

HEALTH PLANNING IN LATIN AMERICA: REVIEW AND EVALUATION*

Dieter K. Zschock, State University of New York at Stony Brook

THE GOVERNMENTS OF LATIN AMERICA, HAVING BEEN PREOCCUPIED MAINLY with industrialization since World War II, began to give more attention to social development during the Sixties. Priorities of development policy, stressed under the Alliance for Progress, now include education and health; improvements in both areas are regarded as means of raising output as well as furthering social progress. Analyses of Latin America's human resources, however, have concentrated mainly on manpower requirements and corresponding educational needs.¹ They have been supported by evidence of high returns to investment in education,² while studies of the region's health conditions have yielded no comparable evidence in support of health sector investments. Health improvements are evident, but economic analysis has not yet shown to what extent they are attributable to health expenditures alone. Poor health is closely associated with poverty, low education, and rural residence, but causal relationships among these and other variables remain largely unexplored.

Health planning and research on health conditions in Latin America have not attracted much attention from social scientists. Of particular interest are the evolution of health planning approaches, and a number of research projects on health and related environmental conditions. The latter include a national health study in Peru in 1964, the Inter-American Investigation of Mortality, carried out during 1962-64, and the Study on Health Manpower and Medical Education in Colombia, initiated in 1964 and completed in 1969. Studies similar to those done in Peru and Colombia are currently under way in Argentina and Chile.

Previous reviews of health research in Latin America have concentrated on socio-cultural aspects of health program development.³ The comparatively recent introduction of family planning programs in several countries in Latin America, and supportive research on fertility patterns, also have been chronicled elsewhere.⁴ The present review focuses on health planning and the economic

* This study was supported by the Milbank Memorial Fund, whose former Executive Director, Alexander Robertson, was most helpful with suggestions and encouragement throughout. Valuable comments on a first draft of this paper also came from Hernán Durán, Thomas L. Hall, Clyde V. Kiser, Antonio Ordoñez Plaja, Raúl Paredes Manrique, Milton I. Romer, A. Peter Ruderma, and Ramón Villarreal, each of whom is intimately familiar with the topic, and from my colleagues Edward Ames, Estelle James, and Egon Neuberger.

aspects of health conditions in the region. Although economic analysis of health is still in its infancy, various approaches that have been explored in the United States and Great Britain might be applicable also in support of future health planning in Latin America.

HEALTH PLANNING UNDER THE ALLIANCE

Knowledge of health problems and health needs in developing countries generally is so limited, and the income of a majority of the population so low, that demand for health services is below what health professionals might recommend as minimum standards. Among the functions of public health programs, one is to increase effective demand for health improvements, and another to justify expenditures on health services in terms of their economic and social benefits. Health planning in Latin America during the Sixties evolved from goal-setting to a greater research emphasis on health conditions, and to reforms in health sector organization and medical education in several countries. Principal health sector objectives pursued through planning have been to prolong life expectancy and expand health services coverage. Yet while health conditions have been improving, no one knows to what extent such improvement has been the result of more and better health services alone, or to what degree better health has contributed to economic and social development.

1. *Health Goals of the Alliance.* From 1890 until the formation of the Alliance for Progress at the outset of the Sixties, the inter-American system of cooperation retained its predominantly peace-keeping and mutual defense orientation. The Government of Brazil, proponent in 1958 of "Operation Pan America," set in motion the sequence of inter-governmental deliberations that first found expression in the Act of Bogotá in 1960, and culminated in the Charter of Punta del Este in 1961.⁵ In 1967, the objectives of the Alliance were reaffirmed in the Declaration of the Presidents of America. Each of these documents prominently features health improvements as a means as well as a goal of development.

In the Act of Bogotá, health goals are listed only among measures for social improvement, as are education, housing, and rural development.⁶ The Charter of Punta del Este for the first time urged improving health for both economic and social development.⁷ It signifies agreement to include "indices of infant mortality, illiteracy and caloric intake" in evaluating relative development internationally, together with data on per capita output and income. The Charter's principal health goal is an increase by five years of life expectancy at birth, including a 50 per cent reduction in mortality under five years. The Charter speculates that, among other measures, such a reduction will require providing potable water supply and sewage disposal facilities for at least 70

per cent of the urban and 50 per cent of the rural population. In even more general terms, the Charter speaks of eradicating malaria, controlling communicable diseases, improving nutrition, expanding medical care coverage, training medical and health personnel to meet at least minimum requirements, and intensifying scientific research. The Declaration of the Presidents of America gave renewed priority to low-income groups in the expansion of environmental sanitation and nutrition programs and added the promotion of intensive maternal and child welfare programs as a new health sector priority.⁸

The quantitative dimensions of the Charter's health goal were arrived at rather arbitrarily; at best, they reflected an educated guess of what might be attainable if past trends continued into the future. Measures required to attain the specified reductions in mortality were recorded in similarly arbitrary fashion. One can readily conclude, therefore, that economic analysis contributed neither to the formulation of the principal health goal, nor to estimates of how to attain it. The planning process, on the other hand, was regarded as the mechanism for defining health needs and estimating the resources required to satisfy them. It should have been obvious, however, that data on health conditions, as well as analytical experience available at that time, were insufficient for health planning purposes.

2. *PAHO's Role in Health Planning.* Under the Alliance, the governments nevertheless agreed to prepare national health plans immediately. In health, education, and rural development, the agreement called for the creation of inter-governmental task forces at the ministerial level that should further deliberate sectoral development strategies. The Alliance specified that the task force on health should be organized through the Pan American Health Organization (PAHO), which has provided technical support for health programs in the Americas since 1902. Under PAHO auspices, the Task Force on Health at the Ministerial Level, which brought together the region's ministers of health for two conferences during the Sixties, has elaborated the health goals of the Alliance and helped strengthen national commitment to implement measures to attain them.

