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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

ECONOMIC GROWTH OF COLOMBIA:
PROBLEMS AND PROSPECTS
(in XII Volumes)

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CURRENCY EQUIVALENTS

(Certificate Market Selling Rate of Exchange)

End 1968

1 US$ = 16.91 Pesos
1 Peso = US$0.05913

End 1969

1 US$ = 17.90 Pesos
1 Peso = US$0.05586

End-March 1970

1 US$ = 18.20 Pesos
1 Peso = US$0.05494

End-June 1970

1 US$ = 18.48 Pesos
1 Peso = US$0.05411

End-September 1970

1 US$ = 18.80 Pesos
1 Peso = US$0.05319
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SUMMARY AND CONCLUSIONS

1. This is the first time, in recent years, that the World Bank has included a total survey of the health sector of a country as part of a general appraisal of development problems, policies and prospects. The information assembled in this general appraisal is to be utilized as the basis for further discussion by the Bank, other international institutions, governments and inter-governmental agencies with the country concerned (Colombia) on its development policies and plans including those affecting the health sector. Among the major objectives set for the survey and applied in this report on the health sector are: (1) The assessment of the domestic and external financing requirements and of the possibilities that those requirements can be met; (2) an analysis of the principal pre-investment surveys and studies required to carry out the development program; and (3) an analysis of the problems of investment and resource mobilization within the health sector.

2. For this survey the health sector has been broadly defined to include all planned and organized public endeavor directed at the national level toward the promotion of health, the prevention of illness and disability, the care of the sick and the restoration to useful work or activity of all those whose health status has been impaired. Part A of this report, Chapters I-III, describes the Colombian health care system, assesses the major health problems of the country and provides a detailed analysis of the National Ten Year Health Plan (1968-1977). Part B, Chapters IV-VI, considers selected proposals and projects that could accelerate the pace of achievement or consolidate the sound objectives of the Ten Year Health Plan. Separate reports consider the special health related problems of water supply and sewage disposal and of housing and community development.

3. As in many developing countries the health care system of Colombia is predominantly a function of government. The Ministry of Health, though at the apex of this system, is only one of multiple governmental agencies directly concerned with the provision of health and medical services. In recent years the Colombian Institute of Social Security and the National Cajas (welfare funds) have gained prominence in the health sector. Recent legislation has added to the operational responsibilities of the Ministry of Health by assigning to it clearly defined authorities for national health planning and coordination and for the continuing evaluation and supervision of all health services at regional and local levels. Within the last two years, and for the first time, Colombia possesses an integrated network of health programs and activities with high potential for the early development of a comprehensive and efficient health care system.
Health expenditures have risen five-fold in the nine-year period, 1961-1969, from 984 million pesos annually to 2,763 million pesos with a sizeable further increase budgeted for 1970. Thus, public, or governmentally controlled, expenditures for health, formerly fairly constantly at the level of 1.8 percent are now 2.5 to 2.8 percent of the GNP. Significantly, even with substantial increases in appropriations to the Ministry of Health its share of the increased public expenditures for health has fallen from 30 to 26 percent and per capita expenditures for health services for the general population are now at the same level they were 10 years earlier, namely 62 pesos per capita. In contrast, expenditures for hospital and medical care for the five percent of the population covered by social security or the welfare funds of national ministries have risen during the same interval from 326 to 736 pesos per capita and the aggregate costs of these services now represents over half (53 percent) of all public expenditures for health. Private expenditures for health, though substantial, cannot readily be assessed.

5. Capital investments made in the past for health facilities and equipment have not been subject either to analysis or plan even though there is abundant evidence that all levels of government and many public spirited individuals and groups have made available sizeable funds for these purposes. Recently, as part of a new National Hospital Plan and with the recent incorporation of the National Institute for Municipal Development within the Ministry of Health, that Ministry has established an orderly system of planning and budgeting for capital construction, modernization and equipment of health facilities covering the entire country. A rough approximation places the health investment budget in 1970 at slightly under 10 percent of total public expenditures for health.

