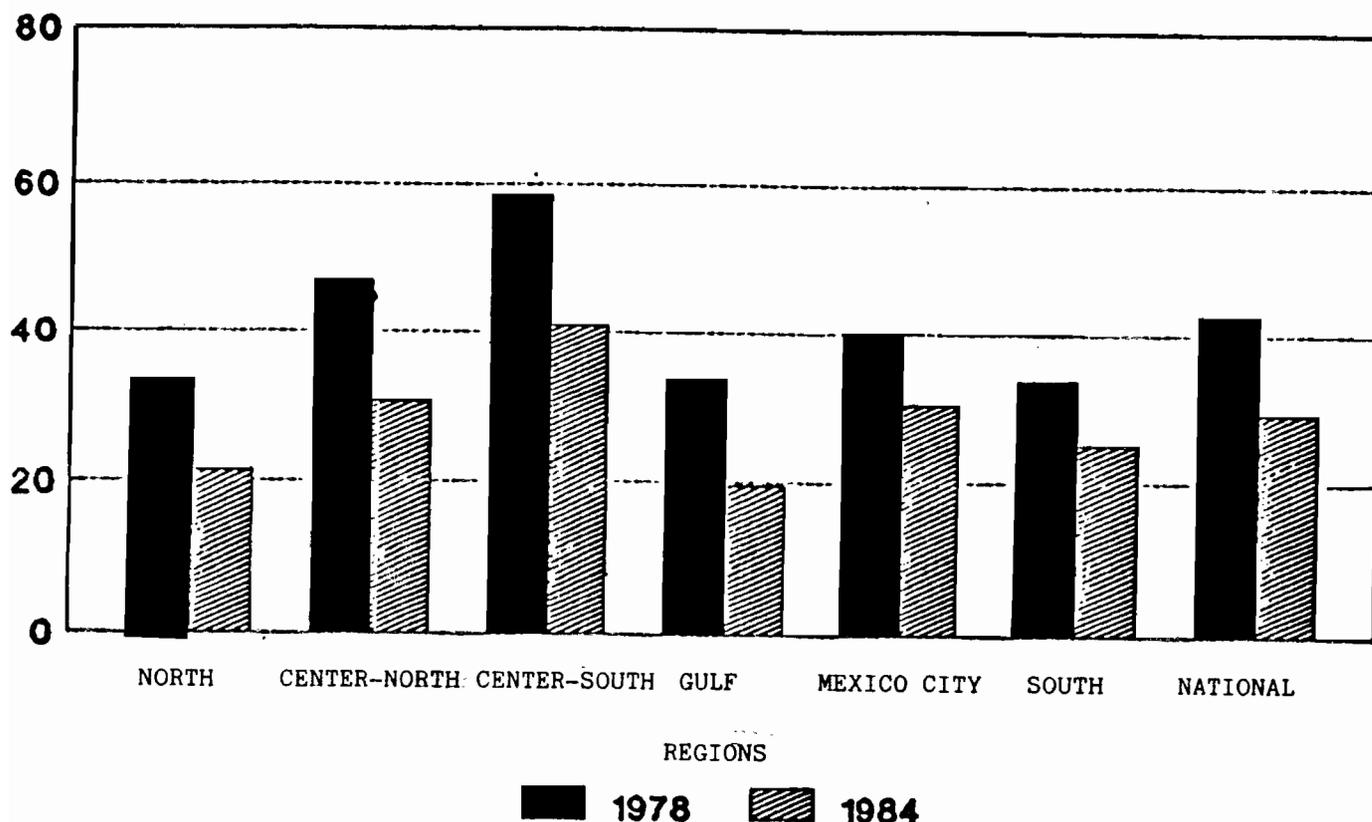
Sources: MEBS; INEGI and SPP (1978), (1984)



by the crisis. In the first group were pneumonia, diarrhoeal diseases and perinatal complications, which together accounted for over two-thirds of all infant deaths from 1971 to 1975 and, from 1981 to 1985, for 55 percent. In the second group were acute respiratory infections, the incidence of which as a cause of infant mortality dropped by 50 percent from 1971 to 1975 but by only 12 percent from 1981 to 1985, and dysentery and anaemia, which were responsible for a declining number of infant deaths from 1971 to 1975 but a growing number from 1981 to 1985. Malnutrition was the only major cause which increased in importance during both periods. If the analysis is extended to include the intervening years, 1976 to 1980, then the rates linked to the principal causes of infant mortality show overall declines, except that for perinatal complications which remained stable at 2 deaths per 1,000 live births.

