

## **Working Document**

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# **Health System Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy Implications**

**Rubén M. Suárez-Berenguela<sup>1</sup>**

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## **Abstract**

The paper summarizes the concepts, methods, and results of a study on measuring health system inequalities in six countries of the Latin American and Caribbean region: Brazil, Ecuador, Guatemala, Jamaica, Mexico, and Peru. Illness concentration curves and a health status inequality index are used to assess and compare health status inequalities. Concepts of vertical and horizontal equity and inequity and inequality indices are used to measure inequities in access to health care services and in the financing of national health systems. Benefit incidence analysis is used to assess the distribution of the benefits of government expenditures on health by socioeconomic groups. The paper includes a summary of the results of the measurement of health status inequalities, the degree of inequities in access to health care services (preventive, curative, and chronic care), and inequities in the financing and distribution of benefits of government expenditures on health by socioeconomic groups. Policy implications of the findings are also discussed.

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Author's E-mail address: rubensu@msn.com  
Telephone: 1-301 7652140; Fax: 1-301-765 5912.

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<sup>1</sup> Economic Adviser, Consultant to the World Bank's "Equity in Health in LAC" (EquiLAC) project and to the Pan American Health Organization (PAHO)-United Nations Development Program (UNDP) project on "Investments in Health Equity and Poverty" (IHEP). My thanks to Noberto Dachs, Edward Greene, David Gwatkin, Amparo Gordillo, Cesar Vieira and Jose Vicente Zevallos for their helpful comments on the earlier drafts. Also, I thank for their comments Arnab Acharya, George Alleyne, Ichiro Kawachi, Elsie Le Franc, William Savedoff, Michael Ward, Adam Wagstaff, and other participants at the International High-Level Meeting of Experts in Economics, Social Development, and Health on the "Impact of the Investments in Health on the Economic Growth, Household Productivity, and Poverty Reduction," organized by PAHO, at which partial results of the EquiLAC and IHEP projects were presented (5-6 October 1999). The usual disclaimer applies.

# **Health Systems Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy Implications**

## **Equity in Health in Latin America and the Caribbean (World Bank EquiLAC Project) Investments in Health Equity and Poverty Project (PAHO/UNDP IHEP Project)**

### **Executive Summary**

This paper presents a summary of results of the studies on health system inequalities, and poverty carried out within the framework of the World Bank's EquiLAC Project and the PAHO/UNDP-sponsored IHEP project. The EquiLAC and IHEP projects entailed the development of several reports covering different aspects of health system inequalities and poverty in six countries of the LAC region: Brazil, Ecuador, Guatemala, Jamaica, Mexico, and Peru. This group of countries accounts for more than two-thirds of the overall regional population, gross domestic product and health expenditures.

Illness concentration curves and indices are used to assess health status inequalities. Concepts of vertical and horizontal equity and inequity and inequality indices are used to measure inequities in access to health care services and in the financing of national health systems. Benefit incidence analysis is used to assess the distribution of the benefits of government expenditures on health. The concept of horizontal equity is used to assess inequities in access to (delivery/utilization of) health care services: i.e., the extent to which persons in equal need have similar utilization of health care services, regardless of their socioeconomic status or level of income. The concept of vertical equity—i.e., the progressiveness or regressiveness of the sources of financing of government expenditures—is used to assess inequity in the financing of the systems. Benefit incidence analysis—i.e., analysis of the distribution of the benefits of government expenditures on health care services accruing to different socioeconomic groups—is used to assess the distributive impact of government expenditures on health.

With the exception of Jamaica, the country case studies found significant pro-rich health status inequalities, regardless of whether the proxy variable used to measure inequalities was self-assessed health status (subjective model) or symptoms of illness and accidents (medical model). Pro-poor inequalities in the case of Jamaica were not statistically significant. In general, inequalities in the perception of health status are relatively small when compared with overall socioeconomic and/or income inequalities.

All country case studies found significant pro-rich inequities in access to health care services. In general, inequities in access to preventive care were more pronounced than inequities in access to curative care. Inequity in access to chronic care services was less severe than inequity in access to curative care. Inequalities (and inequities) in access/delivery of health care were less pronounced than overall socioeconomic or income inequalities.

Financing of public health systems tends to be regressive (Ecuador, Guatemala, Jamaica, and Mexico) or, at best, neutral (Jamaica). Taxes (direct and indirect) were the main source of financing for government programs in Jamaica and Brazil. Contributions to social security were

the main components of the public health system in Mexico. Taxes and contributions to social security were of equal importance in Ecuador, Guatemala and Peru. Private out-of-pocket expenditures, the main source of financing for national health systems, accounted for 48% to 66% of overall national expenditures on health and exhibited inequalities that were more pronounced than the income distribution inequalities.

Distribution of the benefits of government expenditures on health were pro-poor in the case of Jamaica, neutral in Peru, and pro-rich in Ecuador and Guatemala. No estimates were presented for the cases of Mexico and Brazil.

The following are some of the policy implications of the findings:

- Increasing the availability of health care services may not result in an increase in utilization of these services, even if services are provided free of charge or at a low nominal fee. Lack of significant differences in the perception of symptoms of illness or accidents among socioeconomic groups suggests that service availability may not be a major constraint for the poor in accessing health care services.
- A more technocratic public health policy approach may be a better way to decide on policies and make health care services more conducive to breaking the cycle of disease and poverty. The fact that low-income groups may not perceive symptoms of illness as poor health status suggests that demand-oriented policies relying on peoples' perception of illness or health risks may not be the best way to decide on the type of services a community needs to address actual health problems.
- Cost recovery or fee-for-service schemes may aggravate inequalities in access to quality health care services, as measured by differences in the level of consumption expenditures by income group.
- There is ample room to improve what governments can do to enhance the distributive impact of public expenditures on health: increasing the amount of resources, reducing regressivity in the financing of health systems through more intensive use of direct taxes, and—by redirecting public expenditures to intervention—inducing greater awareness of the malaise and health care services needs among the poor.

The results from the EquiLAC and IHEP studies shed some light on the way in which applied research can be used to assess health system inequalities and inequities. However, the studies also raise many questions about conceptual and methodological issues requiring further analytical and empirical work.

# **Health Systems Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy Implications**

## **Findings and Policy Implications**

**Equity in Health in Latin America and the Caribbean  
(World Bank EquiLAC Project)  
Investments in Health Equity and Poverty Project  
(PAHO/UNDP IHEP Project)**

**Rubén M. Suárez-Berenguela**

### **1.1. Background**

This paper presents a summary of results of the studies on health system inequalities, inequities, and poverty carried out within the framework of the World Bank's EquiLAC Project and the PAHO/UNDP-sponsored IHEP project. Development of the EquiLAC and IHEP projects involved the adoption of an analytical framework and the production of background and demonstration papers, regional overviews, and country case studies. The analytical framework adopted was an extension of the framework used in a comparative study on equity in the finance and delivery of health care systems in 10 developed countries sponsored by the Commission of the European Communities: the ECuity Project (Van Doorslaer, Wagstaff, and Rutten, 1993).

The background papers include a review of the state of the art of concepts and methods for assessing health system inequalities and inequities in developed and developing countries (Wagstaff and van Doorslaer, 1997) and of concepts and issues related to the analysis of poverty and health inequalities (Whitehead, 1999). Two demonstration papers use data from a 1988 Jamaican Living Standard Measurement Survey (LSMS) to show the applications of some of these concepts and methods. One of the papers focuses on concepts and methods for measuring health status inequalities (van Doorslaer and Wagstaff, 1998a), while the second deals with the measurement of inequities in the delivery of health care (van Doorslaer and Wagstaff, 1998b). The regional overviews include a paper on health systems and health sector reform policies in countries of the LAC region (Bengoa et al., 1998) and a paper that proposes a taxonomy of national health systems of countries of the LAC region (Suárez, 1998).

The EquiLAC and IHEP projects sponsored eight country case studies covering different aspects of health system inequalities, inequities, and poverty in six countries. The EquiLAC case studies focused on the measurement of health system inequalities in Brazil, Ecuador, Jamaica, and Mexico. The IHEP case studies focused on an assessment of the nature of health system inequalities affecting the poor (the lowest 20% of the income distribution) in Brazil, Ecuador, Guatemala, Jamaica, and Peru. This group of countries accounts for more than two-thirds of the LAC region's population, gross domestic product (GDP), and overall health expenditures.

All the case studies shared similar terms of reference and were based on intensive use of micro-data, or household-level data, on health status, health service utilization, income and expenditures, and other socioeconomic characteristics of individuals and populations. The country case study reports include a description of the institutional structure and organization of

national health systems, as well as a summary of national health expenditure accounts (flows of expenditure and sources of finance). They also include the results of the measurement and analysis of health care system inequalities and inequities: health status inequalities, inequalities and inequities in access to or utilization of health care services, and inequalities and inequities in the financing of national health systems. Most of the data were obtained from the most recent national household surveys, mainly Living Standard Measurement Surveys (LSMS) and national Household Income-Expenditure Surveys (HIES).

Most of the country case studies were carried out by local multidisciplinary research teams between June 1998 and January 1999. The Mexico case study was initiated in November 1998; a first draft of the report was completed in June 1999. Preliminary findings of that report are included here. The team coordinators for the country case studies were Antonio Campino for Brazil, Enrique Lasprilla for Ecuador, Edgard Barillas for Guatemala, Karl Theodore and Althea Lafoucade for Jamaica, Eduardo Gonzales and Susan Parker for Mexico, and Margarita Petrer and Luis Cordero for Peru. A list of country reports and members of national teams is included in Annex 1.

## 1.2. Living conditions, income inequalities and poverty: results

The countries included in the EquiLAC and IHEP studies are very diverse in terms of population size and living conditions as assessed by the level of per capita income, income inequalities, and poverty. However, in spite of this heterogeneity, these countries share some common characteristics: a relatively high degree of income inequality—when compared with other countries of the world—and a large proportion of the population living in poverty.

**Table 1.: Summary indicators of countries participating in the EquiLAC and IHEP projects**

Country	Population (millions) 1998	Per capita Income, 1998 PPP*	Gini Coefficient	Ratio 20/20	% of population below PL-C**
Brazil	165.2	6160	0.60	26	27.2
Ecuador	12.2	4630	0.47	10	54.7
Guatemala	11.6	4070	0.60	30	75.2
Jamaica	2.5	3210	0.41	8	34.2
Mexico	95.8	8190	0.54	16	38.6
Peru	24.7	4410	0.46	12	49.0

Source: World Bank, Social Indicators of Development, Database, 1999 (CD-Rom). PAHO Health Status Indicators, 1999.

\* PPP = Purchasing Power Parity, international dollars

\*\* PL-C = Consumption-based poverty line

Table 1 provides a summary of indicators of the socioeconomic characteristics of these countries. In 1998, the population of the countries ranged from 2.5 million in the case of Jamaica to 94 million in Mexico and 165 million in Brazil. Ecuador and Guatemala had a total population of around 12 million each, while Peru's population was twice that size. All the countries included in the study can be classified as middle-income countries (income per capita above US\$ 400). Per capita income in these countries, expressed in United States dollars (US\$) adjusted for purchasing power parity (PPP), ranged from less than US\$ 3,500 in Jamaica to around US\$ 4,000 in

Guatemala, US\$ 4,500 in Ecuador and Peru, US\$ 6,200 in Brazil, and more than US\$ 8,000 in Mexico.

