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Equity in Health and Health Care in the Philippines

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Contents

Abstract

Equity is an abstract concept covering philosophical issues such as fairness and social justice, making its definition and measurement very complex. This study attempts to define and measure equity in health status and health care utilization using the equity index of opportunity. The study introduces a methodology to explain equity in terms of between- and within-group equity. While the between-group equity implies equal treatment for equal needs, the within-group equity implies that individuals with unequal needs should be treated unequally according to their different needs. The proposed methodology can be applied to any socioeconomic and demographic group. Empirical analysis is carried out using Demographic and Health Surveys and Annual Poverty Indicator Surveys conducted in the Philippines.

I. Introduction

There has been increased attention to issues of equity in health and health care as governments and international organizations renew their commitment to improve the health status of the poor and marginalized (Gwatkin 2000, Wagstaff 2000). Equity is one of the basic principles of primary health care, and features implicitly or explicitly in the health policies of most countries (WHO 1981 and 2004).

Equity is an abstract concept covering philosophical issues such as fairness and social justice, making its definition and measurement very complex. Before John Rawls's *A Theory of Justice* (1971), researchers mainly assessed fairness or equity in social allocation based solely on the distribution of outcomes. Since then, significant conceptual shifts have taken place: Rawls's "difference principle" sought to maximize the availability of primary goods to the least privileged group; Sen (1985) spoke of capabilities in terms of the set of possible functionings that an individual might enjoy and emphasized the distribution of those capabilities; Dworkin (1981) equated fairness with equality of resources, not outcomes; and Roemer (1998) emphasized equality of opportunities. This evolution in the theory of social justice over the past three decades or so is a movement away from actual *ex post* outcomes (such as incomes) and their effects on the well-being of the individual, and toward sets of potential outcomes *ex ante* (such as capabilities or opportunities).

Equity related to health and health care may be viewed from three broad perspectives: (i) equity in health, (ii) equity in health service delivery, and (iii) equity in health financing. While this study deals with all three, the first two constitute the focus of this study. In this context, it is important to discuss operational definitions of (i) and (ii).

Equity in health is defined as minimizing avoidable inequalities in health and their determinants between groups of people who have different levels of underlying social advantage or privilege. Inequities exist when there are disparities in health and health care and their determinants that are deemed to be avoidable, unfair, and unjust. Hence not all inequalities in health between population groups are regarded as inequities. Inequities in health and health care specifically refer to disparities between groups of people related to their social position as measured by characteristics such as income or wealth, occupation, education, geographic location, gender, or ethnicity. Health inequalities due to inevitable and unavoidable conditions such as biological and genetic variations do not constitute inequities.

Equity in the delivery of health services is to ensure that all people have access to a minimum standard of health services if and when required and not by certain criteria such as ability to pay. A main objective of this study is to assess how equitable the utilization of basic services in health is. To achieve this, the study uses a concept of equity that is related to equality of opportunities: every person in society should enjoy the same opportunity to access basic services if and when required irrespective of his or her economic, social, and demographic circumstances. Moreover, to make this assessment, we measure both the levels of opportunities available to the population (i.e., overall access to opportunities) and how these opportunities are distributed across various socioeconomic and demographic groups (i.e., distribution of opportunities). In this study, opportunities refer to variables that influence outcomes and at the same time are critical for human development.

The opportunity to access a basic service can reasonably be measured by the probability that an individual has of having access to the service if and when needed.[1] A service can be defined as perfectly equitable if every individual in society enjoys exactly the same probability of access. This is of course an extreme situation in the sense that all individuals cannot have the same probability of access to any service. Basic services are provided by both private and public sectors; as such, richer individuals can afford to buy more and better quality services from the private sector, while the poor depend mainly on the services provided by the public sector. Public services are goods whose consumption yields collective benefits, and it is well known that there are several reasons for which an unregulated market will not provide enough public services. The provision of public services by the government is largely justified on equity grounds: a minimum level of consumption of goods such as health and education should be available to everyone in society. However, public services often fail to reach poor people—in many developing countries, public facilities impose user fees for services that the poor cannot afford to pay.

This study focuses on the extent to which the poor are able to utilize services relative to the nonpoor. We define a service to be equitable if the poor have a higher probability of utilizing the service than the nonpoor. Following this definition, the study adopts the equity index of opportunity (equity index) as a measure of equity. Introduced by Ali and Son (2007), the equity index measures the extent to which the opportunities to access basic health care are distributed between the poor and the nonpoor. A graphical representation of the level and distribution of opportunities can be made using an opportunity curve.

Furthermore, the study develops a methodology that decomposes the equity index into between- and within-group equity. The proposed methodology can be applied to any socioeconomic and demographic group. While the between-group equity implies equal treatment for equal needs, the within-group equity implies that individuals with unequal needs should be treated unequally according to their different needs. As pointed out

[1] Note that actual access to services is a different concept from probability of access. An individual may decide not to access services but still may possess a high probability of access.

earlier, equity implies that every individual in society should have equal access to services if and when needed, irrespective of their individual circumstances such as income, wealth, occupation, education, geographic location, and ethnicity. Consider a population divided according to their occupation. In this case, the between-group inequity may be referred to as horizontal inequity in the sense that individuals belonging to different occupational groups are treated differently.[2]

Corollary to this, there is a U-shaped relationship between the age of a person and his or her needs for medical services. Intuitively, a high between-group inequity would be observed across different age groups. On the other hand, the within-group inequity controls for differences in need due to age. If within-group inequity after controlling for age still exists, then this suggests there are factors other than age that contribute to inequity in utilization of health care.

Section II of this paper is devoted to methodology. It explains the opportunity index, which takes into account both the level of opportunities available to the population and how opportunities are distributed between the poor and the nonpoor. The equity index, which measures the equitability of health status and health care utilization, is then derived from the opportunity index. The equity index is able to answer several questions: Are health and health care pro-poor or anti-poor? How much pro-poor or anti-poor are they? The section also develops formulas to calculate between- and within-group equity (or inequity). Section III quantifies and analyzes equity in health status and health care utilization in the Philippines. While the proposed methodology is applied only to the Philippines in the current study, it can be easily applied to other countries. Section IV concludes the study by providing policy recommendations.

II. Methodology

Suppose there are n persons in a society with economic welfare levels $x_1, x_2, \ldots\ldots, x_n$, where the person with economic welfare x_1 is the poorest person and the person with economic welfare x_n is the richest person. Economic welfare can be measured either by expenditure or income. In this study, we measure the economic welfare of an individual by the per capita expenditure of a household where the individual belongs. Individual i is said to be poorer than the individual j if x_i is less than x_j.

Let y_i be the probability that the ith individual is able to utilize a service when and if needed. We define a service to be equitable if the poor have a higher probability of utilizing the service than the nonpoor. Following this definition, it is obvious that a service is equitable (inequitable) if y_i decreases (increases) monotonically with i: the poorer (richer) an individual, the greater (smaller) the probability of utilization. In practice, a

[2] An implication of this inequity is that access to services is determined by an individual's occupation.

monotonic relationship seldom happens. We should therefore have an overall index of equity that measures the degree of equity or inequity in the utilization of a service when no such monotonic relationship exists. This index is derived in the next subsection.

A. Equity Index

Suppose the economic welfare x of an individual is a random variable with probability density function $f(x)$, and $y(x)$ is the probability of opportunity to access a service by an individual with economic welfare x, then the average opportunity enjoyed by the whole population is given by

$$\bar{y} = \int_0^{\infty} y(x)f(x)dx \tag{1}$$

Government policy should be to expand the opportunities available to society. In an ideal situation where everyone in society has access to a service, $\bar{y}$ will be equal to 100.

The main drawback of this measure is that it is completely insensitive to the distribution of opportunities across individuals with different levels of economic welfare. The maximization of $\bar{y}$ does not necessarily achieve greater opportunities for the poor. In fact, a policy may increase $\bar{y}$, but still the opportunities available to the poor may decline.

Ali and Son's (2007) opportunity index takes into account not only average opportunities available to the society but also how the opportunities are distributed across the individuals. This index gives the largest weight to the poorest person in society, and the weight decreases as economic welfare increases. Suppose $\bar{y}(x)$ is the average opportunity enjoyed by individuals who have income less than x, then their opportunity index is given by[3]

$$\bar{y}^* = \int_0^{\infty} \bar{y}(x)f(x)dx \tag{2}$$

The greater $\bar{y}^*$ is, the greater will be the opportunities available to the population. The government policy should be to maximize the value of $\bar{y}^*$. If everyone in the population enjoys exactly the same opportunity in terms of accessing a service, then it can be shown that $\bar{y}^*$ will be equal to $\bar{y}$. Thus, the deviation of $\bar{y}^*$ from $\bar{y}$ indicates how opportunities are distributed across the population. If $\bar{y}^*$ is greater than $\bar{y}^*$, then opportunities are equitably distributed, i.e., pro-poor. In a similar manner, if $\bar{y}^*$ is less than $\bar{y}$, opportunities are inequitably distributed, i.e., anti-poor. This leads to the equity index:

$$\varphi = \frac{\bar{y}^*}{\bar{y}} \tag{3}$$

[3] Note that $\bar{y}(x)$ approaches $\bar{y}$ when x approaches infinity.

which implies that opportunities are equitable (inequitable) if φ is greater (less) than 1. For instance, $\varphi = 1.09$ implies that the distribution of opportunities contributes to equity by 9%. Similarly, $\varphi = 0.95$ suggests that the distribution of opportunities contributes to inequity by 5%.