Figure 3 depicts the results of an analysis of the regional variations in infant mortality by cause. For the purposes of the analysis, Mexico was divided into six groups of Federal states classified according to their GDP from 1970 to 1985. The analysis demonstrated that, as expected, overall infant mortality declined in every region, although at different rates. Furthermore,

FIGURE 3: INFANT MORTALITY BY REGION
(Deaths Per 1,000 Live Births, 1978 And 1984)
Source: INEGI and SPP (1978), (1984)



it revealed the following trends.

1. Infant mortality due to malnutrition rose in the Federal District (Mexico City) by 22 percent and in the South, where the jump was an alarming 56 percent. The rates for this cause of death fell in the other regional groups of states: the North, the Centre-North, the Centre-South and the Gulf (INEGI and SPP 1978, 1984). The increases may be linked to the economic crisis to the extent that the crisis involved increased shortages and hardship among the disadvantaged. However, more troubling is the fact that a positive correlation has been shown to exist between malnutrition and susceptibility to infectious disease. A recent study of 3,108 death certificates issued in Mexico City has revealed that nutritional deficiency had been listed as a contributing cause of death in 12 percent and as a "conditioning" cause in 6 percent of the cases (Bustamante 1989). A statistical analysis indicated that a relative risk factor of 61.3 is associated with malnutrition and death due to infectious disease. The risk factor declines with age and is higher for males than it is for females.

2. Infant mortality due to perinatal complications rose in all regions except the Gulf. The percentage increase was the greatest in the South and slight (3 percent) in the Centre-North and the Centre-South. However, in absolute terms, the regional differences in the overall importance of this cause of infant death are significant. Thus, for example, an infant in the Federal District (Mexico City) is twice as likely to die because of perinatal complications than is an infant in the North or Centre and three times more at risk than is an infant in the South (INEGI and SPP 1978, 1984).