The first conference of health ministers, held in 1963, emphasized the view expressed in the Charter, that health is an investment in economic development as well as in social progress.⁹ The conference called for epidemiological investigations, analyses of health services, and the development of reliable statistical data as prerequisites for establishing health program priorities. The Colombian health survey, reviewed below, was initiated as a pilot study in response to this call for research to improve the data base for health sector development. The health ministers acknowledged the lack of coordination among health services, few of which they actually control because of the proliferation in most of their countries of separate health care programs. Since

then, health sector reforms in Colombia and Argentina, for example, have begun to help resolve this problem. The conference nevertheless closed on the affirmative note that the health program of the Alliance could be carried out.

The second ministerial conference on health was held in 1968.¹⁰ While reiterating previously stated health objectives, the ministers revealed the failure of their countries to incorporate health plans into national development plans. In part, they blamed this failure on the lack of an economic theory of health that could be drawn upon to justify investment expenditures in this sector. This appears to be the first sober recognition by the Latin American governments that, indeed, a requisite analytical framework for planning has been lacking. In part also, health information remains deficient, although here the conference acknowledged the contributions of recently completed health surveys, including the study of urban mortality in ten major cities of Latin America, and the comprehensive study of health conditions and health sector resources in Colombia. In its final declaration, however, the second conference returned to primarily social rather than economic justifications for health services.

With the pessimistic hindsight of the second conference, one may view a health planning method developed under PAHO auspices in 1963 with some skepticism.¹¹ Various descriptions of the method as “planning without facts” and “planning by successive approximations,” the method encourages diagnosis of health problems and health program formulation without accepting delays because of insufficient information.¹² National health planning in Latin America (as elsewhere) is dominated by health professionals, and they rely on their experience and judgment as substitutes for reliable information and economic analysis. The PAHO health planning method has been taught in the manner of a “school of thought,” to about 200 high-level health professionals in international courses given at the Latin American Institute of Economic and Social Planning in Santiago, and in national courses to over 2,000 health professionals at lower levels of program administration. The training of health professionals in the rudiments of planning and economic and social analysis presumably has improved their effectiveness in health services administration and broadened their view of development problems.

The PAHO planning method was originally formulated in 1962 to aid in the preparation of national health plans during the initial rush of new developmental initiatives encouraged by the Alliance in the early Sixties. The method, in its essence, seeks to measure the costs of reducing preventable diseases, and then to calculate the benefits in terms of reductions in mortality.¹³ Functional problems in the approach are the unreliability and insufficiency of data on disease incidence, and the likelihood that illness and death in most cases have more than one cause. Also, the failure to consider morbidity in the planning process is a serious limitation. Positive effects of national health plan-

ning under PAHO have been to dramatize health problems and probably to improve resource utilization. Revisions in the PAHO method, now underway, may enhance its usefulness as a planning-programming-budgeting system.¹⁴

3. *Reform of Medical Care and Education.* Although responsible for health planning, ministries of health in Latin America have had very little authority over medical care. Most countries in the region have a number of different and uncoordinated systems of health services. In addition to public health services and private medical care facilities, they have separately organized social security services for salaried employees and for wage earners, quasi-public charity hospitals (governed by boards of private citizens or church authorities, and financed by donations and income from state lotteries), and special facilities for military and police forces. Many national, regional, and city government agencies also frequently operate independent medical care services, either for their employees, or as part of their principal functions, for example, in agriculture and education. Moreover, all but public health facilities and charity hospitals, which provide services to the general public where they exist, serve relatively small, privileged segments of the population for whose benefit they were created. Large segments of the countries' low-income population, on the other hand, particularly in rural areas, receive few if any modern health services.

The dispersion and limited coverage of medical care in Latin America was first analyzed under PAHO auspices by Milton I. Roemer and others in 1963.¹⁵ Subsequently, a PAHO report on medical care critically examined the relationship between medical programs of social security agencies and those of ministries of health and other governmental agencies, made proposals on the coordination of medical care, and recommended policies for the planning of hospitals and other health services.¹⁶ The report concluded that health planning and policy formation for the entire health services sector, including both preventive and curative services, should be the function of national health ministries. Considering the scarcity of national resources available for health services, the report saw coordination of all health sector services by ministries of health as the most effective means of expanding their coverage. Colombia and Argentina have since initiated reforms that assign a central role in the coordination and expansion of medical care to their health ministries. In other large countries, such as Brazil, Venezuela, and Mexico, which have similarly uncoordinated health services, no such reforms are as yet in evidence.

In medical education in Latin America, a new generation of leaders, whose advanced training has been at United States and British medical centers, is groping to reconcile its professional orientation toward specialized and research-oriented medicine with a growing tendency to regard medical care as a means of economic development and social progress. The views of medical

educators in Latin America on the role of health care in economic and social development are well represented in a volume published under the auspices of the Colombian Association of Medical Schools.¹⁷

Results of a recent survey, sponsored by PAHO, show the dimensions and characteristics of medical schools in Latin America.¹⁸ The region has 151 medical schools (of which 69 are in Brazil and 22 in Mexico) with a total enrollment in 1967 of 98,245 students. Argentina had the largest number of medical students, namely 27,790, but only nine medical schools. Colombia also has nine medical schools, but had only 3,572 students enrolled. Medical education in most schools follows immediately after secondary school, although in several schools, one or two-year preparatory "general studies" programs are being introduced to improve the preparation of applicants. The length of medical curricula vary from five to seven years; retention rates of students are generally low; and the quality of schools, especially among the many schools in Brazil, varies greatly. The survey report echoes recommendations being made by many analysts and leaders of medical education in Latin America, namely to restrict admissions, introduce general studies programs, and change medical education from a theoretical to a community health services orientation.

The principal vehicle for discussions of reform in medical education has been a series of regional meetings, beginning with the Pan American Congress on Medical Education in 1951, including two seminars on preventive medicine in 1955 and 1956, and leading in 1962 to the founding of the Pan American Federation of Medical Schools. In 1966, the Federation sponsored its First General Conference on Medical Education, which stressed the relationship between medical education and social and economic development.¹⁹ It remains unclear, however, to what extent the quality of medical education is in fact being improved and whether students are indeed turning their interests to community medicine as a result of high-level attempts at reform. Personal observation in Colombia and Chile, for example, leads one to be optimistic. The proliferation of medical schools in Brazil, however, probably does not reflect such efforts but rather suggests uncontrolled and uncoordinated activity.