B. Between-Group and Within-Group Equity

Suppose there are k mutually exclusive socioeconomic and demographic groups. Inequity can arise from within and/or between groups. In this section, we attempt to capture within- and between-group inequities. For instance, we want to explain how much a regional difference in opportunities contributes to the overall equity or inequity in a country. In this case, we quantify the contribution of the distribution of opportunities between regions to the total equity or inequity. If inequity between regions is found to be high, this suggests that well-off regions tend to enjoy greater opportunities than poorer regions. In such circumstance, a plausible policy prescription would be to reallocate public resources toward the poorer regions. On the other hand, if within-region inequity is high, then regional specific policies need to be introduced.

As defined earlier, $\bar{y}(x)$ is the average opportunities enjoyed by individuals who have income less than x, which can be expressed mathematically as

$$\bar{y}(x) = \frac{F^*(x)}{F(x)} \tag{4}$$

where

$$F^*(x) = \int_0^x y(X) f(X) dX \tag{5}$$

and

$$F(x) = \int_0^x f(X) dX \tag{6}$$

Note that $F(x)$ is the cumulative distribution function when individuals are arranged in ascending order of their economic welfare x. It is interpreted as the percentage of individuals who have economic welfare less than or equal to x. $F^*(x)$ may be called cumulative opportunity distribution function and is interpreted as the total opportunities enjoyed by the population with economic welfare less than or equal to x. We can define $F(x)$ and $F^*(x)$ for the jth group as

$$F_j(x) = \int_0^x f_j(X) dX \tag{7}$$

and

$$F_j^*(x) = \int_0^x X f_j(X) dx \tag{8}$$

where $f_j(X)$ is the probability density function of the *j*th group. If a_j is the population share of the *j*th group, then we can always write

$$f(X) = \sum_{j=1}^{k} a_j f_j(X) \tag{9}$$

Substituting equation (9) into equations (7) and (8) we immediately obtain

$$F(x) = \sum_{j=1}^{k} a_j F_j(x) \tag{10}$$

and

$$F^*(x) = \sum_{j=1}^{k} a_j F_j^*(x) \tag{11}$$

respectively. Using equations (11) and (4) into equation (2), we obtain

$$\bar{y}^* = \sum_{j=1}^{k} a_j \int_0^{\infty} \frac{F_j^*(x)}{F(x)} f(X) dX \tag{12}$$

If everyone in the society has exactly the same opportunity equal to $\bar{y}$, then we must have

$$F_j^*(x) = \bar{y} F_j(x) \tag{13}$$

which on substituting in equation (12), gives $\bar{y}^* = \bar{y}$, suggesting that perfectly equal distribution of opportunities will give perfect equity, which is equal to 1.

Between-group equity is captured by assuming that every individual within a group has the same opportunity but the average opportunity varies across groups. This requirement will be met if

$$F_j^*(x) = \bar{y}_j F_j(x) \tag{14}$$

which on substituting in equation (12), gives the between-group opportunity index as

$$\bar{y}_b^* = \sum_{j=1}^{k} a_j \bar{y}_j \int_0^{\infty} \frac{F_j(x)}{F(x)} f(X) dX \tag{15}$$

Therefore, the between-group equity index is defined as

$$\varphi_b = \frac{\bar{y}_b^*}{\bar{y}} \tag{16}$$

The between-group variation in opportunities is equitable (inequitable) if φ_b is greater (less) than 1.

The within-group equity is captured when the variation in opportunities exists within each group but the between-group variation is zero, i.e., different groups have exactly the

same average opportunities. This requirement will be met if we substitute $F_j^*(x) = \frac{\bar{y}F_j^*(x)}{\bar{y}_j}$ in equation (12) to obtain the within-group opportunity index

$$\bar{y}_b^* = \bar{y}\sum_{j=1}^{k}\frac{a_j}{\bar{y}_j}\int_0^{\infty}\frac{F_j^*(x)}{F(x)}f(X)dX \tag{17}$$

which gives rise to the within-group equity index as

$$\varphi_w = \frac{\bar{y}_w^*}{\bar{y}} \tag{18}$$

The within-group variation in opportunities is equitable (inequitable) if φ_w is greater (less) than 1.

The equity index, $\varphi = \frac{\bar{y}^*}{\bar{y}}$, measures equity across all individuals and thus can be referred to

as the total equity in the delivery of a service. Like Theil's (1967) inequality measure, total equity cannot be expressed as the sum of between- and within-group equity. This is because the social opportunity function used to derive equity index is interdependent across the population. This should not be regarded as a serious drawback considering that individuals assess their utility from the opportunities that are available to them in relation to the opportunities available to other individuals in society. The measures of between- and within-group equity derived in this study quantify relative contributions of equity (or inequity) between and within groups to total equity (or inequity).

III. Empirical Analysis

The proposed methodology outlined in Section II is applied to Philippine data. For this purpose, the Annual Poverty Indicators Surveys (APIS) conducted in 1998, 2002, 2004, and 2007 are used as well as the National Health and Demographic Surveys (NHDS) conducted in 1998 and 2003.

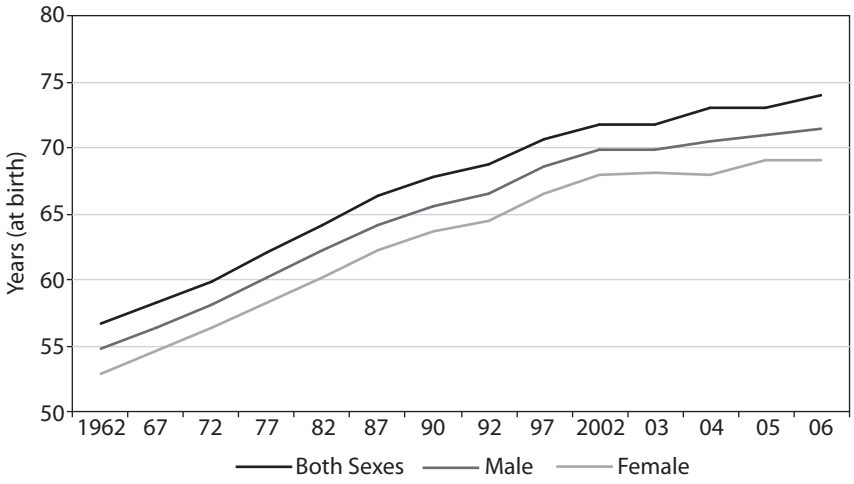
The main objective of this section is to assess equity in health status and health service delivery.

A. Health Status

Aggregate health outcomes have improved significantly over the last five decades in the Philippines, with life expectancy at birth consistently improving over the period. On average, a Filipino born in 2006 could expect to live to 71.5 years, up from 54.8 in 1962.

Women continue to live longer than men—74 years for women compared to 69 years for men in 2006—and men are unable to catch up as life expectancy for men has increased only 16.1 years since 1962 compared with 17.3 years for women (Figure 1). A higher life expectancy among women compared to men should not be regarded as inequity favoring women because this could be due mainly to biological reasons; however, a growing gap between the two groups should be of concern to policy makers. Moreover, rather than merely observing the life expectancy at birth for the Philippines over time, it would be more useful to look into how the country performs relative to its neighboring countries in the region. This issue will be examined later in this section.