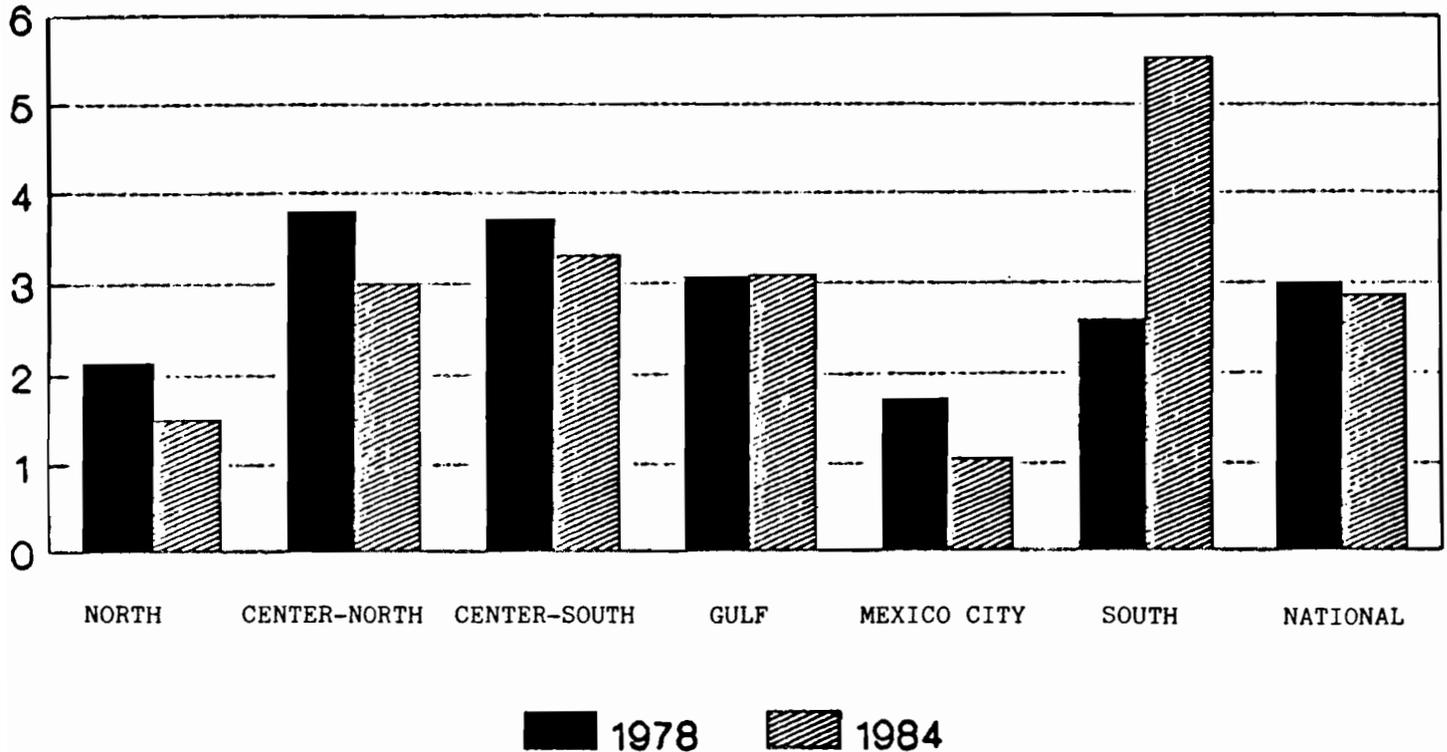
3. Infant mortality due to pneumonia and diarrhoeal diseases fell in all regions except the South, where the rate for pneumonia remained practically unchanged and the rate for diarrhoeal diseases rose slightly. This rise was certainly responsible for most of the increase in the overall infant mortality rate in the region. Moreover, while the relative importance of death due to pneumonia in overall infant mortality rates in the South was constant, that of death due to diarrhoeal diseases grew by 10 percent from 1978 to 1984, making the South the region with the highest mortality rate due to this cause (INEGI and SPP 1978, 1984).

Meanwhile, the child mortality rate (CMR) (children between the ages of 1 and 5) shot up 114.3 percent in the South from 1978 to 1984. The sudden rise was very possibly linked to the recession, which hit the region especially hard. The mortality rates for children aged 1 to 5 dropped in the rest of the country; the decline was most notable in the North, the Centre-North and the Federal District (Figure 4). The child mortality rate associated with diarrhoeal diseases also jumped in the South, from 92.5 deaths per 100,000 inhabitants in the age group in 1978 to 218.8 in 1984, a 122 percent increase. Thus, the growing importance of diarrhoeal diseases in the overall under-5 mortality rate in the South was clear (INEGI and SPP 1978, 1984).

In summary, although the economic crisis of the 1980s affected the health of the infant and preschool population in Mexico, just as it did in the rest of the world, a precise measurement of the effects is difficult because of their diverse and subtle nature. Thus, the overall decline in infant mortality at the national level has masked the impact of the crisis.

A comparative analysis by region is one way to render this impact more clearly perceivable. A regional classification according to economic indicators such as per capita GDP facilitates this type of analysis. Another useful tool is the examination of trends. A comparison of the situation before and the situation during the crisis can thus help clarify particular effects and their relative importance. Although research into many complex variables

FIGURE 4: CHILD MORTALITY BY REGION
(Deaths Per 1,000 Population In The 1-To-5 Age Group, 1978 And 1984)
Source: INEGI and SPP (1978), (1984)



would be necessary for a proper identification of the components of individual changes, this paper, as a first approximation to pinpointing the possible effects of the crisis, has concentrated on tracing the alterations in direction or in the speed of increase or decline of the rates associated with the major causes of infant and child mortality.