The countries included in the study can be characterized as countries with a relatively high degree of income inequality and a high percentage of the population living in poverty. The average Gini coefficient for countries of the Latin American and Caribbean region is 0.50. The Gini coefficients for these countries range from 0.41 to 0.60, which is above the average of 0.32 for developed countries. Moreover, the lowest degree of income inequality in the region, around 0.41 for Jamaica and Uruguay, is similar to the average value of the Gini coefficient for East Asian countries.<sup>2</sup>

The relationship between the level of income per capita and the degree of income inequality and poverty is weak. Brazil, with almost twice the level of income as Jamaica, is the country with the greatest degree of income inequality; Jamaica has the lowest degree of income inequality. The Gini coefficient for Brazil is 0.60, while the ratio of the share of income going to the top and bottom quintiles of the income distribution is 26. Jamaica has a Gini coefficient of 0.41 and an income share ratio of top to bottom quintiles of 8. However, in spite of the high degree of income inequality, Brazil is the country with the lowest percentage of population living in poverty—around 28%—because of its level of income per capita. For the rest of countries included in the case studies the Gini coefficient ranged from 0.46 (Peru) to 0.54 (Mexico), with large variations in the income share ratio of top to bottom quintiles (see Table 1). The population living in poverty—defined as those whose income is below the cost of a market basket of commodities providing a minimum intake or consumption of calories and proteins—ranged from less than one-third of the population in Brazil to more than three-fourths of the population in Guatemala. For the rest of countries, the percentage of population living in poverty fluctuated between 34% in Jamaica to 38.6% in Mexico, 49% in Peru, and 54.7% in Ecuador.

### **1.3. National health systems: a taxonomy**

The national health care systems of countries in the LAC region are very diverse. Historical reasons, ideology, and economic conditions have shaped and constantly modified the structure of national health systems. National health systems are diverse in terms of their organizational structure or institutional configuration, the principles guiding the role of government, and the role of the public and private sectors in the provision (financing and/or delivery) of health care services.

To analyze how national health systems performed in terms of equity, the systems were broadly classified into three categories: National Health Service Systems (NHS), National Health Insurance Systems (NHIS) and highly fragmented or Mixed National Health Systems (MNHS).<sup>3</sup> The systems were then ranked according to the relative importance of the role of government:

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<sup>2</sup> The Gini coefficient is an index for measuring income distribution inequality. The values of the coefficient will range from 0 to 1. The value of the coefficient will be close to 0 for a low degree of income distribution inequality and close to 1 for a high degree of income inequality. Data on regional averages of income distribution Gini coefficients are based on data from Denninger and Squire (1996) and are taken from IDB (1999). Gini coefficients for the countries presented in Table 1 were taken from the World Bank (1999) and IDB (1999).

<sup>3</sup> This section of the paper is based on the background papers on health systems in Latin America and the Caribbean prepared by Bengoa et al. (1998) and Suárez (1998).

from more statutory (mostly public) to less statutory (mostly private, market-oriented) national health systems.

The national health systems of countries included in the case studies range from a predominantly public national health services system (NHS) in the case of Jamaica to a highly fragmented, market-oriented (predominantly private) mixed health system in the case of Guatemala. In between, are Mexico, with a national social insurance system (NHIS), and Brazil, Ecuador, and Peru, with mixed national health systems (MNHS) characterized by varying degrees of participation by public sector institutions (ministry of health and social security) in the provision of health care.

Countries with NHS were defined as those in which a central government institution plays a major role in the provision of health care services. Social health insurance institutions are non-existent or play a minor role in the financing of the systems. The presence of private providers and the magnitude of private expenditures varies across the countries. To differentiate countries with effective restriction of the private market of health services and health insurance, NHS were further subdivided into non-market and open-market systems. Cuba is the only country with a non-market NHS system, as it is the only country in the region in which market transactions of health care services and health insurance are not allowed.

Countries defined as NHIS were those in which one or more social insurance institutions play a major role in the provision (delivery and/or financing) of health care services. Statutory social insurance systems cover around 50% or more of the total population. Health care expenditures through social insurance schemes are the main component of public expenditures on health. The presence and relative importance of private sector institutions involved in the management of social insurance funds and the provision of health care and health insurance services (including prepaid health plans) varies greatly across these countries. The annex (Table A.1) presents a further differentiation of NHIS according to their public or private nature and whether the health insurance system is organized into a single national system or multiple provincial or occupational-based systems.

Countries with MNHS were characterized as those in which public sector institutions play a relatively minor role in the provision of health care services. Resources of central government institutions involved in the delivery of health care services are limited (less than US\$ 20 per capita). The coverage of mandatory social health-insurance systems is limited to less than one-third of the total population. The magnitude of private out-of-pocket expenditures on health services is relatively large, and the presence and relative importance of private insurance and prepaid health plans varies greatly according to the country's income per capita.

The broad classification categories presented above are similar to those used to classify national health systems of developed countries, based on the predominance of actual or planned methods of financing (OECD, 1987; van Doorslaer et al., 1993; WHO, 1997). However, within the framework of the OECD and WHO classification, most national health systems of LAC countries would be classified as mixed national health systems (MNHS). Despite this, national health systems of countries in the LAC region are rather heterogeneous, with a relatively weak predominance of a "main" institution or source of finance characterizing most national health systems. None of the systems provides the universal and comprehensive coverage of health care services achieved by European national health systems.

Table 2 illustrates the characteristics of national health systems in terms of selected indicators. It includes the type of national health system, the number of public and private

institutional providers of health care services, the level and public-private composition of national health care expenditures (total, per capita, and as a percentage of GDP), and the percentage of population covered by the national social insurance systems.

The national health care systems of these countries can be characterized as open-market systems. The number of for-profit institutional providers of health care and their market share are relatively large, as compared with national health systems in developed countries. There are a significant number of private providers of health care and a relatively large private sector in the provision of health care services. Private expenditure on health—i.e., direct out-of-pocket expenditures and voluntary contributions to privately managed prepaid health plans and health insurance schemes—is the largest component of national health care expenditures. It represents around 53% in Mexico and 66% in Brazil. In Ecuador, Jamaica, and Peru, the public-private mix is around 50/50. In developed countries, excluding the United States, most institutional providers are public and not-for profit institutions; the coverage of the systems is universal; and public expenditure and financing represent more than 70% of national expenditures on health.

In Brazil, whose system is classified as an MNHS, the public component of the Unified National Health System (Sistema Único de Saúde – SUS) has been financed, since 1989, through consolidation of the funds of public-sector institutions. Resources from the social insurance fund, managed by a decentralized government institution (INAMPS), were transferred to a national health fund. The management of the national health fund is being decentralized and administered by local (municipal) governments. In addition, there are a large number of decentralized public sector institutions (62) involved in the provision of specialized health care services or the management of specific public health programs. These institutions have their own budget but also receive transfers from the central government. In Brazil it is estimated that there are a total of 6,124 providers of institutional care (hospitals and clinics). Of a total of 2,874 private hospitals, more than half are for-profit institutions. Direct out-of-pocket expenditures account for 40% of total national health expenditures. Contributions to privately managed prepaid health plans or private health insurance schemes represented 26% of national health care expenditures. It is estimated that around 30 million Brazilians (20% of the population) are enrolled in private health insurance or prepaid plans.

In Jamaica, classified as a country with an NHS, the Ministry of Health (MOH) operates an extensive network of health posts, clinics, and hospitals. There are a limited number of private providers of institutional care (private hospitals and clinics) and an incipient health insurance market. Seven of the 31 institutional providers are private for-profit hospitals. User fees are charged at many public facilities. There is a tendency for health professionals from the MOH to supplement low government salaries through private practice, often in government facilities, for which they pay a nominal fee to the government. Private practice by MOH physicians and other health sector workers is widespread.

Mexico's system is classified as an NHIS. More than 60% of the population (around 54 million) is covered by a national health insurance system: the Mexican Social Security Institute (Instituto Mexicano de Seguridad Social – IMSS) for workers from the private sector and the Social Security and Services Institute for Government Employees (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado – ISSSTE) for government employees. These two institutions own and manage a large network of health facilities. Participation of the MOH in the provision of curative services and in expenditure on health care delivery is relatively minor. There are a large number of private providers of institutional and individual health care. Private hospitals account for around two-thirds of the total number of institutional providers, mostly for-

profit institutions. The proportion of the population using private health care services is larger in the lowest and highest income quintiles than in the middle quintiles of the income distribution.

**Table 2: National Health Systems in Latin America and the Caribbean: Selected Indicators**

	<b>Brazil</b>	<b>Ecuador</b>	<b>Jamaica</b>	<b>Mexico</b>	<b>Peru</b>	<b>Guatemala</b>
Type of System	<b>MNHS</b>	<b>MNHS</b>	<b>NHS</b>	<b>NHIS</b>	<b>MNHS</b>	<b>MNHS</b>
Total National Health Expenditure-NHE (millions US\$, PPP)	74.410	3.010	470	38.160	5.190	1.080
NHE % GDP	7	5	5	5	5	3
NHE Per capita (per capita US\$, PPP)	456	251	186	406	216	103
<b>Number of Health Sector Institutions:</b>						
<b>Public Sector:</b>						
<b>General Budget</b>	1 (24)	21	1	16(31)	n.a.	n.a.
<b>Own Budget</b>	62			2		
Of which:						
Social Security	4	1	(1)	4	1	1
Coverage of SI	n.a.	19%	n.a.	60%	30%	16%
<b>Total Institutional Providers:</b>						
	6,124	299	31	3,033	n.a.	n.a.
<b>Of which Private Sector:</b>						
<b>Hospital</b>	2,874	132	7	2,096	n.a.	n.a.
<b>Non-for profit hospital</b>	1,197	4	0	16	n.a.	n.a.
<b>NHE Composition:</b>						
Public (%)	34	52	49	47	51	45
Private (%)	66	48	51	53	49	55
Total (%)	100	100	100	100	100	100

The numbers in parentheses in the cases of Brazil and Mexico indicate the number of local governments; for Jamaica the number indicates the existence of a National Insurance Board that deals with health care insurance issues. n.a. = not available.

Source: Developed by the author based on information from PAHO (1998, 1999), Suárez (1998a); World Bank SID (1999), and the country case study reports.

The national health systems of Ecuador, Guatemala, and Peru are classified as MNHS. In these countries the national health insurance fund is financed by compulsory employee-employer contributions to a national social insurance scheme, which is managed by decentralized public sector institutions. Coverage of the social insurance system is limited to less than 20% of the population. MOH budgets are relatively small—about half the amount of the budget managed by the social insurance institutions. Direct out-of-pocket payments are the main source of financing for national health expenditures. Coverage of and expenditures on private health plans and health insurance schemes are negligible.

The national health systems of these countries were ranked from more statutory (mostly public) to less statutory (mostly private, market-oriented): Jamaica (NHS) and Mexico (NHIS) thus form a first group, Brazil and Peru a second group, and Ecuador and Guatemala a third group. All the countries in the second and third groups have MNHS. This ranking is based on the

institutional configuration of the systems and the relative importance of public sector institutions, the coverage of the population, and the relative importance of the resources managed by the systems. The relationship between the type of system and the degree of health inequalities is explored in the following section.

## **1.4. Measuring health system inequalities and inequities: concepts and findings**

### **1.4.1. Concepts**

Illness and medical care concentration curves, concepts of vertical and horizontal equity, and inequality and inequity indices were used to describe and measure the extent of health system inequalities and inequities: health status inequalities, inequities and inequalities in access/utilization of health care services, and inequities in financing.