After having initiated health planning and encouraged research on health conditions under the Alliance, PAHO in 1968 published a succinct calculation of health improvements.²⁰ The report concludes that "infant mortality is not being decreased at a pace to meet the goals of the Charter of Punta del Este," but that "mortality in the age group 1-4 years has decreased rapidly, approaching the goal of the Charter." It attributes the reduction in child mortality largely to improvements in environmental factors, principally better nutrition and sanitation. This conclusion suggests, for example, that health improvement may be a consequence of development more generally, rather than being attributable primarily to maternal and child care. Progress in malaria eradication has been

impressive, and achievements in the control of communicable diseases are encouraging. These findings undoubtedly represent a measure of benefit directly attributable to expenditures on disease control. In providing homes with toilets and running water, the target for urban areas of 70 per cent has been achieved while rural areas lag far behind the 50 per cent target set in the Charter. Coverage by medical care remains similarly biased in favor of urban residents.

SURVEYS OF HEALTH CONDITIONS AND SERVICES

The PAHO report on health progress, referred to above, relies on vital and health statistics supplied by national governments. Sources of statistical information, however, remain unreliable. In three noteworthy efforts to improve the data base for health planning in the region, research teams have surveyed urban mortality patterns internationally, and morbidity patterns and health services utilization on a national basis. The first refers to the Inter-American Investigation of Mortality, the second and third, to a study of health conditions in Peru, and to the Study on Health Manpower and Medical Education in Colombia. National health studies are currently under way also in Argentina and Chile.

1. *The Inter-American Investigation of Mortality.* Conducted under the auspices of PAHO, this comparative study of causes of death in urban areas included 12 cities, ten of them located in eight countries of Latin America,* plus San Francisco, U.S.A., and Bristol, England.²¹ Field research, carried out during 1963 and 1964, consisted of samples of about 4,000 deaths in each city, whose causes were carefully established from available records, supplemented by interviews with medical personnel and family members who knew details of a deceased person's medical and personal history. The study included only deaths of adults between 15 and 74 years of age because least was known about causes of adult mortality. The study notes that, "in the past, health programs have been directed principally to the prevention and control of communicable diseases and to the reduction of mortality in infancy and childhood."

Communicable diseases in the ten cities were found to account for fewer than 10 per cent of all causes of death. Cancer and cardiovascular diseases, which are largely unpreventable, accounted for approximately half of all deaths in the survey. Preventable causes, on the other hand, accounted for roughly one-third of all deaths; moreover, these causes of death were highly associated with adverse social and environmental conditions that affected the deceased. Preventable causes were especially prevalent in mortality of the 15-34 year

* Bogotá and Cali, Colombia; Caracas, Venezuela; Guatemala City, Guatemala; La Plata, Argentina; Lima, Peru; Mexico City, Mexico; Ribeirão Preto and São Paulo, Brazil; and Santiago, Chile.

age group where they accounted for 70 per cent of all male deaths and 57 per cent of all female deaths. The most frequent preventable causes of death among all males were alcoholism, accidents, and violence. Most frequent preventable causes of female deaths were abortion and cervical cancer. Far less frequent causes of death were the infective and parasitic diseases, which tend to be principally debilitating in their effects. Comparing its findings on urban mortality with national mortality data for the countries involved, the study concludes that in Latin America urban mortality is between two and four times lower than rural mortality, and attributes this in part to the higher concentration of health services in the cities.

By comparing relative costs of various disease control and other public health programs, and comparing them with benefits measured in terms of potential mortality reductions, one might use data from this survey as inputs for the PAHO health planning method. Because of changing environmental conditions and circumstances affecting the impact of health programs, however, future costs and benefits of such programs are likely to be unpredictably different from past results. In less exacting terms, results of the mortality survey nevertheless suggest some guidelines and conclusions for health planning. Most importantly, they suggest that relatively few deaths are preventable by conventional health program activities. Such programs may have their greatest impact among adult females if they provide family planning assistance and cervical examinations. Among males, prevention of alcoholism and violence as causes of death may be impossible in the absence of significant social and economic improvements.

2. *National Health Planning in Peru.* The first major attempt to combine research, training, and health plan formulation under the Alliance occurred in Peru in 1963–64. Before that time, health planning in Peru, as in most other developing countries, was limited to substantiating international loan applications or attacking a defined health problem (e.g., malaria). National health planning occurred only in the guise of buttressing next year's budget request, with no serious attempt to coordinate projected requirements of many separate health projects. In 1962, Peru instituted a National System of Planning, as did a number of other Latin American countries, in direct response to the call for such action under the Alliance. Central planning offices were created, supplemented by a coterie of sectoral planning units.

Despite urgent demands to produce a national health plan in a hurry in 1963, the newly created health planning unit deferred work on the plan in favor of intensive staff training, and, in addition, training of 135 health officials in other public agencies concerned with health. In the words of Thomas L. Hall, who served as technical advisor to the health planning unit, "education and direct involvement were felt to be far more effective than fiscal or admin-

istrative controls.”²² The health planning unit also undertook extensive field research, rather than relying on available statistics in formulating a national plan. Selecting three representative areas, with populations of about 200,000 each, in the three natural regions of Peru, the planning unit surveyed health conditions and available resources of health manpower and facilities to establish a data base. Upon this foundation of training and research, a five-year plan was formulated in 1965. However, the plan has fallen victim to the overthrow of the Belaúnde government.

3. *Study on Health Manpower and Medical Education in Colombia.* Following the first regional conference of health ministers in 1963 (see above), which emphasized research needs for health planning, Colombia was selected for a comprehensive health sector analysis under the joint auspices of the country's Ministry of Public Health, the Colombian Association of Medical Schools, PAHO, and the Milbank Memorial Fund of New York City. The intent was to undertake a pilot study that could be readily adapted by other countries in the region. Initial agreement on relevant parameters of research was reached at a technical conference held in New York in October 1963.²³ The study was inaugurated at a conference of Colombian national and health sector leaders in Bogotá in August 1964.²⁴ From the outset, the study's sponsors thus sought to create broadly-based understanding and support for the study, a strategy which they pursued throughout its duration of approximately five years.