Figure 1: Life Expectancy at Birth

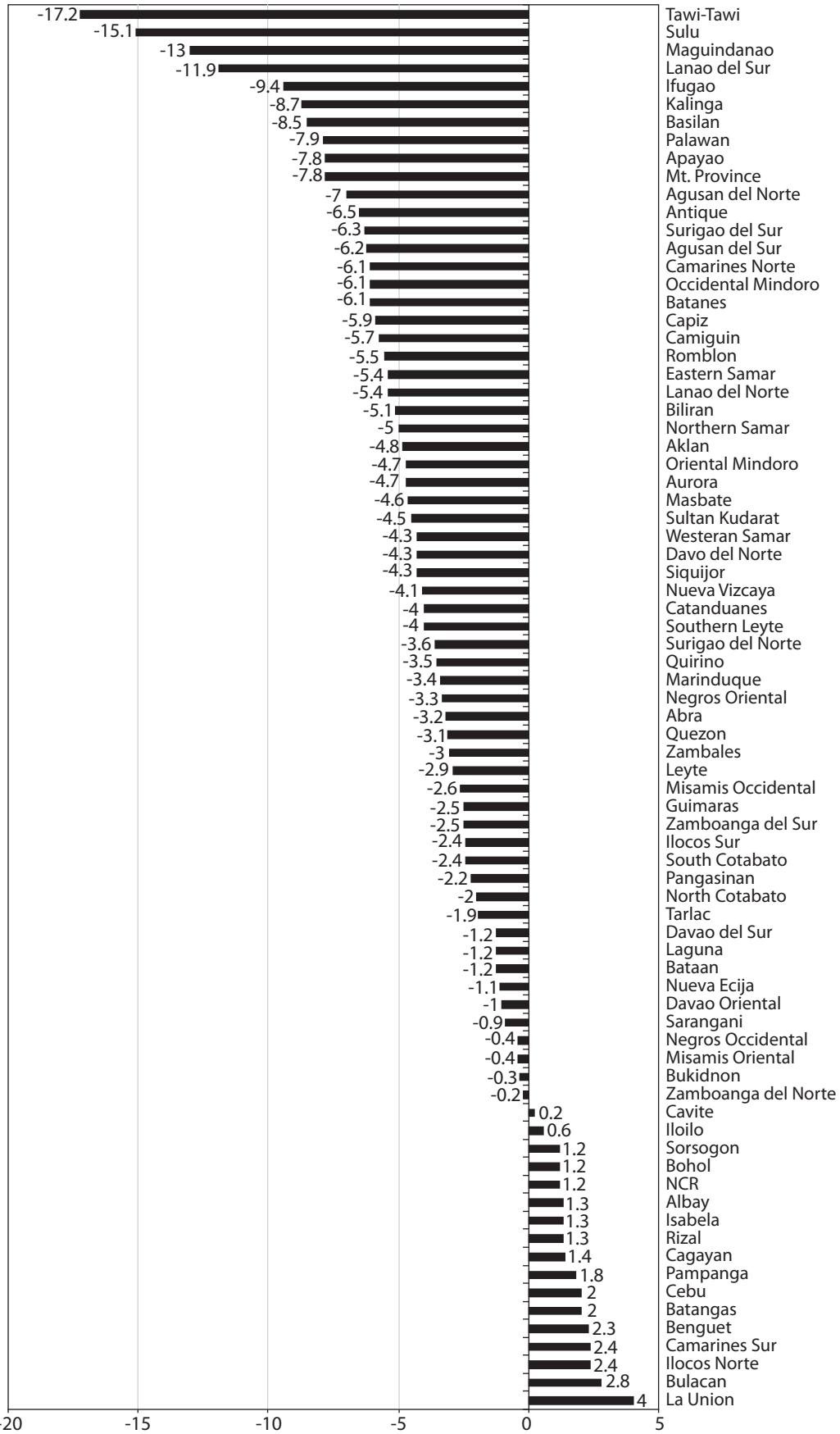


Source: World Bank. *World Development Indicators Online.* Available: http: //devdata.worldbank.org/dataonline/

Life expectancy is substantially shorter in provinces in Muslim Mindanao; for instance, a child born in Tawi-Tawi in 2006 could expect to live only 53.4 years, which is 17.2 years less than the national average of 70.6 years and 21.2 years less than life expectancy at birth in La Union (Figure 2). This is indeed a prime example of monumental inequity that exists across provinces within the country. The presence of prolonged armed conflict in Muslim Mindanao may account for early deaths directly and indirectly through the destruction of health facilities and the unwillingness of health personnel to locate in these areas.

Infant, child, and maternal mortality rates have significantly decreased during recent years due mainly to improved technology and delivery of health services. The infant mortality rate has declined gradually from 38 deaths per thousand in 1993 to 25 deaths per thousand in 2008. Meanwhile the under-5 mortality rate has almost halved during 1993–2008, falling from 64 to 34 deaths per thousand. Likewise, maternal mortality rates have decreased from 209 to 162 deaths per thousand from 1998 to 2006. Such improvements in aggregate health status have come about with improvements in medical

Figure 2: Life Expectancy at Birth by Provinces Relative to the National Average, 2006



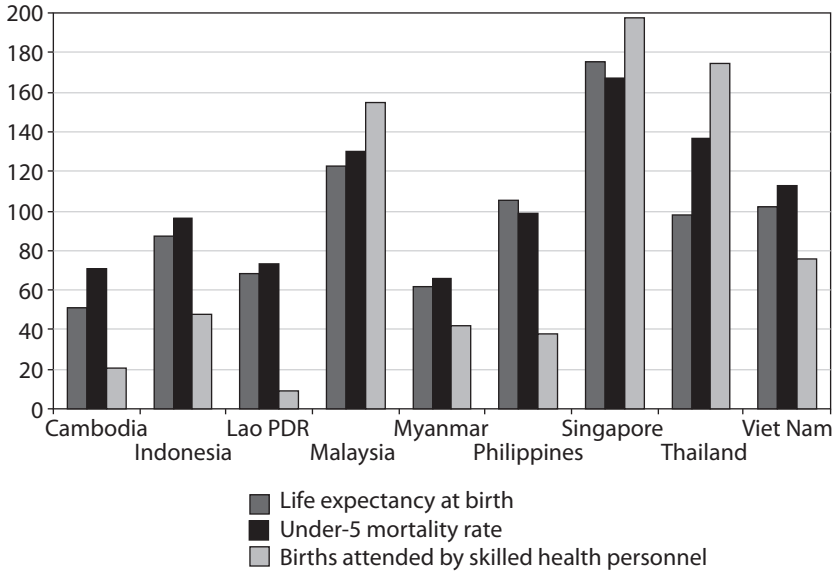
Note: Graph shows provincial differences in life expectancy relative to the national average of 70.6 years. The national average life expectancy is the weighted average of the provincial life expectancies where the weight is the population of each province.

Source: Author's estimates based on the *Philippine Human Development Report 2008/2009*.

technology, specifically the treatment of communicable diseases, as well as policy efforts that have focused on disease prevention such as programs to increase access to basic sanitation and water facilities and expansion of immunization and vaccine programs against preventable diseases.

However, health outcomes in the Philippines are still not up to par with its neighboring Asian countries such as Malaysia, Singapore, and Thailand (Figure 3). Life expectancy and under-5 child mortality rates are far behind those of Malaysia and Singapore. On the other hand, births attended by skilled health personnel (which is highly associated with maternal mortality) is only two-fifths of the world average and is much worse than even Viet Nam, which has a per capita gross domestic product of about two thirds that of the Philippines.

Figure 3: Relative Achievements in Health Outcomes for Selected Asian Countries, 2000–2007



Note: The graph presents the relative achievement index, that is, the normalized index of achievement relative to the average achievement of the world; the world index is set to 100. The achievement index considers a further increase in the standard of living of a country that is already at a higher level as an achievement greater than that of another country with an equal increase in standard of living but from a lower base.

Source: Son (2009).

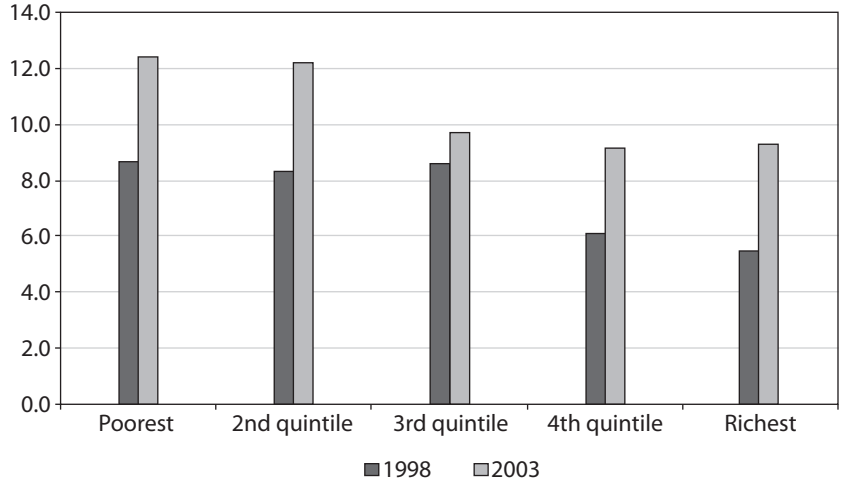
Health status is poorer among children and women at the lower income group. In 2003, children in the poorest 20% of households have a nearly 35% higher risk of suffering from diarrhea compared to children in the wealthiest 20% of households (Figure 4).[4]

[4] The results should be interpreted with care because seasons may affect the incidence or prevalence of certain diseases. For instance, diarrhea may be more prevalent during the rainy season when sanitation and hygiene are worse compared to the dry season. However, as tuberculosis (TB) is an airborne chronic disease and is influenced by poor living conditions, the disease could be prevalent irrespective of seasons. In this context, the results could be influenced by the survey periods. The 1998 NDHS was conducted during the dry season, February–April, whereas the 2003 NDHS was collected during the rainy season, June–September. This suggests that the estimated prevalence of diarrhea in the current study may need to be interpreted with this seasonality issue in mind.