The assessment of the *inequalities in the health status* of the population was based on the concept of illness concentration curves and an inequality index proposed by Wagstaff, van Doorslaer, and Paci (1989). The illness concentration curve (similar to Lorenz curves) plots the cumulative proportion of population ranked by socioeconomic status (SES) against the cumulative proportion of ill health. Ill health or health status of the population was assessed in terms of the observed distribution of self-reported health status-related variables from survey questionnaires (Living Standard Measurement Surveys – LSMS). Depending on the country and year, surveys included questions on self-assessed health status (SAH) or on self-reported symptoms of illness or accident (SIA), and, in a few cases, questions on the number of restricted activity days (RAD) or days of impairment due to illness or accident. A direct standardization procedure was used to isolate the inequalities in health status and health needs arising from differences in the age and sex composition of different socioeconomic or income groups. The standardized illness concentration curve describes what have been called *avoidable inequalities* (Whitehead, 1998)—health inequalities attributable to differences in socioeconomic status. A health status inequality index ( $I^*$ ) is defined as twice the area between the unstandardized and standardized illness concentration curves. The value of the inequality index is negative ( $< 0$ ) if there are avoidable inequalities favoring the rich; it is positive ( $> 0$ ) if inequalities favor the poor. A value of the inequality index close to zero indicates that existing inequalities are due to differences in the demographic characteristics of different socioeconomic groups rather than to differences in socioeconomic characteristics.

*Inequalities in the delivery or access to health care services* were assessed by the distribution of the utilization of health care services—curative, preventive, chronic care, or hospitalization—by socioeconomic groups. It was described by medical care concentration curves and health care and was measured by a medical care use concentration index (similar to Lorenz curves and Gini coefficient, respectively). A summary of the concepts for measuring health status inequalities is presented in Box 1.

Concepts of vertical and horizontal equity similar to those developed in the literature on public finance were used to assess inequities in the delivery and financing of health care systems.<sup>4</sup> The concept of *horizontal* equity applied to the delivery or utilization of health care services refers to the principle or requirement that persons with equal health needs be treated equally. The concept of *vertical* equity implies that persons with unequal health needs should be treated differently. The EquiLAC studies focus on assessing the horizontal equity principle: the extent to which persons in equal need have similar access/utilization of health care services.

*Inequities in access* to health care services were assessed by comparing observed patterns of utilization of health care services with estimates of the distribution of health care needs for those services. The “need for health care services” was derived by estimating what utilization of health care services would have been, by income group, once differences in utilization due to differences in age, sex, and differences in SAH, SIA, etc. were taken into account (standardized distribution of the utilization of health care). Several regression models and techniques were used to derive the (standardized) distribution of “need for health care services.” Differences between estimated “health care needs” and observed utilization of health care services was used to derive the index of (horizontal) inequity in access (Hiwv). The inequity in access is positive in the case of pro-rich inequity and negative in the case of pro-poor inequity. A comprehensive presentation of alternative concepts, methods, and statistical and econometric techniques for measuring health status inequalities and inequities in delivery is contained in the background and demonstration papers prepared for the EquiLAC project (van Doorslaer and Wagstaff, 1997; 1998a; 1998b). A summary of the concepts for measuring inequalities and inequities in access/delivery of health care services is presented in Box 2.

Equity in the financing of national health systems was assessed in terms of the progressivity, regressivity, or proportionality or neutrality of the sources of revenue to finance government expenditures on health. The concepts of vertical and horizontal equity, combined with the *benefit principle* or the *ability-to-pay* principle, provide the framework for different approaches commonly used in assessing the equity of a tax system. The *benefit principle* states that individuals should be taxed according to the benefits they receive from the expenditure which is financed by tax revenue. The *ability-to-pay* principle states that individuals should be taxed according to their abilities to bear the tax burden. Under the benefit principle the concepts of horizontal and vertical equity will imply that individuals receiving the same (different) benefits will be identically (differentially) taxed. The concepts of horizontal and vertical equity imply that individuals with same (different) ability to pay should be taxed similarly (differentially).

The EquiLAC studies assessed the equity in financing considering the ability to pay principle: the extent to which payments for health care services or contributions to the financing of national health care systems should be commensurate with the individual’s or the family’s ability to pay.<sup>5</sup> To assess the distribution of the benefits of government expenditures on health, the country case studies focused on a partial benefit incidence analysis which measured the distribution of government expenditure on health care services by income groups. The concepts and methods used were similar to those used in the analytical and empirical work on fiscal

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<sup>4</sup> A summary presentation of concepts and issues of equity and taxation can be found in an article by Zee Howell in the IMF Tax Policy Handbook (see Shome, 1995). Application of the concepts of vertical and horizontal equity to measure health system inequities is presented in Kakwani, van Doorslaer, and Wagstaff (1997).

<sup>5</sup> Several methodological issues remain to be resolved, including the definition of income to be used, whether the ability to pay should be measured in relative or absolute terms, the degree of progressivity, and others.

incidence analysis sponsored by the World Bank and the International Monetary Fund (Selowsky, 1979; May, 1996; IMF, 1996). Concerns about policy relevance and methods used in assessing the full fiscal incidence, coupled with limited availability of empirical studies and micro-level data, prevented us from asking investigators to conduct a full fiscal incidence analysis of government expenditure on health similar to the one conducted for the OECD countries.<sup>6</sup>

### Box 1:

#### Illness concentration curve, standardization methods, inequality index, and measuring avoidable inequalities

The **illness concentration curve**  $L(s)$  plots the cumulative proportion of the population ranked by socioeconomic status (SES), beginning with the least advantaged, against the cumulative proportion of illness, perception of illness, or another health status variable. If illness is equally distributed across all socioeconomic groups, the illness concentration curve will coincide with the diagonal line, the perfect equality line. If the illness concentration curve lies above (below) the diagonal, inequalities in illness favor the more (less) advantaged member of society. Health inequality is measured by a concentration index  $C$ , the value of which is twice the area between the illness concentration curve and the equality line. If the illness concentration curve coincides with the diagonal, the difference is zero ( $C=0$ ). If all illness is concentrated among the least advantaged, the illness concentration curve will be bowed out, above the equality line, and the concentration index  $C$  will be negative with values tending to  $-1$ . If illness is concentrated among the most advantaged, the illness concentration curve will be bowed in, below the equality line, and the value of  $C$  will tend to  $+1$ .

Direct and indirect **standardization** procedures were used to take into account the confounding effects of demographic factors on inequalities, i.e., differences in illness associated with differences in the age-sex structure of different SES groups or individuals. The standardized illness concentration curves describe health inequalities attributable to socioeconomic characteristics (avoidable inequalities). **Direct standardization** involves applying the age-sex-specific average illness rate of each SES *group* (ranked by social class, groups of persons with similar levels of educational attainment, or income groups) to the age-gender structure of the population. A concentration index ( $C+$  or  $I+$ ) is defined as twice the area between  $L+(s)$  and the equality line. If the standardized illness concentration curve ( $L+(s)$ ) is close to diagonal, the corresponding concentration indices will tend to zero ( $C+ \Rightarrow 0$ ). If the demographic characteristics of the least-advantaged groups of the society (the poor) make them more prone to illness, the standardized concentration curves will be bowed out, above the equality line, and the concentration indices will be negative ( $< 0$ ). If the demographic characteristics of the least-disadvantaged group of the society (the rich) make them more prone to illness the illness, the concentration curve will be bowed in, below the equality line, and the value of the concentration index will be positive ( $> 0$ ).

**Indirect standardization** uses *individual-level* data. It involves replacing **individual person degree of illness [individual degree of illness?]** by the degree of illness suffered on average by persons of the same age and gender. The standardized concentration curve is denoted by  $L^*(s)$  and is measured by a concentration index  $C^*$  defined as the twice the area between the standardized concentration curve and the equality line. An alternative **inequality index** ( $I^*$ ) for measuring avoidable inequalities is defined as the difference between the concentration indices for the unstandardized and standardized illness concentration curves ( $I^* = C - C^*$ ). The value of  $I^*$  is negative ( $< 0$ ) if there are avoidable inequalities favoring the rich (pro-rich inequalities) and positive ( $> 0$ ) if there are avoidable inequalities favoring the less-advantaged members of society (pro-poor inequalities).

<sup>6</sup> The case was made that an analysis of the distributive impact of government expenditures on health was a more relevant policy issue than the fiscal incidence of the sources of revenue. A common argument was that optimal revenue (tax) collection policies are based on efficiency rather than on equity considerations. Sector policies should focus on maximizing the distributive impact of government expenditures if equity is the main policy objective.

Further readings: Wagstaff, Paci, and van Doorslaer (1991); Kakwani, Wagstaff, and van Doorslaer (1997); Wagstaff and van Doorslaer (1998a).

## Box 2

### Equity in delivery/utilization of health services: inequality and inequity indices

**Equity** in the delivery/utilization of health care is defined as a system in which consumption of health care is allocated or distributed according to need rather than according socioeconomic status. This egalitarian view is consistent with policy statements in European countries and Canada, with national health care systems providing universal coverage, as well as policy objectives of health sector reform in countries of the Latin America and Caribbean region. The principle of horizontal equity applied to the delivery of health care requires that persons with equal needs should be treated the same, and thus persons with equal needs should have similar patterns of utilization of health care services. The distribution of utilization of health care services is described by a *medical care concentration curve* ( $Lm(s)$ ). The  $Lm(s)$  curve plots the cumulative proportion of utilization of health care services (vertical axis) ranked by socioeconomic group (horizontal axis) similar to the Lorenz curve. **Inequality in the utilization** of health care services is measured by the corresponding concentration index  $Cm$  (similar to a Gini concentration coefficient). It is defined as the area between the medical *care* concentration curve and the equality line (horizontal).

**Need** for medical care utilization of different socioeconomic groups is estimated using the method of indirect standardization. This method provides estimates of the amount of medical care a person would have received if he/she had been treated in the same way that others with the same characteristics of need were, on average, treated. Distribution of “need” is described by a *need concentration curve* ( $Ln(s)$ ). The  $Ln(s)$  curve plots the cumulative proportion of the population - ranked by socioeconomic status - against the cumulative proportion of “need”, *medical care utilization* [“needed” *medical care utilization?*]. The corresponding index of inequality of health needs is denoted by  $Cn$ , and defined by the area between the need concentration curve and the equality line.

Horizontal inequity is assessed by comparing the distribution of utilization (medical *care* concentration curve) with the distribution of need (need concentration curve). If the need concentration curve ( $Ln(s)$ ) lies above the medical *care* concentration curve ( $Lm(s)$ ), there is horizontal inequity favoring the better off (pro-rich inequity). If the  $Ln(s)$  lies below  $Lm(s)$ , there is inequity favoring the worst-off (pro-poor inequities in access/utilization). Inequity in the delivery is measured by an **inequity index** ( $Hiwv$ ) derived by comparing the actual distribution of the utilization of health care across socioeconomic groups with the distribution of need.  $Hiwv$  is defined as twice the area between the need and utilization or medical *care* concentration curves, or, equivalently, as the difference between the concentration index of utilization of health care ( $Cm$ ) and the concentration index for need ( $Cn$ ):  $Hiwv = Cm - Cn$ . If the distribution of utilization of medical care and need coincide, health services are being used according to need, and the inequity index will be equal to zero. It indicates proportionality in the distribution of health need and utilization of health care services. A positive value of the inequity index ( $Hiwv > 0$ ) indicates horizontal inequity favoring the rich (pro-rich inequity), while a negative value of the inequity index ( $Hiwv < 0$ ) indicates horizontal inequity favoring the poor (pro-poor inequity).