Principal objectives of the Colombian study were to survey health deficiencies and provide guidelines for changing medical education in accordance with newly identified health needs. As its most ambitious project, the study carried out a national morbidity survey of a 3 per cent representative sample of the population. Research also included a census of medical manpower (physicians and nurses); an analysis of current programs in medical education; an inventory of medical care institutions, including a partial analysis of their utilization; and a background review of socio-economic and demographic characteristics of the Colombian population. Because the Colombian health study was conceived as a pilot project to develop and test research methods adaptable elsewhere in Latin America, a review of its principle approaches, problems it encountered, and data it has produced should be of interest.

The morbidity survey consisted of a national probability sample of 8,920 households with a total of 52,964 members. A 10 per cent sub-sample was selected for clinical examination. In addition to detailed personal health information and vital statistics (the latter including pregnancies, deliveries, and child mortality), the household interview also gathered data on family composition, occupation, education and income levels, and on housing conditions. Detailed clinical examinations of the sub-sample provided valid morbidity data.

The morbidity survey served to develop appropriate and inexpensive research methods for adaptation by other Latin American countries. Technical evaluation of the survey shows it to be free of serious bias, and its margins of error are within statistically tolerable limits. Data processing and detailed analysis of data for health planning purposes, however, have been seriously hampered by technical difficulties and a shortage of programmers and analysts.

The investigation of medical care institutions was very complicated because of their diversity. University and social security hospitals were all included, while public and charity hospitals were studied through a probability sample, stratified by size and location. Specialized and private hospitals were inventoried but not studied in detail. Public health centers and private clinics were also sampled, although their total number and composition by types were not accurately known. The investigation sought detailed information on human and material resources employed in medical care, their costs, and on activities performed, including nutrition services. It also concerned itself with an analysis of demand (including socio-economic and pathological variables) in the out-patient departments of the hospital sample, and with health improvements associable with medical care received. The medical manpower and education segments of the study consisted of exhaustive data collection and extensive interviews. Although tedious and time consuming, these components presented no great technical problems.

As soon as most of the field work was completed and some preliminary results were available, PAHO organized an international conference, held in Maracay, Venezuela, in June 1967.²⁵ The objective was to have the study's methods and findings discussed among health sector representatives of most of the Latin American countries. Since the Colombian study was organized as a pilot effort for the region, such haste in scheduling seemed justifiable to the sponsors. In August 1967, the Colombian Ministry of Public Health and the Colombian Association of Medical Schools, whose research staffs had collaborated in all phases of the study, also presented their findings to a high-level national audience in Bogotá.²⁶ The objective of this conference was to involve the ministers of education, labor, agriculture, the head of the government's central planning office, and heads of other key agencies, with whose areas of concern health problems are most closely interrelated, as discussants of the health study's relevance to development planning.

Yet another conference on the study was organized in October 1967, in New York. This time the Milbank Memorial Fund was the principal sponsor.²⁷ The Fund brought the directors and principal investigators of the study together with an international group of health professionals and social scientists, all of whom were generally familiar with its major aspects. The objective of this conference was to evaluate the study in terms of its implications for planning health services and medical education, and for further research.

Since this series of conferences in 1967, many of the findings of the study have been published in segmented summaries,²⁸ but it is unlikely that all available data will ever be fully analyzed and published by the sponsors of the study because of technical and staff limitations. Findings that have so far been analyzed and published, however, provide an extensive overview of Colombia's health problems and health services such as has never before been available.

The Colombian study found that health conditions are closely associated with residence, income, and education; morbidity survey data also furnish strong evidence of socio-economic inequalities in access to and utilization of medical care. About four in ten persons in low-income families complained of illness at the time of the household interview, as compared with fewer than three in ten among the relatively affluent. Self-perceived illness involved activity restriction in about one-fourth of all cases. Among the poor, about one-fourth of those who felt ill consulted a physician or nurse; among the well-to-do who felt ill, almost half received medical care. Medical consultation, however, was associated still more highly with education than with income. At all levels of income and education, medical consultation was about twice as high in urban as in rural areas. With these findings, one might begin to develop indices of health services deficiencies, particularly among the low-income segment of the population.²⁹

In the clinical sub-sample, most frequently diagnosed were gastrointestinal diseases, which affect almost one-fourth of the population, while stool examinations showed that eight of ten persons carry pathogenic parasites. Also frequent were cirrhosis and respiratory system ailments. Among children, for whom gastrointestinal diseases are the leading cause of death, six of ten suffered from serious malnutrition. Environmental conditions are closely associated with the incidence of morbidity and mortality. The morbidity survey found the average family size to be 5.8 persons in urban areas and 6.1 persons in rural areas. It also recorded that only 69 per cent of all urban and 49 per cent of all rural households occupied a house or apartment. The remaining proportion occupied what are essentially slum dwellings. In urban areas, virtually all houses and apartments had inside toilets and water supply; in rural areas, over half of all dwellings had no water supply and three-fourths had no toilets (inside or outside).

The distribution of medical care resources is biased toward urban areas and the relatively affluent. Nine out of ten physicians practice in towns and cities, which account for one-third of the country's population. Very few municipal public health posts, which are the only source of modern medical care for most of the rural population, are permanently staffed by trained medical personnel. Of all consultation for medical care among the poor in rural areas, about half represented contact with medical doctors and trained nurses, thus suggesting strong reliance upon indigenous midwives and healers. Registered

and practical nurses, of whom Colombia had only 1,170 and 3,500, respectively, in 1965, are in shorter supply even than physicians, who numbered about 8,000. Among physicians, moreover, only 24 per cent worked exclusively for public health services, although 61 per cent of the total devoted at least some of their time to public health services. In the urban areas, the supply of doctors probably satisfies effective demand and there is even some evidence of oversupply since a number of medical doctors do not work full-time, or work in other occupations. The supply of registered nurses is low for two related reasons, namely, that nursing education requires graduation from secondary school, but the occupation has low social prestige among girls from affluent families, while few girls from lower income families graduate from secondary schools in Colombia. Although many doctors work in public health services available to the urban poor, and popular demand creates heavy workloads, and public resources are insufficient to employ more doctors. More extensive use of auxiliary health personnel, for example, might raise the productivity of public health services.