In any case, the most evident impact in Mexico of the economic crisis has been "epidemiological polarization", an intensification of the disparities in health status within the population. The comparative analysis by region outlined above provides sufficient evidence for the existence of this phenomenon to reject alternative explanations such as underregistration or other gaps in medical data. Moreover, these gaps would only serve to support the hypothesis presented here since they would tend to lead to low estimates of mortality rates.

As a result of this polarization, already underfinanced health care services must now treat increasing numbers of infants and children who are suffering from malnutrition and infectious disease. There is thus a risk that infant and child mortality rates will rise in certain areas of the country, even in pockets of poverty in the most developed regions. Further studies will be required to pinpoint these areas in order to provide relief.

V. CONCLUSIONS AND RECOMMENDATIONS

The economic crisis and the period of adjustment has had an adverse impact on the health status of the population and on the delivery and quality of health care services. Not only has the population become more susceptible to disease, but the resulting increase in the demand for health care services has strained the resources of the national health care system.

Nevertheless, the crisis has led to a needed restructuring of the national system through a series of reforms involving sectoralization, decentralization, the creation of mechanisms for intersectoral coordination, growing emphasis on community participation and the application of measures to improve productivity. The effort has been unprecedented. On the other hand, the crisis has been so pervasive that the task of restructuring the national health care system to ensure greater efficiency, render the system more equitable and root out poor management practices is still a major challenge.

Government expenditure on health care rose until 1981 and then fell drastically as a result of the onset of the economic crisis. In 1980 prices, total government expenditure on health care in 1987 equalled only 47 percent of that in 1981. However, a recovery became evident in 1988.

The institutions in the national health care system have been affected in different ways by these expenditure cuts. Hardest hit have been two entities which furnish public welfare assistance: the National System for Integral Family Development (DIF) and the Programme of Coordination of the National Plan for Depressed and Marginal Areas (IMSS-Coplamar). In 1980 prices, the 1987 budgets of these two entities were equivalent to 26 percent and 27 percent of the respective 1981 budgets. Although part of the reduction in the DIF budget was due to changes in the focus of the institution, the cutbacks were nonetheless severe, especially since these two programmes are designed to deal directly with the health care problems of the most disadvantaged groups in society.

The "item" presentation of the public health care budget must be modified in order to provide uniform and more detailed information on programme and institutional expenditures. As currently issued, the budget shows a lack of continuity in the criteria used in apportioning funds and in the definition of line items; it is therefore not a practical instrument of analysis or policymaking.

Data derived from an analysis of the financing structure of medical services suggest that the policy of the Secretariat of Health of assisting the poorest groups through the application of an income-based scale of fees has

been undermined by the dynamics of the economic crisis. The fee scale has apparently been distorted in order to create an ad-hoc source of financing. The data also show that Government financial support for the Mexican Social Security Institute (IMSS) declined from 11.6 percent of total contributions to the entity in 1980 to 5.7 percent in 1987. This was offset by a rise in the share of employer contributions. These changes are evidence of privatization in the financing of the social security system.

The Government participates in the financing of all forms of health care in Mexico through direct budgetary allocations, a percentage share of social security contributions, or tax deductions for the users of private health care services. More detailed research must be undertaken to determine the exact level of this participation, and a more equitable financing scheme must be implemented to reduce tax deductions, which benefit mainly the wealthier segments of society, and increase the economic support for the most vulnerable.

The significant lack of information on private health care serves to limit the possibility for concerted action between private and public sector services. Detailed research must therefore be carried out so that the private sector can be integrated in a rational manner with the public health care system.