The prevalence of diarrhea is strongly associated with sanitary conditions of households (Strina et al. 2003) as children from poor households are less likely to have access to a toilet facility than those in wealthier households. Additionally, poor children are more likely to live in households where highly polluted cooking fuels are used and safe drinking water is not available.

Moreover, the prevalence rate of diarrhea has increased from 1998 to 2003 for all income groups. This could point to a deterioration of sanitation and living standards over the years as the population has continued to increase while health and sanitation services have failed to catch up. Moreover, overcrowding and worsening pollution could contribute to higher incidence of diarrhea.

Figure 4: Prevalence of Diarrhea by Quintile among Children aged 0–5 years, 1998–2003



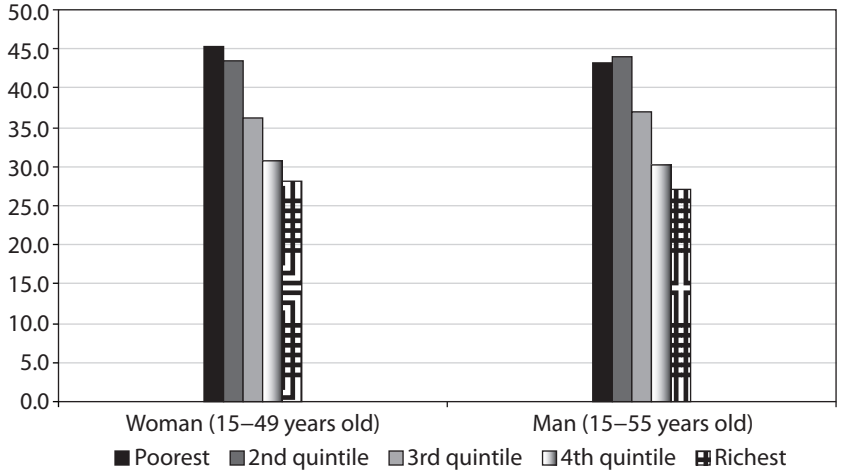
Source: Author's estimates based on NDHS 1998 and 2003.

TB continues to be a public health concern in the Philippines. The government reported in 2002 that pulmonary TB was the sixth leading cause of morbidity, and TB in all forms was the sixth leading cause of mortality. In 2003, the Philippines ranked ninth in the world and third in the Asia and Pacific region in terms of the estimated number of new TB cases (WHO 2005). Estimates of disability adjusted life years for the Philippines in 1997 indicate that about half a million years of healthy life are lost annually because of illness and premature death from TB (Peabody et al. 2005).

According to the 2003 National Demographic and Health Survey (NDHS), about 35% of adults aged from 15 to 49 years for females and from 15 to 55 years for males were reported to have at least one symptom of TB. Moreover, the results suggest that adults in the poorest 20% of households are at almost 60% higher risk of being infected by TB than adults in the wealthiest 20% of households (Figure 5). This finding is to be expected because the incidence of TB declines with improved living conditions. People living in

wealthier households are endowed with better and less crowded living conditions and nutritional status and are thus less likely to suffer from the infectious disease.

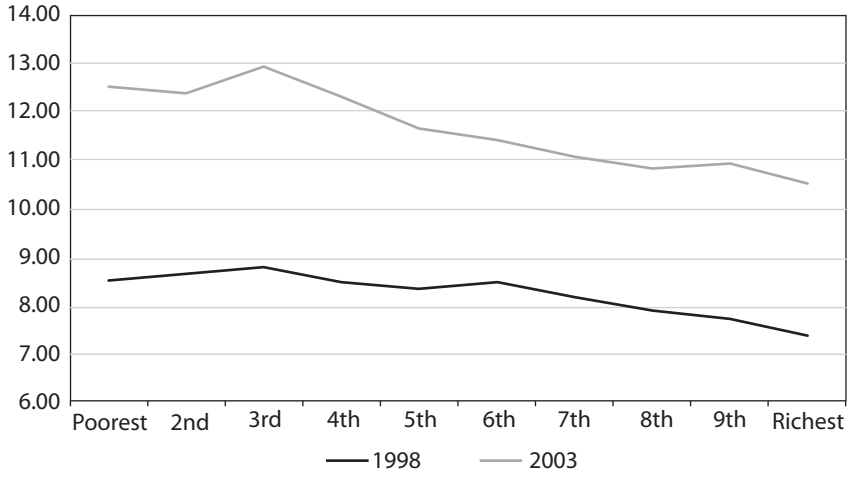
Figure 5: Proportion of Women and Men Having One Symptom of Tuberculosis, 2003



Source: Author's estimates based on NDHS 2003.

Data from the 2007 National TB Prevalence Survey indicates that the prevalence of TB is higher among males and females who are above 50 years old, perhaps due to their weaker immune systems. This calls for a policy intervention to control TB that is focused on the elderly.

Figure 6: Opportunity Curve for the Prevalence of Diarrhea among Children below 5 years old, 1998 and 2003 (percent)



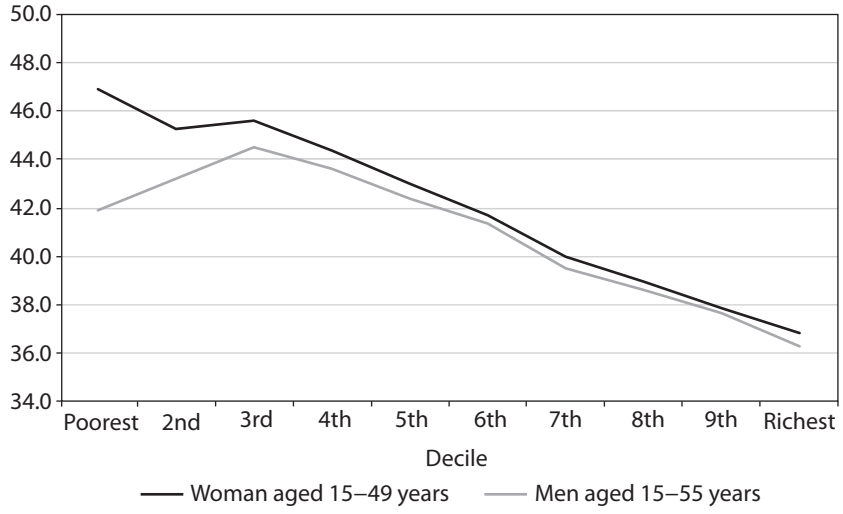
Source: Author's estimates based on NDHS 1998 and 2003.

The opportunity curves for the prevalence of diarrhea in 1998 and 2003 are shown in Figure 6. The opportunity curve shows the average prevalence of diarrhea for the bottom 10% of the population, followed by the bottom 20%, and up to the average prevalence of diarrhea for the entire population. Thus, if the opportunity curve is above the horizontal line drawn from the rightmost point (i.e., average prevalence for the population), inequity can be measured as the area between the opportunity curve and the horizontal line.

Two findings are worth highlighting from Figure 6. First, the opportunity curve has shifted over time, suggesting that the prevalence of diarrhea has become higher across the population over the 1998–2003 period. Second, the inequity biased toward the nonpoor has increased over the period. This can be seen by comparing the size of the area between the opportunity curve and the horizontal line for the two periods: the size of the area for 2003 is larger than that of the area for 1998.

Opportunity curves for TB among adult males and females are presented in Figure 7. These figures also demonstrate a significant burden of TB among the poor, particularly among females: the gap between the two gender groups almost disappears among those from higher deciles. This suggests a higher prevalence of TB among poor adult women in the Philippines. Moreover, the curvatures of the opportunity curves also suggest that the prevalence of TB among the adult population is more inequitable than that of diarrhea among children under 5 years old; i.e., the opportunity curves for TB are steeper than those for diarrhea. This finding confirms the view that TB is a disease that is more prevalent among the poor who tend to have poor nutrition and live in cramped conditions.

Figure 7: Opportunity Curves for Prevalence of Tuberculosis among Adults, 2003 (percent)

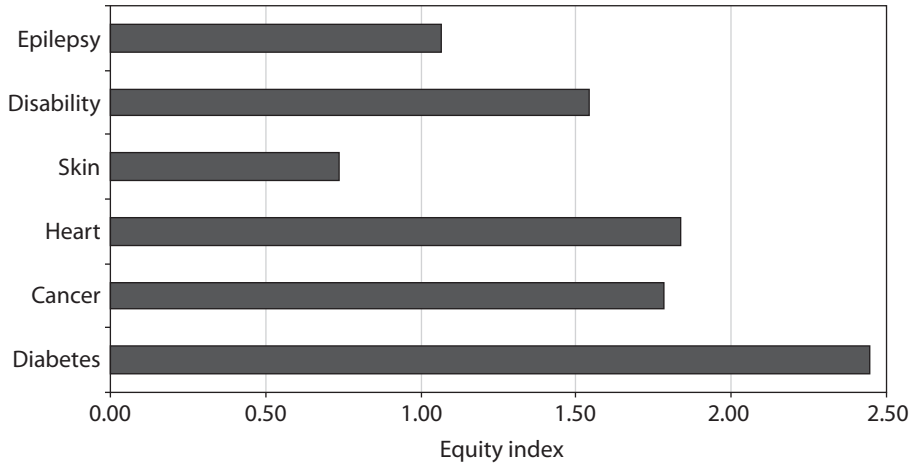


Source: Author's estimates based on NDHS.