Further readings: Wagstaff, van Doorslaer, and Paci (1989); Wagstaff and van Doorslaer (1987, 1998b).

### *Methodological Issues*

All case studies used a common analytical framework, shared similar terms of reference, and were based on intensive use of micro-data, or household-level data, from the most recent national household surveys, mainly living standard measurement surveys (LSMS), national health surveys (ENSA) and national household income-expenditure surveys (HIES). A summary of surveys used in the country case studies is presented in Table A.2 of the annex. Table 3 summarizes health status and health services variables used in the country studies to measure health status inequalities, inequalities and inequities in access/delivery of health care services, and the distribution of the benefits of government expenditures on health. The table also includes a description of the most common ranking variables used to assess the socioeconomic status (SES) of the population.

The results obtained from country case studies should be seen as a first systematic attempt to measure health system inequalities in countries of the LAC region. The qualitative results, particularly those assessing health status inequalities, inequities in the delivery of or access to health care services, and the distribution of the benefits of government expenditures on health, are very robust. Cross-country comparison of quantitative results is somewhat more limited. Differences in definition of variables, coverage, reference period and contents of the surveys, together with some differences in estimation procedure limits a direct cross-country comparison of all the quantitative results.

Different variables and models were used to assess health status inequalities. All the country case studies reported or acknowledged the existence of large health status inequalities, as measured by difference in mortality and/or incidence or prevalence of diseases and injuries (Zt) by different socioeconomic groups. However, the analysis of health status inequalities focuses on the analysis of self-reported health status variables belonging to the subjective, medical, and functional models. Questions on qualitative (very poor, poor, fair, good or very good) self-assessed health status (SAH)—the subjective model—were included in the questionnaire of one round of the LSMS in Brazil (1996/97), Jamaica (1989), and Mexico (1994). The country reports from these three countries present the findings on illness concentration curves and the inequality index of SAH variables. All the surveys included questions on self-reported symptoms of illness or accident/injury (SIA)—the medical model. Few surveys (only those in Brazil, Ecuador, and Jamaica) included questions on the days of disability or restricted activity days (RAD) due to illness or injury—the functional model. [o.k. as edited?] Several of the surveys included specific questions on whether the onset of the illness or injury had occurred in the previous four weeks, the number of days suffered from the symptoms of reported illness or injury, and the existence of a chronic health problem.

In all the surveys the general questions about SAH, SIA, and RAD were very similar. However, there were some differences in the reference period and the person answering the surveys. In most surveys (LSMS) the reference period for the general health questions was the four weeks prior to the interview. The Mexican survey (ENSA), however, used a reference period of only two weeks. Also, while in most countries the reporting on SAH and/or SIA was done by the person concerned, in the Mexican case it was the woman in the home (mother or wife) who answered for all the household members.

The perceived health status questions were aimed at detecting subjective factors that may affect the demand for services rather than the actual health status of individuals. However, it was

noted that self-reported health status variables do not reflect actual health status inequalities as measured by differences in morbidity and mortality by different socioeconomic groups. In addition, concerns were expressed [by the investigators involved in the studies?] about the fact that the inequality index of standardized variables, by eliminating existing differences in the age-sex composition of different socioeconomic groups, would show a lesser degree of inequality.

**Table 3. Variables used in assessing health system inequalities and inequities: summary**

	Brazil	Ecuador	Jamaica	Mexico	Peru	Guatemala
<b>Health Status:</b>						
Mortality/Morbidity Indicators (Zt)	x	x	x	x	x	x
Self Assessed Health (SAH)	x		x	x		
Symptoms of Illness or Accident (SIA) a/	x	x	x	x	x	
Restricted Activity Days due to illness or accident (RAD)	x	x				
<b>Health Care Services:</b>						
Curative	x			x		
Chronic	x					
Preventive	x			x		
Out-patient		x				
Hospitalization		x		x		
Institutional					x	
Non-institutional (private)					x	
Other			x			x
<b>Benefit Incidence Analysis (Partial):</b>	n.a.			n.a.		
Ministry of Health (MOH), Total		x	x			x
MOH, Hospitals & health center/posts					x	
<b>Ranking SES Variable(s)</b>	Pcy	Pce	Pce	Pce	Phy	Geo

a/ In general a four-week reference period, with the exception of Mexico, where it was two weeks.

x = variables included in the analysis.

n.a. = not applicable.

Definitions of ranking socioeconomic (SES) variables: per capita income (Pcy); per capita consumption expenditure (adult) equivalent (Pce); average household income (Phy); and, geographical, by province or department according to level of poverty (Geo).

Estimates of inequalities and inequities in access/delivery of health care services were based on data on health care utilization patterns. General questions on care-seeking behavior by income group were supplemented with detailed information on the type of services and type of providers. However, not all the countries use a common classification of health care services. The Brazil study was based on a differentiation between curative, preventive, and chronic care. Services were classified into outpatient and hospital services in the case of Ecuador. The Mexican case study used curative, preventive, and hospital-type services, whereas in Peru services were classified as institutional (hospitals, health centers, and health posts) and non-institutional (private). Several surveys included basic and follow-up questions on the type of illness or condition for which health care services were sought. The country case studies went to different lengths and depths in analyzing detailed data on more specific types of services and illness conditions.

The socioeconomic status of the population (the ranking variable) was measured by household income, household expenditure, or by the percentage of population living in poverty in the place of residence or province/department. It was suggested that, ideally, households should be ranked in terms of expenditure per adult equivalent to correct for differences in household size and composition (numbers of adults and children). The equivalence scales suggested were similar to those proposed by Aronson, Johnson, and Lambert (1994).<sup>7</sup> However, not all the case studies were able to follow this adjustment procedure. In the cases of Ecuador, Jamaica, and Mexico, the distribution of household income was adjusted by using consumption adult equivalence scales (Pce) by quintiles and deciles. The ranking variable used in the Brazil study was per capita income by quintiles; in Peru, per capita household income by deciles and quintiles (Phy) was used. Data on income or expenditures were not available for Guatemala, so the population was grouped by quintiles according to degree of rural poverty in the province or department (Geo).

In addition to income or expenditure variables, some of the case studies explored inequalities using other socioeconomic ranking variables. Urban/rural and indigenous/non-indigenous categories were used in the Ecuador and Guatemala case studies. City size and rural area categories were used in Ecuador and Jamaica, while extremely poor, poor, and non-poor categories were used in the Guatemala and Peru studies. Gender and age variations were analyzed in the Jamaica, Mexico, and Peru case studies.

Most of the estimates on inequity in the financing of national health care systems were based on results from secondary sources on the fiscal incidence of different sources of government revenues. These results, combined with those relating to the structure of financing of health sector public institutions, were used to assess the proportionality, progresivity, or regressivity of the financing of government expenditures on health. Methods used in assessing fiscal incidence varied significantly across countries, and the authors of the country case studies of the EquiLAC and IHEP projects expressed concerns about the methods and some of the results of those studies. Limited availability of micro-level data on taxes and contributions to social security by different income groups did not allow estimation of an inequity index (Kakwani's index) for financing; instead, only qualitative results are presented.<sup>8</sup>

In general, all the countries reporting estimates of the distribution of the benefits of government expenditures on health followed a similar procedure. Data on government expenditures by different types of services, combined with data on health care utilization patterns (both public and private services), were used to allocate government expenditures to different income groups on a cost-of-services basis (average expenditure by type of services). Differences in allocation procedures will not significantly change the distribution of benefits by different socioeconomic or income groups.<sup>9</sup>

Differences in the definition of variables and estimation methods are major drawbacks for a direct cross-country comparison of the quantitative results of concentration curves and inequality and inequity indices.<sup>10</sup> However, in spite of these differences, there are some common

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<sup>7</sup> The rationale for this adjustment procedure is discussed in the demonstration paper prepared by van Doorslaer and Wagstaff (1998): p. 11.

<sup>8</sup> The Kakwani index of inequity measures the changes in the distribution of income resulting from different types of taxes; it is equivalent to the difference in the Gini coefficients of the pre-tax and the actual income distributions (after taxes).

<sup>9</sup> An alternative method, although more difficult, would have been to allocate the benefits of government expenditures on a "willingness to pay" basis. This method would have better captured differences in the quality of services provided by public and private providers.

<sup>10</sup> These problems with differences in definition of health status and health variables of data sources and

findings with regard to the signs of inequalities and the relative magnitudes of health inequalities that seem to hold across countries. These findings are summarized in the following section.

### 1.4.2. Findings

The general findings from the country case studies are:

- In all the countries except Jamaica, the studies found significant pro-rich health status inequalities. These pro-rich health status inequalities were constant regardless of the proxy variables used to measure such inequalities: self-assessed health status (SAH) in Brazil, Jamaica, and Mexico; symptoms of illness or accident (SIA) in Brazil, Ecuador, Mexico, and Peru; and chronic illness in Brazil, and Jamaica. Although small pro-poor inequalities were found in Jamaica (SIA) and in Mexico (chronic illness), they were statistically significant only in the case of Mexico (Table A.3).
- Inequalities in perceived health status were relatively small when compared with the large overall socioeconomic and income inequalities and with inequalities in mortality rates by income groups. The health status inequalities index (I\*) ranged from -0.09 to +0.018, over possible values of -1 to +1. Socioeconomic inequalities measured by Gini coefficients of the income distribution ranged from 0.41 to 0.60, over possible values of 0 to 1.<sup>11</sup>
- All the country case studies found significant pro-rich inequities in access (Hiwv >0). Inequities in access to preventive care (Brazil, Ecuador, and Mexico) were more pronounced than inequities in access to curative care. The average Hiwv of these countries was +0.130 for preventive care and +0.080 for curative care. Jamaica and Peru were the two countries with the largest inequities in access to curative care: inequity indices of +0.170 and +0.111, respectively. A lower degree of inequity in access to chronic care was found in the case of Brazil (+0.06). Inequalities in access/delivery of health care were less pronounced overall than socioeconomic or income inequalities (see Table A 4).
- Private expenditures—which are the main source of financing for national health systems, accounting for between 48% and 66% of overall national expenditures on health—were found to be progressive. Private expenditure inequalities are closely related to income inequalities. Private expenditures on health were more concentrated than the distribution of income in the cases of Brazil, Guatemala, Jamaica, Mexico, and Peru. In these countries, the share of private expenditure on health increased with level of income (income elasticity greater than one). In Ecuador the study found that the share of private? expenditures on health was higher in the third and fourth quintiles (Q3) and Q4) than in the first, second, and fifth quintiles (Q1, Q2, and Q5).
- Inequalities in the health status of the population were less pronounced than inequalities and inequities in access. Inequalities and inequities in access, in turn, were less pronounced than inequalities in private expenditure on health-related goods and services.

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estimation procedures are not more severe than the ones encountered in the ECuity study; see van Doorslaer, Wagstaff, and Rutten, eds. (1993): pp. 50-97.

<sup>11</sup> Inequalities in infant mortality rates were -0.284 in Brazil and -0.150 in Nicaragua . These values of the infant mortality concentration index are taken from Wagstaff (1999).