Findings of the morbidity survey strongly suggest that poor health in Colombia is caused as much by unsanitary environmental conditions as by insufficient access to medical care. The rural population and inhabitants of urban slums probably feel that illness caused by gastrointestinal disease does not warrant consulting a doctor; instead, there is evidence of great demand for popular medicines to ameliorate the debilitating effects of such illness. The attack on such health problems, therefore, requires improvements in environmental sanitation as well as in medical care. Educational efforts by medical practitioners, in the schools and through public information, may also help to improve health conditions as long as costly programs to provide housing and sanitary facilities cannot meet the extensive deficiencies in these areas. Here again, auxiliary personnel could be trained to teach the rudiments of modern health practices in rural areas.

An analysis of public health expenditures* for the period 1961–65 revealed that they have remained a constant proportion of GNP at about 1.8 per cent, which, together with private expenditures, probably is below the 3 to 5 per cent of GNP that more developed countries typically expend on health services. The share of funds for generally available public health services in Colombia, moreover, declined from 70 per cent to 60 per cent of the total, while the share of expenditures for social security coverage increased proportionately. The latter, however, primarily benefits employees of government and modern private enterprise, who represent only about 10 per cent of the total population. At the other extreme, about 20 per cent of the population,

* Including, in the case of Colombia, medical care, disease control, nutrition programs, rural sanitation projects, and administrative costs.

principally in the rural areas, is beyond the reach of even the most elementary medical care. This inequality in the distribution of resources available for health services, however, as well as the dispersion of health services among many uncoordinated agencies and activities, may be reduced if a reorganization of the health sector now under way is successful.

The Colombian Ministry of Public Health lately has been assuming control over a broader spectrum of public health activities with the help of legal reforms introduced in 1968. It plans to exercise this control principally as a regulatory and planning agency, delegating operating responsibilities to departmental (state) and municipal governments.³⁰ In 1969, the government also decided to coordinate the utilization of existing and the construction of new hospitals, involving principally the Ministry and the largest social security agency. The Ministry has been using the findings of the national health study to dramatize the role of health in the country's development, and to stress the need for coordination and greater efficiency in the utilization of resources available for health services.³¹ A hastily prepared national health plan, however, does not make analytical use of health study findings to calculate health services deficits, or to project health services requirements on the basis of either biological need or effective demand estimates.³² The planning process is now being further refined, however, with the expectation that it should involve annual revisions and thus become a perpetual effort to rationalize the allocation of resources.

Unless the health study can be periodically updated, however, the data collected in 1964 and 1965 will soon become outdated for health planning purposes. Thus, while the study has demonstrated how a comprehensive data base can be created with relatively inexpensive survey and special census methods, it has failed to provide for the immediate utilization of this information for planning purposes. The experience gained by the participating institutions and the many health professionals employed in the field work and analysis stages, as well as the several national and international conferences held for the study, undoubtedly have created a better understanding of the dimensions of the country's health problems. If this awareness can help orient medical education toward community medicine (and thus restrain its tendencies toward increasing specialization) and encourage the more efficient utilization and more equitable distribution of resources available for health services, the study's original objectives will have been met at least in part, although the failure to integrate research and planning objectives is a major shortcoming of the Colombian study.

3. *National Health Studies in Argentina and Chile.* Following the Colombian example, Argentina in 1967 launched a similar effort. The State Secretariat of Public Health had already initiated a national program to improve routine

collection of health and vital statistics. It had also recently completely an analysis of the country's many independent health insurance agencies. However, the Argentine Association of Medical Schools, founded only recently, was still preoccupied with internal questions of organization. While the Secretariat and the Association together appointed a joint research group and requested technical assistance from PAHO, the urgency and publicity with which the Colombian study was inaugurated in 1964 was lacking. The State Secretariat of Public Health, in fact, regarded the study's potential contribution as supplemental rather than basic to health sector reform and planning. Nevertheless, the study's outline included the same topics as the Colombian study, only with a stronger emphasis on determining the sources and composition of health services funding.³³

Chile also launched a national health study in 1967, also in part supported by PAHO, but with less active cooperation from the country's medical schools or PAHO. Instead, the National Health Service is receiving technical assistance from the Department of International Health of Johns Hopkins University. In contrast to the Colombian and Argentine health studies, which are principally data gathering efforts, the Chilean study and the Peruvian study in the early Sixties represent attempts to construct dynamic health planning models and to gather data specifically required for the models. Although including most of the topics of research also covered in Colombia and Argentina, the Chilean health study involves fewer operational tasks. The morbidity survey utilizes a national population household sample that was drawn by the Chilean labor department for employment surveys. Routine health and vital statistics, moreover, are more reliable in Chile than in the other two countries.

The Chilean National Health Service already controls almost all public health activities, and public health services are now within reach of most of the country's population. Because the National Health Service employs about 80 per cent of all physicians and nurses in Chile, a professional census was unnecessary. An important objective of the Chilean study, therefore, aside from providing policy guidance, is to develop and test a dynamic health manpower planning model. The model also would project health sector expenditures, help in detecting potential bottlenecks, and suggest where health services productivity might be raised. The Chilean study is being carried out with the assistance of Thomas L. Hall, who also served in a similar capacity in the Peruvian health planning effort discussed above. His health manpower planning model, developed from his Peruvian experience (see no. 22), now provides the operational framework for the Chilean study.³⁴

ECONOMIC ANALYSIS AND HEALTH PLANNING

The generally accepted definition of the public health sector in Latin

America now includes medical care and disease control, as well as environmental sanitation in rural areas and urban slums. Economic analysis of health could make intersectoral comparisons of benefits derived from health expenditures and from other economic and social development expenditures as well as concern itself with activities within the health sector itself. It could also seek to distinguish between economic benefits (raising labor productivity) and social benefits (improving welfare through more consumption). Health planning would then seek to allocate resources so as to maximize economic and social benefits in some normatively determined combination, both intersectorally and intrasectorally.