B. Utilization of Health Services

This section begins by looking at the major diseases Filipinos tend to suffer from. According to Figure 8, the poor tend to have a higher incidence of diseases such as diabetes, cancer, heart disease, disability, and epilepsy: the equity index for these diseases is greater than 1, suggesting that the poor tend to suffer more than the nonpoor, the exception being skin disease, which is suffered more by the nonpoor.

Figure 8: Equity Index of Major Diseases



Source: Author's estimates based on the APIS 2002.

In particular, the incidence of diabetes is prevalent among people belonging to the lower end of the income distribution, which points to the importance of health literacy. Vulnerable groups not only shoulder the greatest health burden but may also have poorer access to information and communication technologies, and face important shortcomings in their overall literacy levels or general language barriers. Health literacy implies the achievement of a level of knowledge that enables one to take actions to improve personal and community health by changing personal lifestyles and living conditions. Illness such as diabetes requires a good level of health literacy, and evidence suggests that inadequate health literacy is widespread and that the poor are likely to be severely affected. To improve health literacy, social marketing has been shown to be an effective tool to raise awareness about specific issues such as stigmatization and discrimination, and to provide health information about the existence and relative advantages of health interventions or services addressing issues of price, access, and environmental support.

It is obvious that people suffering from diabetes, cancer, and heart problems need to seek quality health care that is largely provided by public and private hospitals and private clinics in the Philippines. Since the poor suffer a greater burden of these diseases than the nonpoor, the poor necessarily have a greater need for health care than the nonpoor.

This in turn suggests that if vertical equity is to prevail, the poor, who have greater needs, should receive more of the treatment. However, what is observed in the Philippine case is that there is inequity: the poor are not getting treatment according to their needs.

Table 1 presents the proportion of the population that has visited a health facility, e.g., government hospital, private hospital, private clinic, rural health unit (RHU), *barangay* health station (BHS), or other health facilities, during the past 6 months before the survey period. It should be noted that the utilization of a health facility is applied to the total population in the Philippines irrespective of individual sickness or illness; for instance, it also includes people who sought a regular check-up in a health facility. The last column in the table presents the annual growth rates of utilization of various services.[5] The services of government hospitals, RHUs, and BHUs are mainly provided by the public sector while services of the private hospitals, private clinics, and other facilities are provided by the private sector. Public sector services are highly subsidized so that the poor can afford to pay for the service he or she utilizes. We can therefore expect that the poor will utilize more of the public services than the nonpoor.

The most striking result of Table 1 is that utilization of health services provided by any health facility has declined at an average annual rate of 6.9% over a period of almost 10 years. In 2007, 11.71% of the population utilized a health facility, having declined at an average annual rate of 6.9% from 1998 (18.91% utilization). Utilization of government hospitals has declined at an annual rate of 4%, from 3.7% in 1998 to 3.4% in 2007. Utilization of private hospitals has declined even more sharply at an annual rate of 6.8%, from 3.06% in 1998 to 2.25% in 2007. Most of all, the decline in utilization of RHUs and private clinics is the greatest, declining by 8.9% and 8.4% per annum over the period 1998–2007, respectively. More recently, in 2004–2007, utilization of both RHUs and BHSs declined substantially while that of government hospitals increased sharply. Over the period, there has been a shift of trend in utilization of a health facility among the Filipinos toward government hospitals and away from primary public health facilities such as RHUs and BHSs.

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[5] To calculate the growth rate over the period 1998–2007, the study used the methodology of "equivalent uniform growth rate" proposed by Kakwani (1997). There are only four observations, namely, 1998, 2002, 2004, and 2007, which are not equally spaced. Taking into account unevenness of observations, the following formula is derived to calculate the aggregate growth rate (R) given by

$$Ln(1+R) = [-Ln(x_1) + Ln(x_2) + Ln(x_3) + Ln(x_4)]/19$$

where x_t is the average utilization of a service at year t. According to Kakwani, the trend growth rate calculated in this way is welfare superior to the conventional growth rate based on a least square trend regression line. See Kakwani (1997) for a detailed discussion on this issue.

Table 1: Utilization of Health Services

	1998	2002	2004	2007	Growth Rate
Government hospitals	3.70	2.46	2.80	3.40	–4.0
Private hospitals	3.06	1.93	1.72	2.25	–6.8
Private clinics	5.13	3.33	2.98	2.55	–8.4
Rural health units	4.79	2.74	2.88	2.36	–8.9
Barangay health station	2.45	2.34	2.31	1.82	–2.1
Other services	0.27	0.26	0.28	0.21	–1.2
Any health facility	18.91	13.06	11.48	11.71	–6.9

Source: Author's estimates based on APIS.

It is generally perceived that RHUs and BHSs provide low-quality health services. Diagnosis is poor and doctors are seldom on site, resulting in repeat visits. Medicines and supplies are inferior and rarely available. Waiting time is long, schedules are very inconvenient, and facilities are rundown (World Bank 2001).

Note that both RHUs and BHSs are categorized as primary public health facilities that can appropriately provide preventive health services and treatment for minor illnesses and accidents. Despite access to these primary facilities, however, an increasing proportion of Filipinos still prefer to seek treatment in government hospitals and private clinics and hospitals. Thus, government hospitals end up providing the same services as primary health care facilities. It is therefore critical to ensure that primary health services are delivered efficiently so that they can prevent the incidence of diseases such as diarrhea, bronchitis, influenza, pneumonia, and TB. Preventive health care services do a lot more in the long run in protecting the people's health and require less amounts of budgetary allocation than medical treatments.

Why has there been such a sharp decline in utilization of health services? This is a critical policy question that must be answered because the declining trends in utilization of basic health services can have a severe impact on people's health in the long run. Two factors stand out to explain such a trend in utilization of health facilities. First, utilization of health services among the poor may have declined more than among the rich due to a lack of ability to pay for health services. This calls for policy options such as Thailand's a scheme of issuing health cards for the vulnerable (e.g., indigent, children below 12 years old, elderly, veterans, handicapped, and religious and community leaders)—that can improve the pricing structure of health care and lower the prices of medicines.

Pharmaceutical prices in the Philippines are among the highest in Asia (ADB 2009). Such high prices have been attributed to a relatively monopolistic market structure that is not countervailed by government and PhilHealth procurement policies on the demand side and by strong competition from generic drugs on the supply side.[6] High pharmaceutical

[6] The Cheap Medicines Act, a measure that seeks to reduce prices of essential drugs, was recently passed. The act, by providing a more secure legal footing for the country to take advantage of Trade-Related Aspects of Intellectual Property Rights flexibilities like parallel importing, aims to allow the government to mitigate high drug prices

prices can deter people—particularly the poor who have lower capacity to pay—from utilizing health care.

Alternatively, financial difficulties may have forced the poor to postpone seeking care until more severe stages of the illness, thus necessitating the bypass of primary basic health facilities (Kraft et al. 2009). Spending on health care has remained predominantly supported by private sources. The National Health Accounts indicate that during 1992–2005, nearly half of total health care spending came from out-of-pocket payments of households, while roughly one third of total health expenditures was financed by the government, both national and local.

As the health sector in the Philippines operates in a devolved system, health spending by local governments has increased over the period; nevertheless, the national government is still a major funding source for public spending on health. With the devolution of health care services, local governments, especially at the primary level, are now increasingly responsible for public health programs that specifically address the control of infectious diseases, although they still maintain hospitals and clinics that explain the increase in local funds spent for personal health care services. However, funding for health at the local level is primarily dependent on the priorities of the local chief executives as well as on the resource base of the local government unit. This unevenness in local funds could have implications on the sufficiency and quality of primary health care facilities and the services provided at the local level.

An alternative explanation for the worsening utilization of health care over the period could be supply-side constraints: the supply of health care may not be keeping up with population growth. The population of the Philippines has been increasing at an annual rate of 2.3%, so if supply of services is not keeping up with population growth there will be a decline in the utilization rate of the services. This hypothesis is tested in Table 2, which presents a counterfactual situation where the utilization of health care services is estimated after adjusting for the growth in population during 1998–2007. The last row in Table 2 gives the population index, which is set to 100 in 1998. The figures in Table 2 were obtained by multiplying the figures on utilization in Table 1 by the population index and diving by 100. We find from Table 2 that trend growth rates in utilization of services are still negative: utilization of health care has declined at an annual rate of 4.7% during 1998–2007. This suggests that the utilization of health care has declined at a faster rate than population growth. This sharp decline in health care utilization could be attributed either to a decline in the supply of services or to a decline in the demand for services or to a combination of both. The decline in supply could be due to scarcity of materials as well as lack of staff and equipment, which may have forced people to go to tertiary or private health care facilities that are better equipped and staffed, even for basic and

arising from drug patents. It also strengthens the Food and Drug Administration, formerly the Bureau of Food and Drugs, by allowing it to retain its revenues and allows the Secretary of Health to regulate prices as necessary. However, the full implementation of the law has yet to be seen pending the promulgation of its implementing rules and regulations.

primary health care. A World Bank study (2001) reports that satisfaction is lowest among primary basic health care facilities such as BHSs and RHUs where their service quality is inferior in terms of care, facilities, availability of medicines, personnel, and convenience.