The deficiencies in the health care infrastructure and in the geographic distribution of health care services became manifest after the earthquake of 1985. In turn, the practical benefits of external financing became clear during the process of decentralization and development of primary health care services that followed. These lessons must now be extended to secondary health care.

The data currently available on unit, secondary and total costs are inadequate and cannot be employed as a guide for the creation of mechanisms to redistribute income in the health care system through exchanges in kind, or as a firm economic foundation for productivity improvements, such as the establishment of standardized service fees, the design of programmes and the construction of resource-efficient installations. Precise cost analysis is therefore an urgent requirement.

Productivity increased in certain areas of the health care system during the economic crisis and the subsequent period of adjustment. However, it is not clear whether these productivity improvements occurred to the detriment of service quality; nor is it clear in which areas waste, the underutilization of capacity, or inefficiency had been most prevalent before the crisis, and if and how these problems were checked. Given the probability of continuing

financial constraints, these gaps in information must be filled so that future budget cuts will not be applied indiscriminately but rather in those areas where acceptable levels of efficiency and quality can still be maintained.

Epidemiological data suggest that children between 1 and 5 years were relatively more affected by the economic crisis and the period of adjustment than were infants because of the susceptibility of preschoolers to accidents, infectious diseases and malnutrition. This is reflected in the decline of just 4 percent in the mortality rate for children between 1 and 5 years between 1978 and 1984. However, it is possible that the greater relative susceptibility of preschoolers may also be partly due to the priority given by the health care sector to meeting the health needs of the infant population, thus neglecting to a certain degree those children between 1 and 5 years.

The impact of the economic crisis has been most severe in the poorest regions of the country. Data indicate that the health status of infants and children in the South has been particularly affected, further exacerbating existing disparities and inequities and intensifying epidemiological polarization.

The slowdown in the decline of the infant and child mortality rates associated with acute respiratory infections, dysentery, anaemia and malnutrition may be linked to the economic crisis. However, it has not been possible to confirm the hypothesis that a relationship exists between this slowdown and contractions in family budgets that have resulted in less spending on medicines and medical care.

Meanwhile, during the crisis and the period of adjustment, infant mortality rates due to malnutrition rose in only two regions: the Federal District (Mexico City) and the South. The incidence of malnutrition is an important health status indicator not only because malnutrition is a direct cause of death among infants, but also because it contributes to or "conditions" the spread of infectious diseases.

Infant mortality due to perinatal complications rose in all regions except the Gulf. The percentage increase was the greatest in the South. The same is true of maternal mortality rates associated with childbearing. Deteriorations in the quality of perinatal health care as a result of the emphasis on productivity and the significant budget cuts of the adjustment period may be directly responsible for these swelling rates.

Infant mortality due to pneumonia and diarrhoeal diseases fell in all regions except the South, where the relative importance of death due to diarrhoeal diseases in the overall infant mortality rate grew by 10 percent from 1978 to 1984.

The mortality rate for children between 1 and 5 years shot up 114 percent in the South but dropped in the other regions. The greatest declines in mortality among this age group were registered in the North, the Centre-North and the Federal District.

More research must be carried out on the effects of economic crisis on morbidity and susceptibility to disease, and studies must be undertaken at the community level to measure the impact on living conditions, childcare practices, family nutrition and the ability to purchase medicines and use health care services.

The data analysed in this paper strongly suggest that the economic crisis in Mexico has transformed the epidemiological profile of the population and exposed the most vulnerable sectors of society to the greatest risk. The implementation of strict adjustment policies has led to changes in the budgetary support of the Government for health care that have fostered the privatization of the financing structure of the social security system and encouraged higher user fees in public welfare assistance. The restructuring programme initiated in the national health care system in response to the crisis may have improved productivity, but it may also have ushered in a decline in service quality. In short, the crisis has fundamentally altered public health care in Mexico.

The major lesson for the future is that steps must be taken to ensure the most efficient use of scarce resources. At the same time, the public sector must be protected from haphazard measures which may harm either its ability to dispense health care equitably or its crucial role in the redistribution of resources and income.

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