6. The health problems and needs of Colombia are identifiable with a rapidly growing population currently estimated to number 21.5 million. The population is concentrated in the younger age groups and increasingly in urban centers although almost half (48.5 percent) reside in small villages and on farms. A high but not precisely determined birth rate, coupled with a declining death rate - which may be associated more with a youthful vigorous population and with improved levels of income and education than with widely available and successfully utilized public health services - has resulted in a high rate of natural increase in the population. This high rate of population increase shows some evidence of having passed its peak yet it places heavy burdens on the current national effort to extend and improve health and medical care services for all segments of the population. The impact of this large and rapidly growing population is also being severely felt in other areas of economic and social development -- in the need for schools and teachers, in employment opportunities, in housing and community development, in the per capita share of the gross domestic product and in many others.
7. The socio-economic profile of the population is also characteristic of a developing society with a low median family income (1965) of 4348 pesos (US$ 290) rising to 6645 pesos (US$ 443) in urban areas and falling to 2872 pesos (US$ 191) in rural households. The per capita share of the gross domestic product is estimated (1967) at US$ 282 having risen from US$ 246 ten years earlier. Occupational pursuits are heavily weighted by unskilled employment. Educational levels are low with only 13 percent of Colombians over the age of 15 having had some secondary schooling and less than 2 percent with some university or professional training. Thirty-five percent of rural dwellers have had no schooling and only 3 percent have advanced to secondary school levels.

8. Rates for all illness, restricted activity and confinement to bed due to illness are high and are inversely correlated with low levels of education, income and occupation. The same observations hold for the utilization of health care services, attendance by a physician or visits to a hospital. Rural dwellers fare far less well than their urban counterparts whether it be in relation to risk of illness or to the utilization of health care services.

9. The major categorical disease problems of Colombia are, again, typical of a developing society. The foremost, diarrheal disease and related conditions, including intestinal parasitism, are clearly associated with low levels of environmental sanitation. Others include the acute communicable diseases (of childhood), malnutrition -- much of which is occult rather than overt -- tuberculosis, venereal disease, induced abortions, accidents, dental disease and mental illness. Many, if not all of these conditions are amenable to modern preventive measures and yet until very recently all but a fractional share of national health effort has been consumed in attempting to cope with the huge burden of morbidity these problems create. Other significant public health problems characteristic of Colombia's geographic and climatic circumstances -- malaria, yellow fever, yaws and leprosy -- are in sight of successful attack yet major efforts and continued vigilance are required to bring them under total control or possible eradication.

10. Sizeable investments have been made in the past in the building equipment and operation of hospitals, health centers and health posts throughout the country. These dispersed institutions have, until recently, been independently operated, usually inefficiently and without supervision or regulation based on nationally agreed upon norms and standards. A national hospital plan is now in operation with the objective of weaving together a nationally directed and supervised system of health institutions and facilities. This plan, calling for modernization, regionalization and adequate staffing of the health care system gives promise of providing comprehensive health services available to all segments of the Colombian population.
11. Shortages of all categories of essential health personnel and the maldistribution of the limited health manpower supply comprise the most difficult and demanding problems currently being faced by the country's health leaders. These shortages and maldistributions are severe for the higher professional categories -- physicians, dentists, professional nurses, sanitary engineers, nutritionists, health educators, statisticians, hospital administrators and other supervisory level personnel. A major problem also exists, due to the larger numbers required, at middle levels -- auxiliary nurses, technicians of all types, medical and dental assistants, sanitarians, statistical assistants and higher level clerical workers. Lower level supporting personnel are also in short supply with insecurity of jobs and rapid turnover in employment conspicuous problems.

12. These manpower problems require reorientation and augmentation of education and training at all levels and particularly for middle level personnel. This will be feasible provided other educational institutions, in addition to the university medical schools, are fully mobilized for this purpose. Special attention should be given to the need for close integration of all training programs and the development of a national plan for the training of all categories of required health manpower. Stabilization of the available health manpower supply also requires a recasting of the salary system, improved incentives and conditions of employment as well as the acceleration and reinforcement of the adopted policy of delegation of tasks to trained middle and lower level personnel to be performed under competent supervision.

13. A sound Ten Year National Health Plan, 1968-1977, has been adopted and is currently being implemented. This Plan has gained the support of the top levels of the national government and is backed by all significant elements within the health sector. Under the provisions of the Plan, mechanisms have been created for the close integration of all health activity in the country whether these be under governmental or non-governmental auspices. Also, for the first time, national, regional and local health programs are fully coordinated, under the direction of the Ministry of Health, and offer promise of the early institution of a comprehensive health and medical care system available to all segments of the population. For the present, the Ministry of Health retains responsibility for the administration of nation-wide campaigns that focus on major health problems requiring mass preventive measures, e.g., environmental sanitation including water supplies and sewage disposal, malaria, leprosy, yaws and yellow fever eradication, nutrition and vaccination against communicable disease but these programs too will ultimately be decentralized.

14. Despite conspicuous increases in public or governmentally controlled expenditures for health, current trends, sustained over the ten year period 1961-1970, indicate that insufficient resources are being directed toward the improvement and extension of general health services,
the objectives of the National Health Plan. In response to a rapidly rising demand for hospital and therapeutic care on the part of insured workers, a larger and larger share of expenditures is being consumed for the benefit of this small but important element of the population. The balance of increased expenditures, at least on a per capita basis, is also being consumed by increases in the total population and the depreciating purchasing power of the peso. To fully implement the National Health Plan will require additional funds derived from public sources and earmarked for general health services. A rise of 50 percent in such expenditures is desirable with emphasis on the utilization of such increased expenditures for preventive measures.