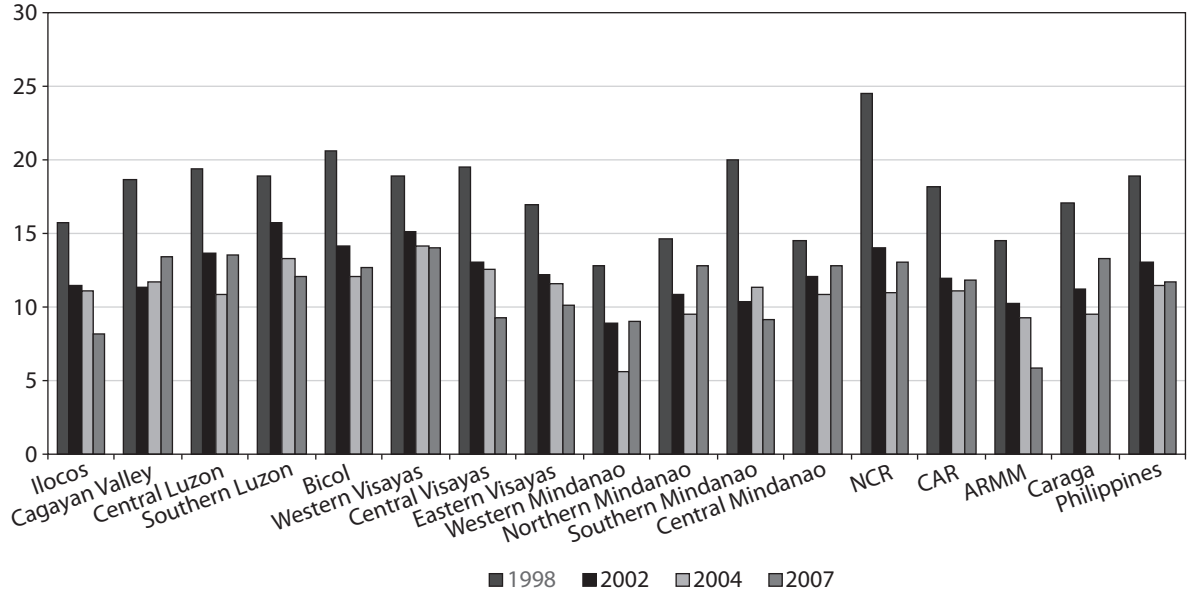
Table 2: Utilization of Health Services Controlling for Population Growth

	1998	2002	2004	2007	Growth Rate
Government hospitals	3.70	2.68	3.24	4.14	–1.8
Private hospitals	3.06	2.10	1.99	2.74	–4.7
Private clinics	5.13	3.64	3.45	3.11	–6.3
Rural health units	4.79	2.99	3.33	2.88	–6.8
Barangay health station	2.45	2.55	2.67	2.22	0.1
Other services	0.27	0.28	0.33	0.25	1.0
Any health facility	18.91	14.24	13.28	14.25	–4.7
Population index	100.0	109.1	115.6	121.7	2.3

Source: Author's estimates based on APIS.

There are regional variations in overall utilization of a health care facility and its equity. Utilization of health services is lower in Autonomous Region of Muslim Mindanao (ARMM) relative to the other regions in the country (Figure 9). According to a study by ADB (2009), there are two explanations for this that stand out. First, regional variations exist because of constraints in the supply side like the lack of hospital beds and physicians. Second, uneven distribution of health personnel across regions can also explain geographical differences in the delivery of health services.

Figure 9: Utilization of a Health Facility by Region, 1998–2007 (percent)



Source: Author's estimates based on APIS.

Table 3 is concerned with equity of health care services in the Philippines. The results show that overall health services are inequitable in the sense that they are largely utilized by those at the top end of the income distribution, i.e., the value of the equity index is less than 1.

More importantly, the proportion of poor people who sought a health facility declined sharply over 1998–2007, as seen in the fall of the equity index to 0.81 in 2007 from 0.88 in 1998. This implies that the provision of health services has become more inequitable over the last decade or so. This finding calls for a careful assessment of the government's health policies with particular focus on equity. As noted earlier, there is a high concentration of major disease burden among people from poor households. If equity is to prevail, the poor need to get more health care compared to the nonpoor as their need is greater; however, the current study finds a violation of vertical equity.

Table 3: Equity Index for Utilization of Health Care Services

	1998	2002	2004	2007	Growth Rate
Government hospitals	0.85	0.81	0.82	0.81	–0.8
Private hospitals	0.45	0.41	0.42	0.39	–1.6
Private clinics	0.57	0.53	0.50	0.46	–2.3
Rural health units	1.26	1.18	1.13	1.14	–1.5
Barangay health station	1.33	1.28	1.25	1.29	–0.7
Other services	1.21	1.03	1.20	1.28	–0.6
Any health facility	0.88	0.85	0.84	0.81	–1.0

Source: Author's estimates based on APIS.

Regional variations in equity of utilization are also present. As shown in Table 4, utilization of health services is inequitable across all regions in the country, with the most equitable utilization registered in the National Capital Region (NCR) and the most inequitable utilization observed in Southern Mindanao during 1998–2007. The sharp decline in equity of utilization in ARMM and Southern Mindanao is of particular concern because it is coupled with very low overall utilization. This suggests that the poorest in these regions do not utilize a health facility at all or have extremely low utilization levels.

Another question is whether total regional inequity is attributed to inequity within or between regions. In health economics literature, equity is distinguished between horizontal equity (equal treatment of equals) and vertical equity (appropriate unequal treatment of unequals). Most attention in health care policy has been given to the horizontal equity principle, defined as equal treatment for equal medical need, irrespective of other socioeconomic characteristics such as age, gender, place of residence, race, etc. (Kakwani et al. 1997). Moreover, horizontal equity plays an important role in health because great differences in health needs exist across different groups in the population. In Table 5, the between-group equity measures horizontal equity and seeks to establish whether there is differential utilization of health care by income after standardizing for

differences in the need for health care in relation to income, where a proxy for the need is used by geographical location (i.e., region), age or gender. After standardization of health care needs, any residual inequality in utilization is interpreted as the within-group equity, which could be equitable (if the equity index is greater than 1) or inequitable (if the equity index is less than 1).

Table 4: Equity Index for Utilization of a Health Facility by Region

Region	1998	2002	2004	2007	Growth Rate
Ilocos	0.95	0.94	0.84	0.77	–1.8
Cagayan Valley	0.82	0.83	0.75	0.78	–0.7
Central Luzon	0.95	0.87	0.87	0.76	–2.1
Southern Luzon	0.93	0.94	0.82	0.91	–0.7
Bicol	0.94	0.85	0.80	0.79	–2.2
Western Visayas	0.87	0.78	0.84	0.79	–1.3
Central Visayas	0.98	0.82	0.81	0.78	–3.2
Eastern Visayas	0.83	0.75	0.85	0.86	–0.1
Western Mindanao	0.96	0.87	0.98	0.88	–0.8
Northern Mindanao	0.95	0.79	0.89	0.81	–2.1
Southern Mindanao	0.87	0.81	0.76	0.64	–2.6
Central Mindanao	0.91	0.98	0.90	0.84	–0.1
NCR	0.93	0.95	0.99	0.92	0.3
CAR	0.91	0.99	0.88	0.84	–0.2
ARMM	1.02	1.00	0.71	0.83	–3.1
Caraga	0.86	0.91	0.92	0.86	0.6
Philippines	0.88	0.85	0.84	0.81	–1.0
Between-region	0.96	0.96	0.98	0.97	0.2
Within-region	0.92	0.88	0.86	0.83	–1.2

ARMM = Autonomous Region of Muslim Mindanao, CAR = Cordillera Autonomous Region, NCR = National Capital Region.
Source: Author's estimates based on APIS.

On the other hand, vertical equity is measured by the within-group equity, which implies that individuals with unequal needs should be treated unequally according to their differences in need. The results reveal that inequality in utilization of health care between regions, or between age and gender groups is not problematic. The concern lies with the inequity that exists within groups, after controlling for differences in individual circumstantial variables such as place of residence, age, or gender.

After controlling for regional differences, it is observed that equity in utilization of a health care service declined between 1998 and 2007: the within-group equity has declined at an annual rate of 1.2% over the period (Table 4). In other words, within-region equity plays an important role in determining overall equity in health care utilization in the Philippines. This finding carries two implications. One is that health interventions aimed at reducing inequities should be addressed or tailored toward particular regions or provinces. This would make sense since provinces are more financially capable of providing services and they are the immediate local government units below the national government. While regional coordination can be performed by national agencies, these regional coordination units have to engage the provincial governments since they have the executive and the

political power to implement projects. The provincial governments can then engage the municipalities under them. Second, greater financial resources should be channeled from the central government to the regions or provinces that are historically disadvantaged such as ARMM.