- The results suggest that financing of public health systems tends to be regressive (Ecuador, Guatemala, Jamaica, and Mexico) or, at best, neutral (Jamaica). Progressivity (or regressivity) in financing was undetermined in the case of Brazil and unknown in the case of Peru. Taxes (direct and indirect) were the main source of finance for government programs in Jamaica and Brazil. Contributions to social security were the main component of the public health system in Mexico. Taxes and contributions to social security were of equal importance in Ecuador, Guatemala, and Peru.
- The distribution of the benefits of government expenditures on health were pro-poor in the case of Jamaica, neutral in Peru, and pro-rich in Ecuador and Guatemala. No estimates were presented for the cases of Mexico and Brazil. In Jamaica government expenditures represented 2.8% of GDP, 25% of which was received by the poorest 20% (first quintile) of the population. In Peru, MOH expenditures on health represented 1.5% of GDP, and each quintile received one-fifth of the benefits. In Ecuador and Guatemala, the MOH budget represented less than 1% of GDP, and around 30% of government expenditures benefited the richest 20% (the top quintile).

More detailed findings with regard to the various dimensions of health system inequalities are summarized below.

#### ***1.4.2.1. Inequalities in health status***

Differences in self-reported health status by socioeconomic groups (SES) are relatively small when compared with the large differences in health status measured by rates of disease incidence and prevalence and mortality (Zt). This is so even though low-income groups are more exposed to environmental risks, suffer illness more frequently than the rich, live shorter lives, and report more days of disability due to illness or accidents. This conclusion holds for almost all the countries, regardless of the variable used: self-assessed health (SAH) variables (subjective model) or self-reported symptoms of illness or accident (SIA) variables (medical model).

Figure 1 shows the slope of the relationship between these health status variables and income (by quintiles). The numerical values of these indices have been created for illustrative purposes only. The equality line indicates that all members of the population have similar health status, regardless of their income level. Points above the equality line indicate values of that particular indicator greater than the national average. Values below the equality line indicate values of the indicator below the national average. The slope or gradient of the illness distribution line is equivalent to the health status inequality coefficient. A negative slope indicates pro-rich inequalities in the distribution of ill health. Positive values—an upward sloping illness-income line—indicate pro-poor inequalities. Actual values of the concentration curves and inequality indices for different self-reported health status variables are shown in Table A.3 in the annex.

**Figure 1: Health Status Inequalities** [N.B. Figure needs to be inserted]

## *SAH*

The Brazil and Mexico surveys included a qualitative question on self-assessed health status: excellent, very good, good, fair, or poor. The Brazil study found that the percentage of people reporting better-than-good health increased with income: from 76% in the lowest quintile to 87% in the top quintile (pro-rich inequalities). An opposite result was found in the case of Mexico: around 37% of the population in the lowest quintile reported good or very good health, while in the highest quintile the proportion was around 26%. In the case of Brazil, standardization enhanced the positive correlation between SAH and income. In the case of Mexico, standardization procedures yielded the opposite result: health status improved with income, but there was little variation between percentage of population in the lower and upper quintiles. These findings are similar to those derived from an analysis of an early round of the Jamaican LSMS survey, contained in one of the demonstration papers produced for the EquiLAC project (Wagstaff and van Doorslaer, 1998a).

The lack of significant pro-rich inequalities in SAH is reflected in the shape of the concentration curves, which are close to the equality line, and in the values of the concentration ( $C$ ,  $C^*/C+$ ) and inequality ( $I^*$ ) indices, which are close to zero (See Table A.3). The values of the coefficients are similar to those observed in Sweden and other developed countries with quite egalitarian health systems (Wagstaff and van Doorslaer, 1998a).

## *SIA*

In general, perception of SIA is inversely related to level of income and is much closer to the perfect equality line. Differences in the perception of illness or accident are relatively small compared to differences in the distribution of income or inequalities in the distribution of other socioeconomic variables.

In Brazil the relationship between SIA and income was negative: 27% of the population in the first (poorest) quintile versus 21% in the highest (richest) income quintile (the national average was 23.4%). In Ecuador the proportion of population reporting SIA showed little variation across income groups or by urban and rural location. The population reporting SIA ranged from 40.3 % in the second quintile to 42.8% in the third quintile. The proportions of population reporting SIA in the lowest and highest quintiles were similar—around 46%. For the population in urban and rural areas, the average was around 42%. Differences in the perception of SIA by different ethnic groups showed that indigenous populations, mainly rural and poor, reported less SIA than those self-classified as non-indigenous (36% versus 42%).<sup>12</sup>

The population in Jamaica reported fewer symptoms of illness or accidents than in other countries: 11.8 %. No systematic variation seems to exist in the percentage of people reporting SIA by income group (quintiles) or by age group (adults and children). Reporting of SIA was more frequent in females than in males, and reporting of SIA was also higher in rural than in urban areas.

The Mexico case study found a negative relationship between percentage of population reporting SIA and income level, indicating some pro-rich inequalities. Standardization procedures resulted in a change in the slope of the relationship between these two variables (pro-poor

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<sup>12</sup> The percentage of population classified as indigenous is very low: only around 5% of the total population.

inequalities) but, again, with little variation in the percentage of population by income group. In the case of Peru, the proportion of population reporting SIA in 1997 was 36%. Perception of SIA and income showed a positive correlation: the percentage of population reporting SIA in the poorest quintile was 33%, while the average for the highest-income quintile was 40%.

The relationship between SIA by type of symptom or illness and income, on the other hand, was not homogeneous. In the case of Brazil the proportion of SIA related to respiratory illnesses (flu, cold, pneumonia) and digestive tract infections was higher in the lower-income group than in the higher-income quintile, signifying pro-rich inequalities. Reporting of SIA associated with infectious diseases, accidents, dental problems, and other non-specified symptoms was positively correlated with income, again indicating pro-poor inequalities.

While no clear relationship was found between overall reporting of chronic diseases by income level, some specific chronic diseases did show a correlation with level of income. In Brazil, chronic heart problems, hypertension, and diabetes were more prevalent in high-income groups, while chronic respiratory, digestive tract, and neuropsychiatric illnesses were reported more frequently in low-income groups. In the case of Mexico, both standardized and non-standardized distributions showed pro-poor inequalities, with a positive relationship between overall reporting of chronic illness and income. Since standardized distribution corrects for differences in the demographic characteristics of different income groups, findings of pro-rich inequalities in the perception of chronic illness suggest that the poor may be less aware of chronic diseases. Lack of awareness of chronic conditions may be due to cultural or educational factors and to relatively low levels of access to or utilization of health care services.

Jamaica is the only country with continuous and systematic collection of data from 1989-1996 through LSMS-type surveys. Results from these surveys show a significant decline in the percentage of persons reporting SIA during the reference period: from around 17% of the population in 1989-1990 to around 10% in 1995-1996. The largest reduction in the perception of SIA occurred in the low-income groups. However, results with regard to protracted (extended period) illness or injury suggest a different pattern. The percentage of the population reporting protracted illness or injury has been increasing over time: from around 23% in 1989-1990 to 33% in 1995-1996. With the exception of the results for 1990, no systematic variation in the percentage of population reporting protracted illness by income group was found. However, over this period, the slope of the relationship between protracted illness by income group seems to have tilted upwards, and the increase in the percentage of population reporting protracted illness was greater in the high-income groups.

#### *RAD*

In Brazil, around 40% of the population reported an average of 3 restricted activity days (RAD) due to some symptom or health problem or accident. No significant variations existed in the percentage of the population reporting RAD by quintile. In Ecuador, the population reported an average of 6.7 days of inactivity due to illness or accident—more than twice the number of days reported in Brazil. Moreover, the number of RAD in Ecuador was inversely correlated with level of income. The lowest quintile reported an average of 9 days of inactivity due to illness, while the average for the fourth and fifth quintiles was 5 days.

#### ***1.4.2.2. Inequalities and inequities in access: pro-rich inequalities in preventive and curative care services***

Inequalities in access are relatively large and significant. Utilization of health care services is, in general, positively correlated with level of income. Inequities in access, measured by the gap between health needs and actual utilization of health care services, is inversely correlated with income level. The lower the level of income, the larger the gap between health needs and utilization of health care services. This finding holds regardless of the measure of health needs used (Figure 2). In addition, standardization procedures to derive the inequity-in-access index yielded similar results, namely, pro-rich inequities in access to health care services.

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Figure 2: Inequalities and inequities in access/delivery [N.B. figure needs to be inserted]

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The Brazil study analyzed access/utilization of health care services by grouping questionnaire data on utilization into three types of health care services: *curative*, *chronic*, and *preventive* care. Pro-rich inequalities and inequities in access were more pronounced for preventive care than for chronic and curative care. For the three types of health care services, the study found a positive association between frequency of utilization of health care services and income levels (deciles or quintiles). Although there was little difference in reporting of SIA by different income groups, health care services were more frequently used by high-income groups than by low-income groups. The slope of the relationship between utilization and income declines as one moves from preventive to chronic to curative care.

The study also found significant differences by income group in the type of providers and facilities used. Health centers and public hospitals were more often used by poor and low-income groups, while use of private physicians, clinics, and hospitals was more frequent among higher-income groups. Nevertheless, the study found that the inverse relationship between income level and use of public hospitals did not hold in the case of specialized public hospitals. The higher-income group tended to make intensive use of specialized public hospitals, particularly those offering costly medical treatments and clinical procedures. The survey showed small differences by income group in the type of provider consulted.

In the Ecuador study, inequalities in access/utilization were assessed by comparing the use of outpatient and inpatient services by income group: overall; by type of facility, hospital, clinic, or health center; and by geographic location of the facility (large metropolitan area, medium or small urban area, or rural area). Use of outpatient services by high-income groups (the top quintile) was more than twice that of the low-income group (the bottom quintile). Eighty percent of outpatient services were provided at hospitals and clinics and 20% in health centers; 70% of outpatient visits occurred in urban areas and 30% in rural areas. High-income groups made more intensive use of hospitals and clinics than low-income groups—between two and three times more. The poorest 20% of the population, in both urban and rural areas, accounted for less than 12% of outpatient visits at hospitals and clinics. Variations in the use of health centers for outpatient consultations by income group were relatively small. The middle-income groups, those in the second to fourth quintiles, made more use of outpatient services at health centers than the population in the lowest and highest income groups. Inequalities in the utilization of inpatient services were more concentrated than in the utilization of outpatient services. Utilization of health care services by the high-income group was two to three times greater than that of the low-income group. The low-income group accounted for 8.4% of total inpatient services, while the high-income group accounted for 28.4%. More than two-thirds (69%) of inpatient health care services were provided at clinics and less than a third (31%) were provided at hospitals. Approximately 77% of inpatient services were provided in urban facilities. The rural poor—the

rural population in the lowest 20% of the income distribution—accounted for less than 5% of total use of inpatient services at hospitals and clinics.

The Peru study presents a breakdown of utilization by institutional and non-institutional providers, and utilization of institutional services by type of provider: MOH, social insurance, or private provider. It found no differences in the distribution of access to or use of institutional or non-institutional providers, but there were large differences between income groups in the distribution of service use by type of providers. While still favoring the rich, visits at MOH facilities were more equally distributed than visits to social insurance facilities and visits to private providers. Within the MOH services, visits to health posts and centers were more equally distributed than visits to hospitals (Gini coefficients of 0.0694 and 0.1793, respectively).

It was found that the poor in Peru made more intensive use of government services than did high-income groups: 61% of visits by low-income groups were to MOH facilities, versus only 18% of visits by high-income groups. However, because of large differences in utilization rates between these two groups, there were only small differences in the distribution of public subsidies accruing to low- and high-income groups. Only 25% of the population with SIA in low-income groups sought medical attention, while in the high-income group this proportion was 62%. Inequalities in the use of prenatal care services by low- and high-income groups were even more marked: 1.4 prenatal visits per newborn in the lowest quintile versus 6 in the highest (Francke, 1998).