15. An extension and consolidation of the social security system is under consideration. Because such a system involves contributory mechanisms -- contributions by the workers, by the employer and by the government -- it has appeal to those who recognize the need for broadening the base for the funding of essential health care services. Such an extension, however, warrants careful study of the current costs and the efficiency of operation of the existing system and its more effective integration with the general health services directed by the Ministry of Health. There are already evidences that a two class system of health and medical care services -- one for the employed, the other for the rest of the population -- is developing. Furthermore, preventive medicine and health promotive measures should receive greater emphasis in the services available to social security and welfare fund beneficiaries.

16. A weakness in the existing mechanisms for the financing of health services, now in the process of correction, has been insufficient attention to and the planning of long-term capital investments in required health care facilities and equipment. The establishment of the National Hospital Fund and the National Institute for Municipal Development give promise of correcting these deficiencies. External assistance in the form of long-term loans, on favorable terms, is needed to augment domestic resources.

17. Opportunities exist for further advances in the health status of the Colombian population through the conjoint action of the Ministry of Health with other ministries of government: with the Ministry of Education for the education and training of health personnel and the health education of the public; with the Ministry of Agriculture in nutrition and the adaptation of food resources to the feeding and nutritional needs of the population; and with the Ministries of Public Works and Interior in housing and community development. Other examples could be cited including industry and agriculture in improving the health conditions of employment. The National Health Plan calls for more of such endeavor and the Ministry of Health has already made significant strides in this direction. National policy should encourage such efforts.
18. The Government of Colombia has recognized the urgent and mounting problems of a rapidly increasing population complicated by mass migrations to urban centers and has launched a significant family planning program to cope with these problems. Family planning informational and medical services are being developed under both governmental and voluntary auspices to meet a genuine and increasing public demand. The limitations of these programs are related more to needs for trained manpower and the organizations of health services than to the availability of funds for program financing. Social forces -- improved educational levels, increased family income, better housing and recreational opportunities and more ready access to general health care -- have all been demonstrated to foster a declining birth rate. Improved knowledge of these forces and its translation into national policy and social action is still required to bring the excessive rate of population increase under reasonable control.

19. At present, five significant health projects are sufficiently developed in terms of plan, scope and cost to warrant careful consideration for external financial assistance. Each represents an area of high priority determined by the National Health Plan. Domestic funds already committed to these projects in the annual budget of the Ministry are insufficient to realize their objectives as rapidly as the need dictates. These recommended projects are: (a) Development of Institutional Resources for Health (Hospitals, Health Centers and Health Posts), (b) Control of Communicable Disease by Expansion and Acceleration of National Mass Vaccination Programs, (c) Expansion and Completion of the National Laboratory of Health, (d) Expansion and Development of the Colombian School of Public Health, and (e) Fluoridation of Urban Water Supplies.

20. Developmental studies are currently in progress to refine and extend the National Health Plan. These studies are being funded from both domestic and external sources and several involve extensive collaboration with international assistance agencies and with scientific institutions in other countries. Six additional preinvestment program studies are recommended for consideration at this time: (a) An Action Program for Education and Training in the Health Sector, (b) Study of Medical Care Institutions, (c) Nutrition Study - Phase III, (d) Health Care Under the Social Security System, (e) Vital Statistics and Morbidity Data - Registration and Analysis, and (f) Sample Studies of the Health Status and Health Resources of Colombia. More detailed outlines of these proposed preinvestment program studies are provided.
I. HEALTH AND MEDICAL CARE AS CRITICAL ASPECTS OF ECONOMIC AND SOCIAL DEVELOPMENT IN COLOMBIA

A. Definitions and Orientations

1. In the past, public health measures were commonly limited to those governmental or philanthropic efforts initiated as a means of mitigating the disruption to commerce brought about by the importation of epidemic infectious disease into a local population. The organization of such services was invariably simple and discontinuous, and the health personnel employed were usually housed in the basement of the local city hall, not infrequently next to the city jail. Gradually, safeguarding the community water supply, sanitary inspection of public places and other relatively simple activities were added functions of the public health officials. In enlightened communities episodic medical care was also extended through charity hospitals, dispensaries and custodial institutions to that segment of the population which, when incapacitated by illness, was considered incapable of fending for itself through private means. These institutions were autonomous, were answerable only to their own independent boards of trustees, and dealt only with those problems which met their own admission policies. Services offered terminated with the death or discharge of their patients.