Table 5: Equity Index for Utilization of a Health Facility by Socioeconomic Group, 1998–2007

	1998	2002	2004	2007	Growth Rate
Total equity	0.88	0.85	0.84	0.81	–1.00
Age					
Between-group	1.04	1.03	1.04	1.01	–0.23
Within-group	0.85	0.82	0.82	0.80	–0.78
Gender					
Between-group	1.00	1.00	1.00	1.00	0.00
Within-group	0.89	0.85	0.84	0.81	–0.98
Age and gender					
Between-group	1.04	1.03	1.03	1.01	–0.23
Within-group	0.85	0.82	0.82	0.80	–0.79

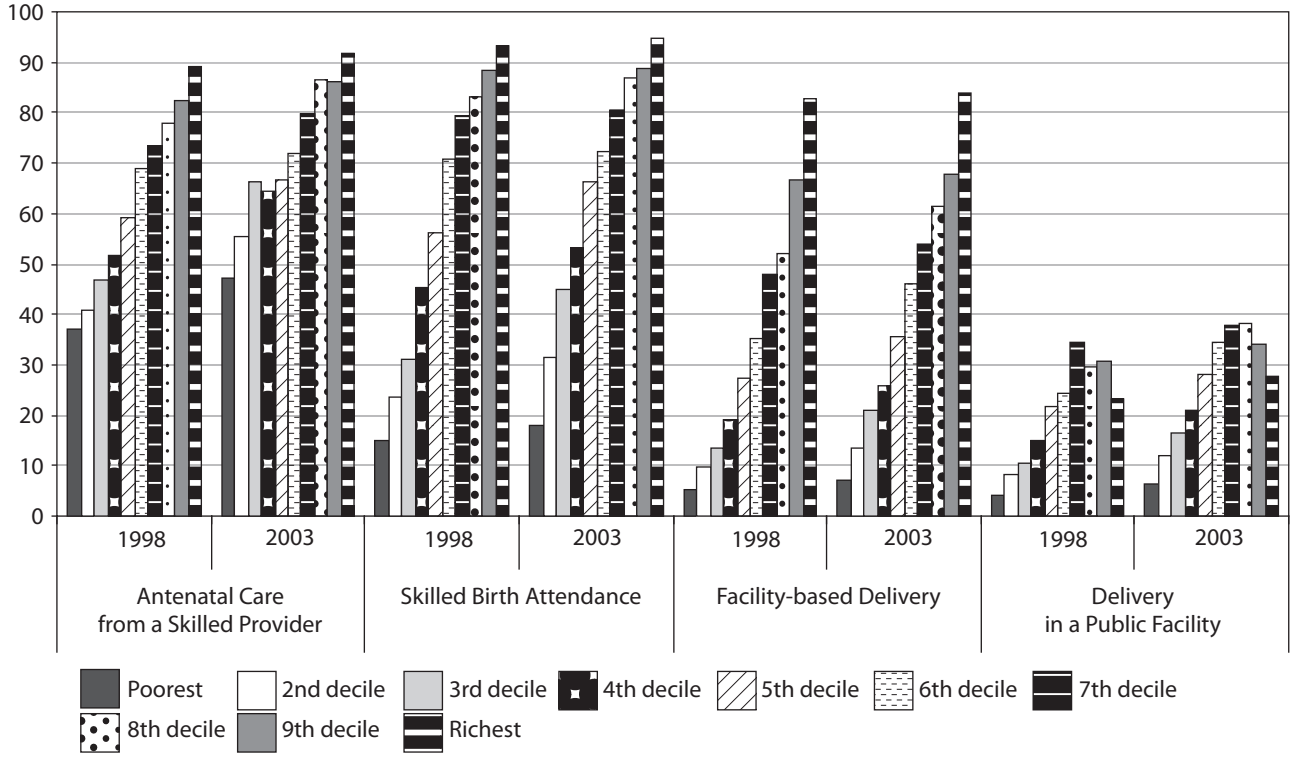
Source: Author's estimates based on APIS.

In addition, equity in utilization of health care is examined after controlling for differences in need of health care by age and gender. Surprisingly, circumstantial variables such as age and gender do not play a significant role in equity in health care utilization in the Philippines. This can be discerned from the values of between-group equity close to 1 in Table 5. This is true whether the adjustment is done for age and gender one by one or jointly.[7] Based on the various APIS rounds, it is observed that there is a high concentration of illness among individuals from the poor households, particularly the elderly (60 years old and above) and children (10 years old and below). This suggests that the elderly and children with greater health care needs should receive more of the treatment. The within-group equity index—all of which have a value less than 1—indicates that there is still inequity in health care even if different needs are adjusted for age and gender groups. In other words, after adjusting for differences in need according to age and gender, the poor are still not getting appropriate treatments even if they have more health care needs compared with the nonpoor.

The same patterns of inequities are found in utilization of antenatal care services, skilled birth attendance, and facility-based delivery. Moreover, inequities across income groups in these indicators are far worse than those for general utilization of health care. Utilization of critical services during pregnancy, the place of delivery, and the personnel who assist in the delivery have a significant impact on maternal and newborn health outcomes. Figure 10 presents the proportion of women at their reproductive age utilizing such services during pregnancy.

[7] In Table 5, five age-groups are classified, including (i) below 10 years old, (ii) 10–25 years, (iii) 25–45 years, (iv) 45–60 years, and (v) above 60 years.

Figure 10: Selected Maternal Health Service Utilization Indicators, 1998–2003 (percent)



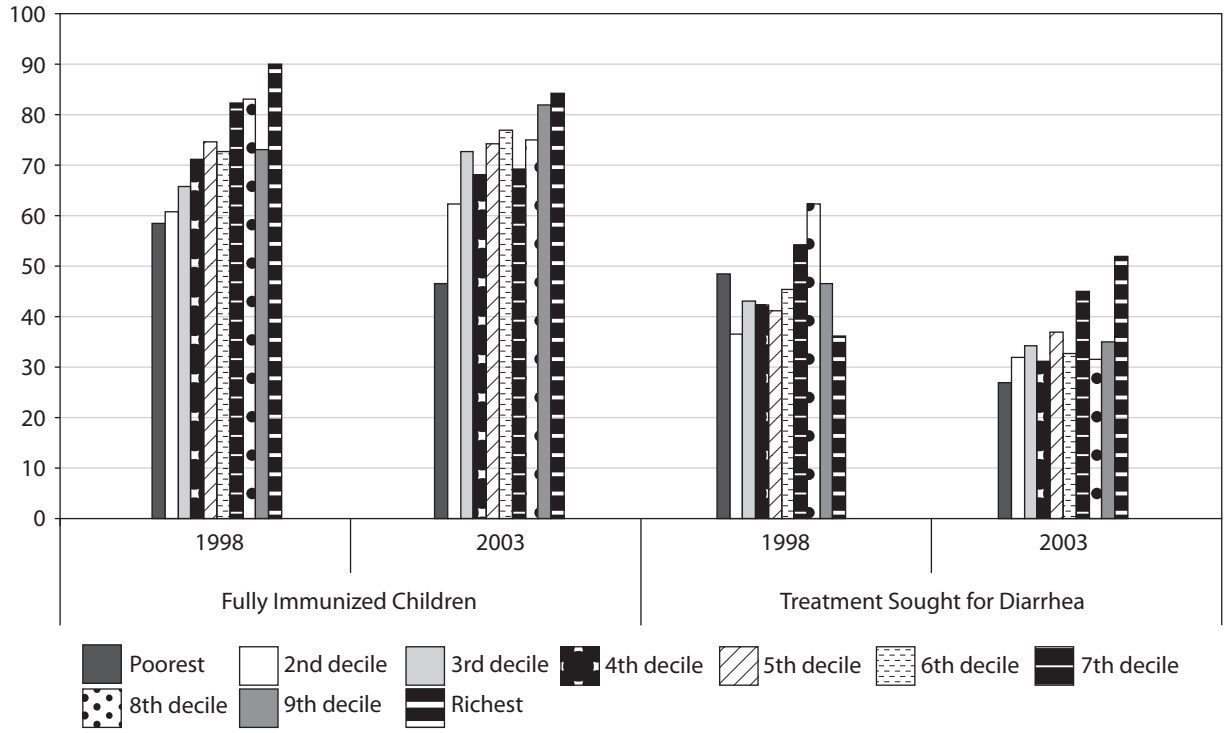
Source: Author's estimates based on NDHS.