In the case of Mexico, the study found that, while health needs were evenly distributed across different socioeconomic groups, there were significant disparities and inequities in access to health care services. The Mexico case study reported utilization patterns for adults only (18 years of age and over) and for the total population. The study examined the utilization of hospitalization, curative care, and preventive care services. The reference period was one year for hospitalization and two weeks for preventive and curative services. Unstandardized data show a steep slope for utilization of all types of health care services by income group. The proportion of people reporting use of hospital and preventive services in the lower quintiles was half the proportion of those in the top quintile of the income distribution: 1.2% versus 2.1% in the case of preventive services, and 2% versus 4.2% in the case of hospital services. In terms of utilization of curative health services, the proportion ranged from 40% in low-income groups to 61% in the high-income group. Standardized distribution of utilization of health care services—used as a proxy for health needs—showed little variation in health needs of the population.

In all the countries studied, the poor used services provided at public-sector facilities (hospitals, clinics, and primary health care posts) more intensively. Use of private providers was positively correlated with income level. Higher-income groups used private-sector providers (visits and medical services at private physicians' offices, private clinics, or private hospitals) more intensively. Use of public clinics and health posts by high-income groups was minimal.

A separate study on health inequalities carried out recently in Chile using a similar methodology found that differences in the reporting of SIA across income groups were not significant. While results from the EquiLAC project found pro-rich inequalities in access, the findings of this study suggest that utilization of health services is very similar across income groups (Sapelli and Vial, 1998).

### ***1.4.2.3. Inequalities in the financing and distributive impact of government expenditure on health care services***

#### *Financing*

Results from the country case studies suggest that financing of national health systems tends to be regressive or, at best, neutral. Full fiscal incidence analysis was limited by lack of current data or studies on fiscal incidence of different revenue collection instruments. Most of the empirical evidence on the fiscal incidence of different sources of revenue for countries of the region seems to show that, while direct taxes are progressive, indirect taxes are highly regressive (BID 1998).<sup>13</sup> The country case studies bear out that finding. The argument is made that since government expenditure on health is financed with general tax revenues—mainly indirect taxes—the financing of the public component of national health systems is, in general, regressive.

However, the studies reveal that there are important differences in the way in which national health systems are financed. *Taxes* were an important source of financing for the national health systems of Jamaica and Brazil; they represented more than 2% of GDP. *Contributions to social insurance systems* were the main source of financing for the public health system in Mexico, accounting for 1.7 % of GDP. Social insurance and taxes were of equal importance in the cases of Ecuador, Guatemala, and Peru (around 1% of GDP); they were of minor importance in the case of Brazil and non-existent in the case of Jamaica (Figure 3).

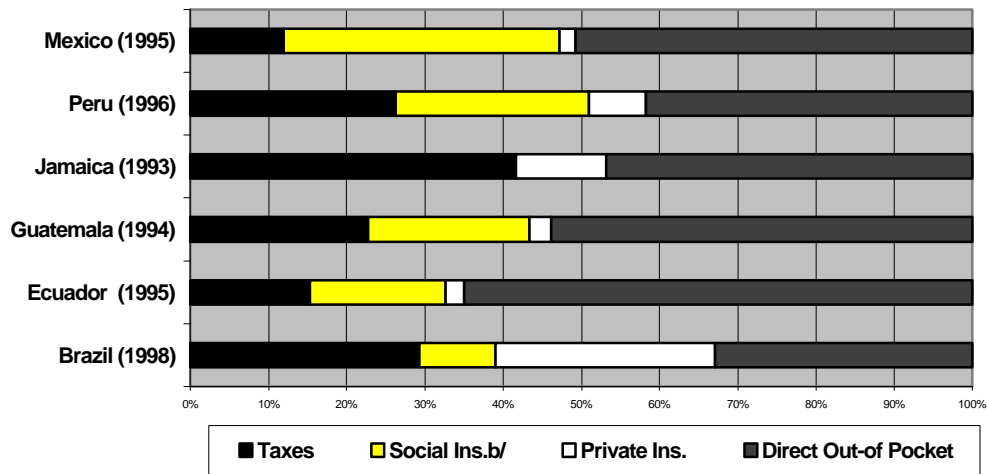
In all the countries, *direct out-of-pocket* expenditures were a main source of financing for the national health care system, accounting for proportions that ranged from around 30% in Brazil to more than 60% in Ecuador. As a percentage of GDP, out-of-pocket expenditures fluctuated between 2.3% in the case of Guatemala to 3.3% in the case of Ecuador. Voluntary contributions to *private insurance* schemes as a source of financing were of significance only in the case of Brazil: more than one-fourth of total financing, or 2.3% of the GDP. Private insurance represented less than 0.5% of GDP in all the other countries.

For the countries of the LAC region as a whole, the share of direct taxes as a percentage of total government revenues, or as a percentage of GDP, is relatively small, as compared with that in more developed countries (OECD countries). During 1986-1992 direct taxes on individuals represented less than 8% of government revenues, less than 2% of GDP in LAC countries. For OECD countries, this type of tax accounted for 28% of total government revenues, around 8% of GDP.

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<sup>13</sup> The relationship between taxes and income (or any other ability-to-pay measure) is said to be regressive if the tax burden declines as income rises, proportional or neutral if the taxes constitute the same percentage of income at all levels, and progressive if tax increases as income increases.

**Figure 3: Health financing mix in 6 countries of the LAC Region**



Contributions to social security are also of greater importance in OECD countries than in countries of the LAC region. In OECD countries, social security contributions **during the same period?** accounted for 25.6 % of government revenue, around 8.3% of GDP. For LAC countries this source of revenue accounted for 17% of total revenue, less than 3% of the GDP. In most countries of LAC, indirect taxes, value-added taxes, excise taxes, and taxes on international transactions are the main sources of fiscal revenues.<sup>14</sup> Indirect taxes accounted for 58% of total revenues **[in what year? for LAC countries overall or for specific countries?]**. For OECD countries, indirect taxes **were around [during the same period as above—1986-1992?]** 33% of total revenues.

The results of the case studies in regard to the incidence of different sources of revenue were mixed. In the case of Brazil, during 1995-1997, public sector health expenditures were financed from taxes on net profits of firms (direct) and from contributions to finance social programs (health, social security, and social welfare programs) that were raised from taxes on enterprises' gross revenues from sales of merchandise and services. In 1997, these two sources accounted for 70% of MOH financing. In 1996 a transitory tax on financial transactions was approved: a 0.20% surcharge on all financial transactions, the CPFIM, which was earmarked to finance the implementation of the Unified National Health System (SUS). By 1998 resources from the CPFIM represented 46% of MOH revenues. Contributions from COFINS represented 25% of overall revenues, and revenues from net profits from enterprises declined from 20% during 1995-1997 to 9% in 1998. While there is general agreement that COFINS taxes are

<sup>14</sup> Also, for countries of the LAC region, the share of government revenues as a percentage of GDP was around 19.7%, almost half of that observed in OECD countries (34.3%, unweighted average) for the period 1986-1992 . See IMF, 1995: pp. 289-310.

regressive, the authors questioned the assumption that taxes on net profits would be regressive, as well as preliminary empirical findings that indicated the CPFM was progressive. In fact, a detailed analysis of the incidence of these instruments is not available. Household surveys (LSMS or household income and expenditure surveys) do not capture data on direct or indirect taxes or on taxes levied on financial transactions to finance health programs, making it impossible to arrive at a precise estimation of the distribution of the burden of different revenue instruments.

The same is true of Jamaica: it was not possible to accurately measure the relative progressiveness or regressiveness of the two major components of government revenues used to finance health expenditure—income taxes (direct) and the general consumption tax (indirect). These two sources accounted for 67% of government revenues. Based on an observation that of an income tax structure with a flat rate of 33% for income above 10,400 Jamaican dollars; with an effective income tax for the lowest quintile of zero percent and constant for those with earning above the specified level of income, the authors concluded that the income tax was nominally regressive. [This sentence is garbled and the punctuation is wrong, but I'm not sure what it is supposed to say, so I don't know how to fix it.] Estimates of the effective general consumption tax (GCT) rate by quintiles found them to be regressive; the effective GCT rate was 7.7% for the lowest quintile and 3.9% for the highest quintile. The author's conclusion is that "...the public revenue source is dominated by two taxes which seem to be biased toward regressivity." (Theodore and Lafoucade, 1998)

In Ecuador, progressivity indices were estimated for the following three main components of government revenue: direct and indirect taxes and contributions to social security. The case study found that while direct taxes were relatively neutral (progressive in rural areas and regressive in urban), indirect taxes were highly regressive. Contributions to social security were also found to be regressive. In Mexico, the case study reported that while direct taxes appear to be neutral, indirect taxes are somewhat more regressive. Overall, the distribution of payments for health—including private out-of-pocket expenditure, which was found to be progressive—was assumed to be neutral.

The analysis of the source of financing for national health systems was not included in the reports from Guatemala and Peru. However, based on the tax structure of Guatemala, the authors argue that the financing of government programs, including the public component of the national health system, tends to be regressive. Indirect taxes, which are in general regressive, accounted for nearly 80% of government revenues.

All the country case studies reported large differences in the level of private expenditures on health by income groups. Private expenditures on health were found to be progressive and more concentrated than the distribution of income in the cases of Brazil, Jamaica, Mexico, and Peru. In these countries the share of private expenditures on health increased with the level of income (income elasticity greater than one). The Mexican study reported that findings from the 1994 survey were different from those obtained in an earlier survey (1992), which found that the share of expenditures on health care services was higher in low-income groups than in the higher-income groups. In Guatemala, results from the most recent National Household Income Expenditure survey reported a similar result. The share of expenditure on health services increased with income, from 3.0% in the lowest-income group to an average of 6% in the higher-income groups.<sup>15</sup> In the case of Ecuador, the study found that the share of expenditures on health was higher in the third and fourth quintiles (Q3 and Q4) than in the first, second, and fifth

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<sup>15</sup> Income groups are classified by income range, not by quintiles or deciles. Results from this survey were not available when the Guatemala case study was completed (See INE, 1999).

quintiles (Q1, Q2, and Q5). Cross-country comparisons of data on the composition of national health care expenditures suggest that the larger the share of government expenditure on health as a percentage of GDP (Jamaica and Mexico), the smaller the differences in overall consumption expenditures between low- and high-income groups (Brazil, Ecuador, Guatemala, and Peru).

Data on the share of private expenditures on health insurance and prepaid plans for these countries reveals that these are of some significance in the case of Brazil (around 3.5% of household income, in 1994-1995) for all income levels. For the other countries for which this information is available (Ecuador, Guatemala, Mexico, and Peru), private insurance expenditures represent less than 0.5% of total household income and are concentrated in the upper-income groups.<sup>16</sup>

### *Distribution of Benefits*

In most cases, the studies revealed that public sector expenditures do very little to correct health care expenditure inequalities associated with private consumption and income inequalities. In four of the countries, the reports included an analysis or data that served to reveal the distribution of government expenditures on health-related goods and services (benefit-incidence): Ecuador, Guatemala, Jamaica and Peru. The results are presented in Table 3 and Figure 3. The table shows the distribution of the benefits of government expenditures by income or socioeconomic quintiles. The last column indicates the amount of public expenditures being distributed as a percentage of GDP.