Conceptual problems and data limitations are such that the contributions of economic analysis to health planning have been minimal. Most difficult, perhaps, is isolating effects of health services from those of other environmental variables that significantly affect health conditions. Policy makers and planners concerned with resource allocation in health may most readily contemplate intrasectoral options. They might compare the effects over time of preventive and curative activities in reducing mortality and morbidity. They might also compare the eventual returns to indirectly productive investment in maternal and child care with the more immediate returns to directly productive investment in medical care for adult workers. In the past, Latin American public health programs have concentrated largely on providing such public goods as disease control, inoculations and (in rural areas) sanitary facilities. If they are now going to provide medical care for the indigent, economic and social benefits deriving from such action should be compared with productivity and welfare gains through more extensive environmental improvements in rural areas and urban slums.

So far, however, there has been almost no analysis of benefits derived from health programs in Latin America. Assertions of such benefits have been fundamental to health goals and health planning under the Alliance. The 1968 PAHO report, *Facts on Health Progress*, referred to above, and a report by Molina and Noam,³⁵ represent the state of knowledge. Neither the former, which relies on declining mortality as a measure of health improvement, nor the latter, which presents correlations of health and related socio-economic variables, is able to show causal relationships among variables affecting mortality and health conditions. Estimates of economic benefits derived from health program investments were not even attempted in these studies.

The expanding literature on health economics provides useful guidelines but scanty evidence for health planning purposes.³⁶ Three conceptual approaches have been pursued in studying economic aspects of health services. The first two are variations of cost-benefit analysis. One, examined by Mushkin, measures economic benefits in terms of productive time of labor gained by

reducing morbidity and prolonging life expectancy.³⁷ The other, exemplified by Weisbrod, calculates benefits in terms of health program costs avoided by investment in preventive measures.³⁸ Both of these analytical approaches would lend themselves to application in Latin America. Mortality and morbidity data might be combined with research on labor productivity to yield results on losses in output. And one might estimate to what extent costs of curative programs could be reduced through greater investment in preventive programs. Only the third approach, which is oriented toward the calculation of health manpower requirements, has been attempted in Latin America. The Colombian, Argentinian, and Chilean health studies have all been designed with the principal objective of providing information for health manpower planning. Only the Chilean study and the earlier study of Peru by Hall, however, are attempts to project health manpower requirements within the context of biological needs and economic constraints.

A recent review by Klarman explains the merits and limitations of various approaches to calculating health manpower requirements.³⁹ The advantage that cost/benefit studies have over manpower requirements analyses is their relevance to the justification and allocation of health expenditures. The identification of manpower requirements typically fails to consider them within the context of economic constraints. The Peruvian and Chilean studies by Hall, however, are attempts to take account of economic constraints, among other determining factors. Another problem is that health manpower planning, at least for physicians and registered nurses, involves a relatively distant time horizon; decisions to increase the supply of physicians, for example, would not result in substantial increases for well over ten years, considering the length of their training and the time necessary to expand physical facilities of medical schools.

A broader definition of health manpower planning would concern itself with raising health services productivity and increasing the number and use of auxiliary medical personnel in order to expand health services coverage. Health manpower requirements involve some combination of biological need and effective demand calculations. In developing societies, the former far exceed the latter, and it remains for public health officials and public policy makers to compromise on what constitute minimal requirements and on resources available for health programs. At any given level of resources available for health, a range of options exists of how to allocate them equitably and utilize them efficiently. At this point, health manpower planning models might contemplate the substitutability of capital for certain types of labor (for example, doctors, if they are scarce), as well as the substitutability of various types of health manpower. Better organization of health services and the use of nonmonetary incentives should also prove important in improving health services productivity.

Health sector reforms in Latin America might gain in rationality and permanence by formulating new operational models. Modern medical care in Colombia and Argentina resembles the dispersion of services and the predominance of private practice by physicians, characteristic of the United States.⁴⁰ Private medical care may adapt more readily to local conditions, particularly in an affluent society with broad coverage by health insurance. Insufficient private resources in developing countries, however, leave large segments of the population without adequate medical care unless it is publicly financed. Health sector reforms in Colombia, as well as the country's new health plan, show determination to raise the efficacy of traditional public health services and to expand medical care coverage through public services.

The Chilean National Health Service, on the other hand, which provides medical care for 80 per cent of the country's population, approximates the system of socialized medicine to which Great Britain converted in 1948.⁴¹ Because of their comprehensive coverage, the Chilean and British systems also lend themselves more readily to economic analysis. Comprehensive cost-benefit studies of the British system, such as those by Lees and Wiseman,⁴² could not be undertaken in Colombia and Argentina unless they were to limit themselves to the relatively small segments of the population covered by existing health insurance systems.

None of the approaches and studies cited has attempted to isolate the effects on health of health services from those of other environmental factors. In a recent attempt to isolate the reduction in mortality in the United States attributable to four variables—medical care, education, income, and residence—Auster, *et al.*, calculated that educational expenditures had a relatively greater influence in reducing mortality than did expenditures on medical care for the period 1955–65.⁴³ The authors concluded that, "the effects on mortality of education are about double those of medical care." Furthermore, comparing marginal costs of medical care with marginal economic benefits in the form of increased production, they speculate that costs may have exceeded benefits in this narrow sense. Reductions in mortality alone, however, are an incomplete measure of benefits from health services; reductions in morbidity from these same health services would raise benefits substantially.

Economic planning and policy formation should be concerned with both health and educational objectives. Improvements in both these sectors are complementary, and to some extent they interact. Health planning, however, has not attracted the attention of central planning offices in Latin America as has educational planning. Colombia is an example of a nation in which returns to investment in education have been calculated by the government's central planning office and given consideration in public policy formation. No such attention has yet been accorded to the country's health sector. Even if con-

ceptual ambiguities and data problems are more troublesome in health than in education, economic analysis in both areas can contribute to a continuing evaluation of program priorities.