As can be discerned from Figure 10, there is a high degree of inequity in favor of the richest decile of the population for all indicators of health service utilization. It should also be noted from Figure 10 that inequity in the proportion of facility-based delivery is particularly high, i.e., it highly favors the richest 10% of the population. Less than 10% of women in the lowest wealth decile deliver in a health facility, while about 84% of their wealthiest counterparts deliver in a health facility. Less than one-fifth of deliveries of the poorest pregnant women are assisted by skilled birth attendants such as midwives or doctors, the rest are assisted by traditional birth attendants (called *hilots)* or by families and friends. This finding clearly shows that publicly provided services for child delivery are utilized more by the nonpoor than the poor. This implies that the nonpoor benefit from public subsidies more than the poor, contrary to the stated intentions of public policies.

Figures 11 and 12 indicate that no improvements were seen in equity in the use of child health services related to immunization and diarrhea treatment from 1998 to 2003. On the other hand, the inequity in favor of the rich has increased if one looks at immunization coverage for diptheria, pertussis, and tetanus; polio; bacille Calmette-Guérin; and measles. In 1998, there was almost no inequity in diarrhea treatment as observed from Figure 12 where the equity index is very close to perfect equity. However, caution should be exercised here. As discussed earlier, there was a high concentration in the prevalence

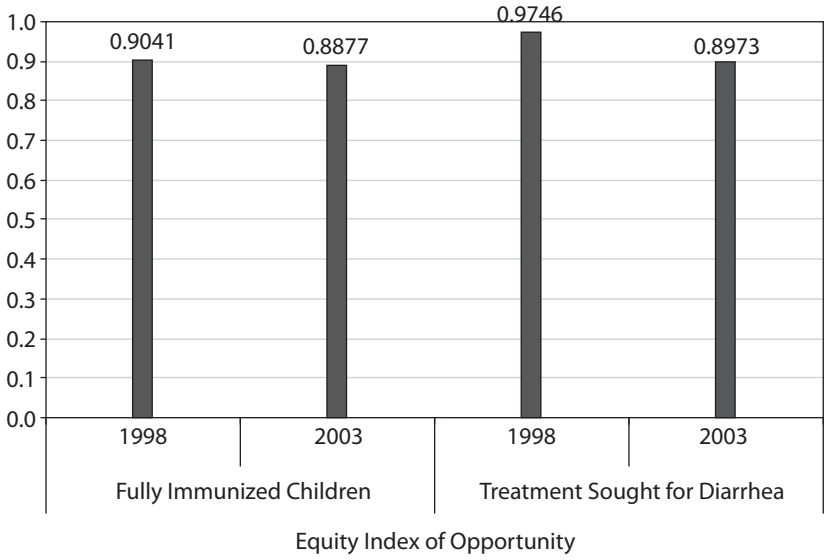
of diarrhea among children from the poorest households. The principle of vertical equity (unequal treatment for unequal need) demands that those with greater need should receive more of the treatment. However, what is observed is that there is equal treatment for unequal need, which clearly violates the principle of vertical equity. Hence, there is inequity as the poor who have a greater need for treatment as compared to the nonpoor are not getting the treatments according to their need. Furthermore, Figure 12 shows that the equity index of diarrhea treatment for 2003 has deviated from perfect equity significantly.

Figure 11: Selected Child Health Service Utilization Indicators, 1998–2003 (percent)



Source: Author's estimates based on NDHS.

Figure 12: Equity Index in Selected Child Health Service Utilization, 1998–2003

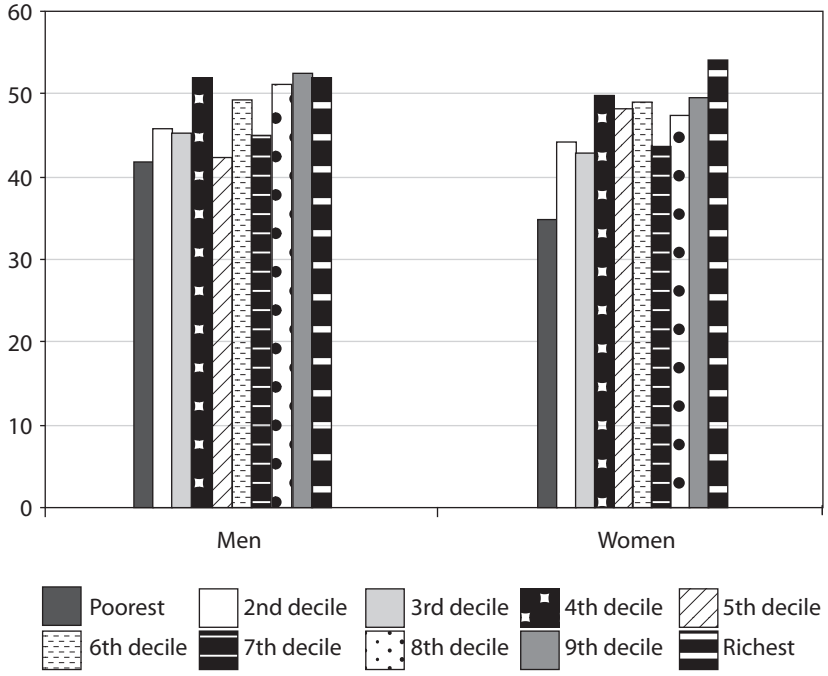


Source: Author's estimates based on NDHS.

Figure 13 on TB treatment for adult sufferers shows a pro-rich orientation, with inequity among females worse than that among males. If equity prevailed in the use of health care for TB symptoms, the equity index should have been greater than 1 because the poor should have more access to medical treatment as they have higher TB prevalence. Instead, the estimates of equity index are 0.954 for males and 0.924 for females, indicating vertical inequity in TB treatment.

The same trend was observed among children who sought medical attention for diarrhea. The nonpoor sought care more than the poorest, and there was no distinction between the poor and nonpoor in terms of seeking care in a public facility. Again, this violates the principle of vertical equity because the poor have a higher prevalence of diarrhea than the nonpoor. As such, this service should be used more by the poor than the nonpoor; "equal" usage in this case means insufficient access by the poor who need it more.

Figure 13: Health Care Utilization for Tuberculosis Treatment, 2003 (percent)



Source: Author's estimates based on NDHS.

IV. Policy Recommendations

Overall, the findings indicate that there is a decline in overall utilization of health care. More importantly, equity in health care has worsened during the period under consideration: the nonpoor who are less burdened by illness or diseases receive more health care services, while the poor who bear a greater burden of illnesses receive less health care. The widening inequity favoring the rich is likely to jeopardize achievement of the Millennium Development Goals and other national and regional targets. To counteract the pro-rich inequities it is recommended that coverage in poor communities be increased through appropriate targeting mechanisms and effective service delivery strategies.

In addition, policy options that can improve the pricing structure of health care are called for. An example of such options could be a low-income card scheme (the "30 Baht" policy) that had been implemented in Thailand since 2001. Moreover, as prices of drugs in the Philippines are among the highest in Asia, a measure that seeks to reduce prices of essential drugs needs to be effectively and promptly implemented. Equally important is the improvement in the quality of services provided by primary health care facilities such as BHSs and RHUs, which are largely utilized by the poor.

The findings of the study on greater inequities within regions cast doubts on the effectiveness of decentralization in the Philippine health system. This echoes an earlier study on the Philippines by Lakshminarayanan (2003) that shows that decentralization does not always result in greater efficiency, equity, and effectiveness in the health sector. Five years after the decentralization in the health sector started, health outcomes in the Philippines are stagnant. These findings point to a further need for studies to identify which service delivery mechanisms are effective in the Philippine context.

It was also found that equity in utilization of health care services within regions has worsened over the period. This calls for policy interventions tailored to each region or province. As funds, resources, and capacities may be limited, these interventions should be targeted to the worst-performing region or province and directed toward those factors that account for regional differences. For instance, a shortage of BHSs is found to be a factor that explains provincial differences in antenatal care services as well as in seeking treatment for TB among males (ADB 2009).

However, these interventions should be made to work within a devolved structure. Thus, the formulation of province-wide investment plans for health for provinces that do not have such plans should be intensified. These province-wide investment plans can serve as the basis for planning priority health services and determining the assistance the province would require from the national government. At the same time, the national government should increase its capacity to assist the provinces in several areas. One is in providing technical assistance to the local government in planning, which may involve increasing capacity in terms of human resources and skills. The government should also ensure that it promptly fulfills its funding and resource commitments to the provinces. This may require changes in administrative procedures to facilitate fund release to provinces.

To address financial barriers to utilization of health care services among the poor, two recommendations could be put forward. First, the databases of the social insurance system, PhilHealth, should be evaluated to have a more accurate picture of coverage. This will provide better data on the scope of expansion needed to achieve universal coverage. Second, advocacy to enroll the poor in PhilHealth should be continued, particularly in provinces and municipalities where coverage rates for the sponsored population are low.

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About the Paper

Equity is an abstract concept covering philosophical issues such as fairness and social justice, making its definition and measurement very complex. This paper attempts to define and measure equity in health status and health care utilization using the equity index. The study also introduces a methodology to explain equity in terms of between- and within-group equity. The proposed methodology is applied to the Philippines using Demographic and Health Surveys and Annual Poverty Indicator Surveys.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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