**Table 3. Distribution of the benefits of government expenditure on health: Ecuador, Guatemala, Jamaica, and Peru**

	Q1	Q2	Q3	Q4	Q5	% of GDP*
<b>Brazil</b>	--	--	--	--	--	--
<b>Ecuador</b>	12.5	15.0	19.4	22.5	30.5	0.86
<b>Guatemala</b>	12.8	12.7	16.9	26.3	31.3	0.97
<b>Jamaica</b>	25.3	23.9	19.4	16.2	15.2	2.75
<b>Peru</b>	20.1	20.7	21.0	20.7	17.5	1.45
<b>Mexico</b>	--	--	--	--	--	--

-- = Not available

\* Ministry of Health budget only

Sources: Benefit incidence estimates taken or derived from country case studies.

Jamaica (1996) is the only country in which a large part of government expenditure went to the lower-income groups, and thus it is the only country in which government expenditure inequalities were clearly pro-poor.<sup>17</sup> It was estimated that 25.3% of government expenditures went

<sup>16</sup> The estimates for Ecuador were 0.15% of household income, in 1995; 0.03% in Guatemala in 1999-99; 0.14% in Mexico for 1995; and 0.15% in Peru in 1985-1986. See Suárez (1995, 1998b). Data for Guatemala are from INE, 1999.

<sup>17</sup> The relationship between benefits and income (or any other ability-to-pay or wealth measure) is said to be pro-poor (pro-rich) if the distribution of government expenditures going to low-income groups as a proportion of overall government expenditures on health is more (less) concentrated in the low- (high-) income groups. The pro-rich and pro-poor definitions are different from a definition of progressivity or regressivity of the distribution of the benefits of government expenditures. Progressivity (regressivity) requires, in the relative version, that the benefits as a share of household income should increase (decline)

to the poorest 20% of the population. In the case of Peru, the distributive impact is neutral; all income groups benefited equally from government (MOH) expenditures on health care services. Results from Peru for 1997 are similar to the findings from earlier studies. A benefit incidence analysis of public expenditures on health in Peru, using data from a 1996 LSMS-type survey, also found that these expenditures had little significant impact on overall health sector inequalities. Public expenditure was equally distributed among different income groups (Francke, 1998).

In the cases of Ecuador and Guatemala, a larger proportion of government expenditure on health went to high-income groups, leading to pro-rich inequalities. In these two countries the richest 20% received more than 30% of the benefits of government expenditures on health. The lowest 20%, the poorest quintile, received around 13% of the benefits. The distributive impact of government expenditure on health care services was limited by the poor's relatively low level of utilization of health care services. In addition, these two countries are among the countries in which ministry of health expenditure as a proportion of GDP was relatively low: less than 1% of GDP.

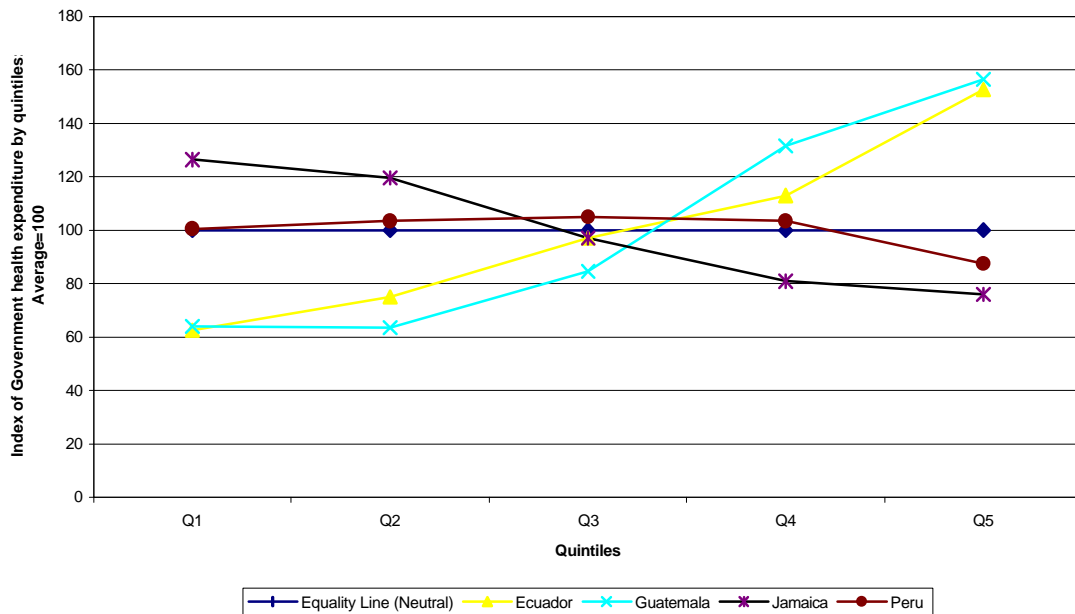
The results from the EquiLAC and IHEP studies are consistent with previous findings about the distribution of the benefits of government expenditures on health. Results for Argentina, Colombia, and Chile are presented in Table A.5 in the annex. These results shows that a greater distributive impact of government health expenditures is found in Argentina and Chile, two countries whose systems can be classified as statutory national social insurance health systems (NHIS). In these two countries, 31% of government expenditures accrued to the population in the poorest quintile. The high-income group, the richest 20%, received less than 8% of the benefits of government expenditures on health. Historically, public sector expenditures on health have represented around 3% of GDP.

However, government expenditures in countries with mixed national health systems (MNHS) also have the potential for achieving an important distributive effect. Results for Colombia for 1970, 1974, and 1993 show that the distributive impact of government expenditures can be changed in favor of the poorest group of the population (see Table A.3). In the case of Colombia, the percentage of government expenditures that accrued to the lowest quintile increased from 21% in 1970 to around 28% in 1974 and 1993. However, these gains were made at the expense of the middle class, the population in the fourth quintile of the income distribution. The share of government expenditure going to that income group decreased from 26% in 1970 to 17.7% in 1974 and 15.9% in 1993. The percentage of government expenditure benefiting the top 20% of the income distribution almost doubled, rising from 6.8% in 1970 to around 12% in 1974 and 1993.

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as income rises. Distribution of the benefits is said to be proportional or neutral if the benefits constitute the same percentage for all income groups.

Figure 3: Distribution of benefits of government expenditures in health



The qualitative results obtained by putting together the estimates and hypotheses on the incidence of the sources of financing and the distribution of the benefits of public expenditures on health are summarized in Table 4. In 4 of the 6 countries included in the study, financing of the public component of national health systems was deemed regressive (ability-to-pay principle): Ecuador, Guatemala, Jamaica, and Mexico. It was undetermined in the case of Brazil and unknown in the case of Peru. Analysis of the distribution of the benefits of government expenditures on health found them to be pro-poor in the case of Jamaica. The share of government expenditures accruing to low-income groups was larger than that accruing to high-income groups. The benefits of government expenditures on health as a share of income declined as income rose (pro-poor). However, as the financing is regressive, the overall distribution of the benefits remains undetermined. The poor paid relatively more and received relatively more, but , it was not possible to determine whether they received more of what they paid for.

In the case of Peru, the benefits of government expenditures on health were equally distributed across income quintiles, with each quintile receiving around one-fifth. Therefore, government benefits as a percentage of income declined as income rose (progressive). Since no data on the fiscal incidence of the financing is presented, the overall impact of government expenditures on health is unknown.

In Ecuador and Guatemala, the overall distributive impact of the financing and benefits of government expenditures on health seemed to be pro-rich. In these countries the distribution of

the benefits of government expenditures on health favored the rich. The first quintile, the poorest, received around 12% of government expenditures on health. The top quintile, the richest, received more than 30% of the benefits. As the financing of the system is regressive, the overall fiscal incidence seems to be regressive (pro-rich).

**Table 4. Fiscal incidence of the financing and distribution of benefits of government expenditures on health**

	Financing	Benefits	Overall Results
Brazil	?	U	U
Ecuador	R	PR	PR
Guatemala	R	PR	PR
Jamaica	R	PP	?
Mexico	R	U	U
Peru	U	N	U

R = Regressive; P = Progressive; (?) = Undetermined; U = Unknown; PR = Pro-rich; PP = Pro-poor; N = Neutral.

## 1. 5. Policy implications of the findings

- *Lack of significant differences in the perception of symptoms of illness or accident (SIA) among income groups suggests that service availability may not be a major constraint for the poor in accessing health care services.*

In general, poor people do not feel sicker than rich ones. While low quality of health care services available to the poor may be a deterrent to demand for health care services among the poor, results from the country case studies show that, in general, they do not suffer illness more frequently or more severely than the rich. This is in spite of strong evidence from morbidity and mortality data showing an inverse correlation between income and the incidence and prevalence of morbidity and higher rates of mortality among low-income groups.

- *Increasing the availability of health care services may not result in an increase in utilization of these services, even if services are provided free of charge or at a low nominal fee.*

Owing to cultural reasons or lack of education, the poor are not taking advantage of health care services provided by government institutions. Increasing awareness of the disproportionately high incidence and prevalence of disease among low-income groups is one mechanism for ensuring that the poor make full use of health care services, where they exist.

- *Low perception of SIA is also an indicator of the limited scope of “community participation” or demand-oriented policies that rely on peoples’ perception of illness or health risks to decide on the type of services a community needs.*

A more technocratic public health policy approach, based on an educated evaluation of the determinants of health status of different income groups, may provide a better understanding of the type of health policies and health care services that will be most conducive to breaking the cycle of disease and poverty.

- *Community participation in financing, through cost recovery or fee-for-service schemes, may aggravate inequalities in access to quality health care services as measured by differences in the level of consumption expenditures by income group.*

The relatively large magnitude of private expenditures as a proportion of overall national health care expenditures, coupled with a ratio of income to expenditure on health services [o.k.? This is a ratio, right? I don't think "an income-expenditure in [on] health services" gets the idea across.] greater than one (share of expenditures as a percentage of total expenditures increases as income increases), suggests that inequalities in access are closely related to individuals' ability to pay. Inequalities in private consumption expenditures, which are more pronounced than inequalities in the utilization of health care services and overall socioeconomic inequalities, suggest that inequality and inequity indices are not capturing differences in the quality of services used by different income and socioeconomic groups as measured by the average expenditure for those services. Increasing the cost of access to public health care services, through cost recovery or fee-for-service schemes, will reduce the demand for those services and increase differences in the level of consumption by low- and high-income groups. The larger the share of out-of-pocket expenditures as a source of financing for health systems, the closer the relationship between access and ability to pay, and, therefore, the larger the inequalities in access/utilization of health care services.

- *There is ample room to improve what governments can do to enhance the distributive impact of public expenditures on health: increasing the amount of resources, reducing regressivity in the financing of health systems, and—by redirecting public expenditures to intervention—inducing greater utilization of health care services by the poor.*

The findings with regard to the distributive impact of government expenditures on health from the EquiLAC and IHEP projects, as well as other studies, suggest that the relative importance of government expenditures on health as a proportion of GDP matters. Government expenditures on health had some significant redistributive impacts (favoring the poor) in countries in which they represented 2.5% or more of GDP (Argentina, Colombia, Chile, and Jamaica). Government expenditure on health was found to favor the rich in countries in which it represented around 1% of GDP or less (Ecuador, Guatemala). Changing the financing of the system from an indirect tax-based system towards a direct tax-based system will reduce the regressivity of health system financing. In most countries financing of the (public) system was regressive, as it was based on indirect taxes. Financing was considered progressive only in the case of Brazil, where in 1997-1998 an earmarked tax on financial transactions and direct taxes on net profits of businesses were the main sources of revenue for the MOH. Redirecting public expenditures toward policies aimed at improving individuals' perceptions of their own health status and health risks may be one effective way to reduce the gap between actual and self-assessed health status, make people aware of their health care service needs, and increase the demand for those services. Such policies may also help improve the distributive impact of government expenditures on health.