With data from the national health studies in Peru, Colombia, Argentina, and Chile, complemented by available economic, demographic, and vital statistics, it should be possible to begin supporting health planning with economic analysis in these countries. Combining the Mushkin, Weisbrod, and Auster approaches, as well as broadly conceived health manpower analysis, effects on mortality and morbidity of medical care and other health-related investments such as disease control, environmental sanitation, housing, health education, and nutrition could be compared in terms of their relative costs and benefits. Economic rates of return could also be compared with more easily calculated rates of return on public investments in other sectors such as transportation, construction, utilities. Analytical and technical problems would be formidable, but if health planning in Latin America is to progress beyond intuitive judgment, the effort must be made.

More generally, social science researchers should find in the morbidity surveys, health manpower inventories, and organizational characteristics of health sector activities produced by these studies, rich sources of new data. Intrasectoral analysis of health-related activities would undoubtedly be more feasible and more useful to health planners in Latin America than intersectoral comparisons. Health planning in Latin America has in fact been confined principally to the intrasectoral approach. As seen by health planners in the region, research priorities include cost-benefit comparisons between hospital and ambulatory care; productivity analysis of various modes of medical care delivery; studies of costs and benefits of programs in environmental sanitation, nutrition, maternal and child care, and family planning; labor market analyses of factors affecting demand and supply of health manpower; and evaluations of alternative ways to finance and administer public health programs.

To conclude, health planning in Latin America, though buttressed as in Peru and Colombia and in the region's major urban centers by extensive new health survey data, has not so far involved extensive economic analysis. While plagued by ambiguities in the area of health, economic analysis can nevertheless contribute to conceptual clarification of alternative approaches to the improvement of health conditions and the delivery of medical care. Public health ministries in most countries in the region (with the notable exception of Chile) have limited themselves largely to providing public services, such as disease control and preventive measures. These programs, together with rising educational levels, probably account for greater improvements in health conditions than might be expected of medical care itself. Newly available morbidity data suggest, however, that environmental conditions still account for seriously

debilitating effects among the population. The Colombian health study has also for the first time in Latin America measured the direct relationship between low family income, low educational attainment, and low utilization of medical care. Unequal access to medical care undoubtedly accounts to a considerable extent for this situation. Social welfare criteria thus suggest that public health services should extend medical care to the poor, while economic criteria might favor greater efforts in improving environmental conditions affecting health.

NOTES

1. During the Sixties, two international meetings on human resources planning in Latin America dealt exclusively with manpower, education, and training, with no reference to health planning as an aspect of human resources development. See Pan American Union, *Methodological Meeting of Human Resources*, papers and proceedings of a conference held in Mexico City, October 14–19, 1963; and Organization for Economic Cooperation and Development, *Problems of Human Resources Planning in Latin America*, papers and proceedings of a seminar held in Lima in March 1965.
2. For a summary of recent research, including his own, see Martin Carnoy, "Rates of Return to Schooling in Latin America," *The Journal of Human Resources*, Summer 1967.
3. See Robin F. Badgley, ed., *Behavioral Science and Medical Education in Latin America*, Part 2 of the *Milbank Memorial Fund Quarterly*, April 1966; and, Arthur J. Rubel, "The Role of Social Science Research in Recent Health Programs in Latin America," *Latin American Research Review*, Fall 1966.
4. See Clyde V. Kiser, ed., *Components of Population Change in Latin America*, Part 2 of the *Milbank Memorial Fund Quarterly*, October 1965; and, Clyde V. Kiser, ed., *Current Research on Fertility and Family Planning in Latin America*, Part 2 of the *Milbank Memorial Fund Quarterly*, July 1968.
5. For a brief review, see, e.g., Ernest R. May, "The Alliance for Progress in Historical Perspective," *Foreign Affairs*, July 1963.
6. *Act of Bogotá* (1960); see "Measures for the Improvement of Public Health," Title I, D.
7. *Charter of Punta del Este* (1961); see references to health in the "Declaration to the Peoples of America," in "Objectives of the Alliance for Progress," Title I, and in "Economic and Social Development," Title II. Also see resolutions appended to the Charter: "Ten Year Public Health Program of the Alliance for Progress," Resolution A.2; and, "Task Forces for Programming," Resolution A.4.
8. *Declaration of the Presidents of America* (1967); see affirmation on health in Title I, and statement on health objectives in Title II, Chapter V, C.
9. Pan American Health Organization, *Task Force on Health at the Ministerial Level*, Official Document No. 51, Washington, D.C., April 1954.
10. *Special Meeting of Ministers of Health of the Americas*, Final Report, Buenos Aires, October 1968.
11. *Health Planning: Problems of Concept and Method*, Scientific Publication No. 111, Washington, D.C., April 1965.
12. For a brief review of several plans prepared during the early Sixties, see Instituto Latino-