The results from the country case studies shed some light on the way in which applied research can be used to assess health system inequalities and inequities, measure inequalities in

health status, and inequalities and inequities in the delivery/access to health care services. In addition, the studies show that general principles of fiscal incidence analysis can be applied to assess the likely distributive impact of government financing and expenditures on health care services. All these tools can be used for an empirically based assessment of the equity impact of health sector (reform) policies and programs.

However, the studies also raise many questions about conceptual and methodological issues, including conceptual issues relating to the definition of proxy variables for measuring health status, health needs, and access/utilization of health services; the concept of equity adopted; and the variables used in ranking socioeconomic groups. Some of the methodological issues are related to the models and standardization procedures used, the consistency between survey results and data from administrative sources, and whether the benefits of government expenditures on health should be assessed on a cost-of-services or a willingness-to-pay basis.

There is also the issue of international comparability of the results and **the transmission mechanism and lag structure** of the linkages between changes in the organization of national health systems and observed health system inequalities. All these are areas in which further empirical research is needed. **[What is meant by “the transmission mechanism and lag structure”? Does this mean that more research is needed to determine what impact changes in the organization of national health systems have on observed health system inequalities and how long it takes for such changes to translate into any measurable effect? If so, I think it would be less confusing to say it that way.]**

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Department, International Monetary Fund. Washington, D.C. 30-34.

## **Annex A.1:**

### **List of country cases studies, members of research teams and their institutional affiliation.**

#### **Brazil**

*Equity in Health in LAC - Brazil*; January, 1999 .

*Investments in Health, Equity and Poverty in Latin America -Brazil*, January 1999.

Prof. Antonio Carlos Coelho Campino\*, \*\*

Prof. Maria Dolores M. Diaz \*\*

Prof. Leda Maria Paulani \*\*

Prof. Roberto G. de Oliveira \*\*

Dr. Sergio Piola \*\*\*

Dr. Andres Nunes \*\*\*

\* Project Coordinator

\*\*Department of Economics, University of Sao Paulo, Sao Paulo, Brazil (USP).

\*\*\* Instituto do Pesquisas Economicas Aplicadas (IPEA)/ Brazilian Research Insitute of Apllied Economics

#### **Ecuador**

*Equity in Health in LAC, Country Studies: Ecuador*; November 1998.

*Inversiones en Salud, Equidad y Pobreza; Estudio de Caso: Ecuador*; Noviembre 30, 1998.

Ec. MSPH. Enrique Lasprilla\*

Ec. Jorge Granda

Ingo. Carlos Obando

Lic. Eduardo Encalad

Sr. Christian Lasprilla

\*Project Coordinator

#### **Guatemala**

*Inversiones en Salud. Equidad y Pobreza: Guatemala, Informe Final*; Octubre de 1998.

Ricardo Valladares

Edgard Barillas\*

GSD Consultores Asociados; Ciudad de Guatemala, Guatemala.

\* Project Coordinator

#### **Jamaica**

*Health and Equity in Jamaica*; Investments in Health, Equity and Poverty in LAC (EquiLAC and IHEP); December 1998.

Prof. Karl Theodore \* \*\*

Prof. Dominic Stoddard \*\*

Prof. Andrea Yearwood \*\*

Prof. Wendell Thomas \*\*

\* Project Coordinator

\*\* Health Economic Unit, University of West Indies, St. Augustine, Trinidad

### **Mexico:**

*"Equity in the Finance and Delivery of Health Care: Results from Mexico"*

June, 1999.

Susan Wendy Parker\*, \*\*

Eduardo Gonzales Pier \*\*\*

\* Project Coordinator

\*\* Progesa-Social Development

\*\*\* Mexican Institute of Social Security/ Instituto Mexicano de Seguridad Social (IMSS).

### **Peru**

Equidad en la Atencion en Salud; Peru 1997. Informe Final; Enero, 1999.

Margarita Petretera\*, \*\*

Luis Cordero \*\*\*

Augusto Portocarrero \*\*\*\*

\* Project Coordinator

\*\* Organizacion Panamericana de la Salud (OPS).

\*\*\* Superintendencia de Entidades Prestadoras de Servicios de Salud (SEPS)

\*\*\*\* Ministerio de Salud, Oficina General de Planificacion (MINSA-Peru).

**Table A.1: Types of national health care systems according to institutional providers: LAC region**

	Type I NHS		Type II NHIS			Type III MNHS
	I.1	I.2	II.1	II.2	II.3	III.
<b>Institutional configuration</b>						
<b>Public Sector (Statutory):</b>						
Central Government ( Ministry of Health and Other Public Institutions) a/						
Local Governments (State/Provincial, Municipal) b/						
<b>Social Insurance Systems (Mandatory)</b>						
Single (National)						
Multiple: Provincial, Departmental, Occupational						
Mix-managed Sickness Funds (competitive, occupational)						
<b>Private Sector (Voluntary):</b>						
Institutional Providers c/						
Individual Providers c/						
Health Insurance & Pre-payment Schemes						
Nonprofit Institutions Serving Households (NPISH).	( r )					
Households						

a/ Other public health program and institutions receiving transfers from the central government but operate with their own budgets.

b/ Countries with federal systems, in which local governments (provincial, state, departmental) play an active role in deciding on resource allocation and revenue collection.

c/ Providers, in the public-finance sense, means individuals or institutions involved in the financing, production, or provision of health care services and health insurance plans.

( r ) = Restricted role

The shaded cells indicate the degree of importance of the type of institution in the health system (darker shading indicates that the institution plays a greater role), while the blank cells indicate the absence of that type of institution in the corresponding health system. [added explanation o.k.??]

NHS: National Health Service System

NHIS: National Health Insurance System

MNHS: Mixed National Health System.

Source: Suárez (1998).

**Table A.2: EquiLAC-IHEP country case studies: data sources by country, year, type of survey, coverage, and institutions conducting the survey**

<b>Country</b>	<b>Year</b>	<b>Type of Surveys</b>	<b>Coverage</b>	<b>Institutions</b>
Brazil	1996/97	LSMS (PPV)	Partial; urban & rural areas	IBGE/World Bank
Ecuador	1995	LSMS (ENCV)	National	INEC
Guatemala	1998/99	ENIG	National	INE
Jamaica	1993	LSMS	National	PIOJ INEGI
Mexico	1994	ENSA	National	
	1994	ENIGH		
Peru	1997	LSMS (ENIV)	National	Cuanto S.A. World Bank

LSMS = Living Standard Measurement Survey

PPV = [what is PPV?]

ENCV : Encuesta Nacional de Condiciones de Vida [National Survey of Living Conditions]

ENIG : Encuesta Nacional de Ingresos y Gastos [National Income-Expenditure Survey]

ENIGH : Encuesta Nacional de Ingresos y Gastos de los Hogares [National Household Income-Expenditure Survey]

IBGE, INE, INEC, INEGI: National statistics offices of the corresponding countries. PIOJ: Planning Institute of Jamaica. Cuanto S.A. is a private consulting firm.

**Table A.3: Health status inequalities, summary of findings SAH, SIA and Chronic Illness**

Countries	C	C*	I*	(t-Statistic)
<b>SAH</b>				
Brazil			( < 0 )	( n.a. )
Jamaica (1989)	-0.0919		-0.0345	(-6.3917)
Mexico	-0.2120		-0.0970	(-7.0410)
<b>SIA/(Curative Care):</b>				
Brazil a/: LSQ	-0.0402	0.0034	-0.0436	(-5.8491)
Logit	-0.0402	0.0034	-0.0436	(-5.8483)
Probit	-0.0402	0.0036	-0.0435	(-5.8306)
Ecuador a/	0.0090	0.0075	-0.0015	( n.a. )
Jamaica (1993-96)a/	-0.0300		0.0018	( n.a. )
Jamaica b/	-0.0458		-0.0042	( n.a. )
Mexico c/	0.0014		-0.0185	(-2.5110)
Peru d/			( 0.062)	
<b>Chronic Illness d/:</b>				
Brazil	0.0424	0.902	-0.0420	(-5.6091)
Jamaica (1989)			-0.0603	(-2.4480)
Jamaica (1993-96)	-0.0866		-0.0051	( n.a. )
Mexico	0.1660		0.0889	(-10.123)

a/ All individuals reporting SIA within the last four weeks.

b/ Number of days ill in the last four weeks.

c/ All individuals reporting SIA within last two weeks.

d/ Reported as “long-term illness” or specific chronic conditions.

I\* value refers to the value of the Gini coefficient, it indicates pro-poor inequalities in the distribution of SIA.

1989 data for Jamaica are from Wagstaff and van Doorslaer (1998a).

n.a. = not available.

Source: Prepared using information from the country case study reports and background papers.

**Table A.4: Inequalities and inequity in the delivery/utilization of health care services: curative, chronic, and preventive a/**

<b>Countries/Variables</b>	<b>Cm</b>	<b>Cn</b>	<b>Hiwv</b>
<i>Curative Care</i>			
Brazil	0.0568	0.0401	+ 0.0969
Ecuador	0.07728	0.0090	+ 0.0682
Jamaica b/	0.1670	-0.0032	+ 0.1700
Mexico	0.0820	-0.0040	+ 0.0860
Peru	0.1672	-0.0563	+ 0.1109
<i>Chronic Care</i>			
Brazil	0.1192	0.0544	+ 0.0648
<i>Hospitalization:</i>			
Mexico	0.1300	-0.0051	+ 0.099
<i>Preventive Care</i>			
Brazil	0.1943	0.0122	+ 0.1821
Ecuador	0.1167	0.0099	+ 0.1077
Mexico	0.1220	0.0230	+ 0.1250

a/ Least square estimates only. In general, the studies found little difference in estimates using alternative econometric techniques (Logit or Probit).

b/ Estimates derived from estimates of C\* from Table A.3 and of C presented in the section on computation methods.

Source: Prepared using information from the country case study reports.

**Table A.5: Distribution of benefits of government expenditures on health in selected countries of Latin America and the Caribbean**

	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
Argentina	31.0	18.0	26.0	18.0	7.0
Brazil	--	--	--	--	--
Colombia, 1970	21.4	26.9	19.0	25.9	6.8
Colombia, 1974	28.0	22.0	20.1	17.7	12.2
Colombia, 1993	27.4	25.6	18.7	15.9	12.5
Chile	31.0	25.0	22.0	14.0	8.0
Ecuador	12.5	15.0	19.4	22.5	30.5
Guatemala	12.8	12.7	16.9	26.3	31.3
Jamaica	25.3	23.9	19.4	16.2	15.2
Peru	20.1	20.7	21.0	20.7	17.5
Mexico	--	--	--	--	--

-- : Not available.

Sources: Estimates for Ecuador, Guatemala, Jamaica, and Peru are taken or derived from EquiLAC-IHEP country case-study reports. Estimates for Argentina are from FIEL (1995). Estimates for Colombia for 1970 are from Meldau (1980) - distribution of health services benefits by income class estimated at cost-of-service basis; for 1974 from Selowsky (1979); and for 1993 from Molina et al (1993) reported in May (1996). Estimates for Chile from World Bank (1997a). The figures for Argentina and Chile are rounded.