Latin American Research Review

- americano de Planificación Económica y Social, "Resúmenes de la formulación de los planes nacionales de salud de Bolivia, Chile, El Salvador, Perú y Trinidad-Tobago," Santiago, November 1966. (Mimeographed).
13. For a more detailed presentation of the approach, see Hernán Durán, "Methodology for Health Planning in Latin America," World Health Organization, Document NHP/INF/66.2, 1966; and, Antonio Valasco, "Health Planning: A Review of Methodologies," in *National Health Planning*, World Health Organization, Document SEA/PHA/64, New Delhi, November 18, 1968.
 14. Pan American Programme for Health Planning, *Annual Reports*, 1968, 1969, Santiago, January 1969 and January 1970. (Mimeographed).
 15. See Milton I. Roemer, *Medical Care in Latin America*, Washington: Organization of American States and Pan American Union, 1963; and Pan American Health Organization, *Basis for the Formulation of a Continental Medical Care Policy*, Special Working Document TFH/9, Washington, D.C., March 8, 1963.
 16. Pan American Health Organization, *Administration of Medical Care Services*, Scientific Publication No. 129, Washington, D.C., June 1966.
 17. Asociación Colombiana de Facultades de Medicina, *Medicina y desarrollo social*, Bogotá, 1964.
 18. Pan American Health Organization, *Medical Education*, Document No. CD19/16, 1969, with annex by Juan César García, "General Characteristics of Medical Education in Latin America."
 19. Federación Panamericana de Asociaciones de Facultades (Escuelas) de Medicina, *Primera Conferencia General de Educación Médica*, Bogotá: Asociación Colombiana de Facultades de Medicina, August 1966.
 20. Pan American Health Organization, *Facts on Health Progress*, Scientific Publication No. 166, Washington, D.C., September 1968.
 21. Ruth R. Puffer and G. Wynne Griffith, *Patterns of Urban Morality*, Washington: Pan American Health Organization, Scientific Publication No. 151, September 1967.
 22. Thomas L. Hall, "Planning for Health in Peru—New Approaches to an Old Problem," *American Journal of Public Health*, August 1966. The same author has also reviewed the project more extensively in his book, *Health Manpower in Peru: A Case Study in Planning*, Baltimore, 1969. His book, however, represents a comprehensive economic analysis of health manpower in Peru which was not part of the national health planning project.
 23. "Health Manpower and Medical Education in Latin America," Report on a Round Table Conference, in *Milbank Memorial Fund Quarterly*, January 1964, No. 1, 11–66.
 24. Asociación Colombiana de Facultades de Medicina, *Boletín de la División de Educación, Planeación y Desarrollo*, Bogotá, 1965. See, "Primera parte: Estudio de recursos humanos para la salud la educación," 13–68.
 25. Ministry of Public Health of Colombia and Colombian Association of Medical Schools, *Study on Health Manpower and Medical Education in Colombia*. Working documents of the International Conference on Health Manpower and Medical Education, held under the auspices of the Pan American Health Organization in Maracay, Venezuela, June 19–23,

HEALTH PLANNING IN LATIN AMERICA: REVIEW AND EVALUATION

- 1967, including: vol. I, *Methodology*; vol. II, *Preliminary Findings*; and vol. III, *Working Papers and Reports*.
26. *Recursos humanos para la educación médica en Colombia*, Bogotá, 1968.
 27. Robin F. Badgley, ed., *Social Science and Health Planning: Culture, Disease and Health Services in Colombia*, Part 2 of the *Milbank Memorial Fund Quarterly*, April 1968.
 28. Ministerio de Salud Pública y Asociación Colombiana de Facultades de Medicina, *Estudio de recursos humanos para la salud y educación médica en Colombia*, Bogotá, 1968. Final research reports, including (a) *Hechos demográficos*; (b) *Diagnósticos de consulta externa*; (c) *La muestra*; (d) *Accidentes*; (e) *Atención médica*; (f) *Evidencia clínica*; (g) *La profesión médica*; (h) *Parasitismo intestinal*; and, (i) *Métodos y resultados*.
 29. This concept is developed in my paper, "Economics Aspects of Health Needs in Colombia," in Badgley, *Social Science*.
 30. By decree No. 2470 of September 1968, the Colombian government integrated the health services of the Ministry of Public Health; the two principal social security systems (Instituto Colombiana de Seguros Sociales, and Caja Nacional de Previsión), and of several special programs. This reorganization included the transfer of the Instituto de Fomento Municipal, which carries out rural sanitation projects, from the Ministry of Development to the Ministry of Public Health.
 31. Antonio Ordoñez Plaja (Ministro de Salud Pública), *Informe al Honorable Congreso de la República*, Bogotá: Ministerio de Salud Pública, República de Colombia, informes anuales para 1966/67, 1967/68 y 1968/69.
 32. Ministerio de Salud Pública, República de Colombia, *Plan nacional de salud, 1968–1977*, preliminary version. (Mimeographed).
 33. Information obtained in personal interviews with representatives of the Secretariat of Public Health of Argentina and the Argentine Association of Medical Schools, in January 1969, in Buenos Aires.
 34. Information obtained in personal contacts with Thomas L. Hall, representing Johns Hopkins University, throughout 1969, and in interviews with representatives of the National Health Service of Chile in January 1969, in Santiago.
 35. Gustavo Molina and Freda Noam, "Indicadores de salubridad, económica y cultura en Puerto Rico y América Latina," *Boletín de la Oficina Sanitaria Panamericana*, August 1964.
 36. Recent inventories of the field include Herbert E. Klarman, *The Economics of Health*, New York, 1965; Donald Mainland, *Health Services Research*, New York: Milbank Memorial Fund, 1967; and Anne R. Somers, "Some Basic Determinants of Medical Care and Health Policy: An Overview of Trends and Issues," *Milbank Memorial Fund Quarterly*, January 1968, Part 2.
 37. See two early articles by Selma A. Mushkin, "Toward a Definition of Health Economics," *Public Health Reports*, September 1958; and, "Health as an Investment," *Journal of Political Economy*, October 1962, Part 2.
 38. Burton A. Weisbrod, *Economics of Public Health*, Philadelphia, 1961.
 39. Herbert E. Klarman, "Economic Aspects of Projecting Requirements for Health Manpower," *The Journal of Human Resources*, Summer 1969.
 40. The U.S. system of medical care is well described in Herman M. Somers and Anne R.

Latin American Research Review

Somers, *Doctors, Patients and Health Insurance*, Washington, D.C.: The Brookings Institution, 1961.

41. The development of the British system of medical care is chronicled in Almont Lindsey, *Socialized Medicine in England and Wales*, Chapel Hill, 1962.
42. See, for example, D. S. Lees, "The Economics of Health Services," *Lloyds Bank Review*, April 1960; and Jack Wiseman, "Cost-Benefit Analysis and Health Service Policy," *Scottish Journal of Political Economy*, February 1963.
43. Richard Auster, Irving Leveson, and Deborah Sarachek, "The Production of Health, an Exploratory Study," *The Journal of Human Resources*, Fall 1969.