2. Improved public understanding of the causes of illness and its economic and social consequences, technical advances in the medical and social sciences, and the assignment to government of greater responsibility and authority for promoting the total well-being of the population it serves, have made so limited a definition of public health obsolete and no longer a tenable one. Today, the field of public health is almost universally recognized as encompassing a planned and organized public endeavor directed on a national level toward the promotion of health, the prevention of illness and disability, the care of the sick, and the restoration to useful work or activity of all those whose health status has been impaired. As such, health care for many has lost the stigma of charity services, or the beneficence of the rich for the poor, and has become an integral part of a rising tide of national aspirations for the interdependent goals of better health, education, housing, and job opportunities.

3. So defined the scope of public health activity has been enlarged in many directions. It must involve a national network of programs and activities reaching down through every jurisdiction of government to the local level where people live and work. It must engage the efforts of every ministry of the national government, and must incorporate the resources of professional groups and private enterprise outside the framework of government. Public health today includes the protection of the human population against all of the hazards of its environment, whether these hazards arise from naturally occurring noxious agents, or from dangerous pollutants of the environment created by man himself; it includes the fortification of man's own resistance to disease by the application of the developing sciences of nutrition, immunization, and chemoprophylaxis; the provision of the institutional resources required to care
for the sick (hospitals, dispensaries, health centers, etc.); and the
training and deployment of health personnel -- both professional and
auxiliary -- required to staff the complex services demanded in a modern
health and medical care system.

4. Two other essential ingredients of such a system should not be
overlooked. First, it is widely recognized -- and will be amply documented
in this report -- that an illiterate population is an unhealthy population,
and a health-illiterate population cannot, or will not, take those measures
which it alone must apply to safeguard or promote its own well-being, nor
will it utilize effectively and efficiently the public health resources
available to it to meet those needs which the individual alone cannot pro-
vide. Thus, a national public education system, adapted to the special
need for increasing enlightenment in matters of health, is an indispensable
requirement of a sound national public health program. Secondly, there
must be clearly defined leadership within the national government --
appropriately within the Ministry of Health -- to take stock of the ever-
changing health situation, to plan and promote the needed programs, and to
mobilize all resources -- governmental and private -- to the end that the
services required by the public are provided within the resources available.

5. In a developing country, such as Colombia, the burden of public
health endeavor falls heavily on the national government, and particularly,
on the national Ministry of Health. Despite its nominal designation and
its legal authorities, the Ministry of Health does not always provide the
sole, or even the major channel for the expenditure of funds for public
health activity. Funds available for public health are at best limited
and other areas of national development are in severe competition for the
resources of the national treasury. The tax base of local and state
(Departmental) governments is severely limited and may be nonexistent;
private enterprise in health and medical care is rudimentary, and public
philanthropy which has pioneered so extensively in expanding the scope of
public health endeavor in the more advanced countries, is episodic and
essentially unorganized.

6. Despite the above assessment, the public health system in Colombia
is an extensive one, and many organizations within and outside of govern-
ment, and at national, departmental and local levels are vigorously engaged
in a modern public health program in Colombia that clearly meets the defini-
tions and criteria set forth in this section. A unique attribute of the
public health movement in Colombia is the availability of an extensive
array of basic data on the health situation and the available health
resources within the country. These were assembled in 1965-66 through a
cooperative enterprise of the Ministry of Health and the Association of
Colombian Medical Schools with financial and other assistance provided by
the Milbank Memorial Fund of New York and the Pan American Health Organiza-
tion (Regional Office for the Americas, World Health Organization). (3, 4)
Many of these data were of fundamental value in the formulation by the
Ministry of Health of a Ten-Year Health Program for Colombia (1968-77).
(12)
7. A final point of orientation is in order. In reviewing the health problems of a developing country, such as Colombia, the observer is immediately made aware of the wide discrepancies that exist in the major health indicators of that country when these are compared with similar indicators for the more advanced nations of the world, as for example, those in Western Europe or in North America. A direct comparison of such data is frequently odious and sometimes hazardous. For example, matching the infant mortality rate for all of Colombia and the U.S. national rate, fails to reflect the variable components within each set of data or that approximately half of the Colombian population resides in a rural setting where levels of literacy are low and family income meagre. The infant mortality rates of rural Negro communities in the Mississippi Delta are of the same order of magnitude as those for a local population in a rural Colombian village. Similar direct comparisons could be made for a Bogotan barrio with an urban ghetto area in any one of several major U.S. cities.

8. Again, in Colombia the ratio of physicians to total population is low, about 4: 10,000, whereas, in the U.S. this ratio is 16:4:10,000 (1). The uneven distribution of physicians in the U.S. has evoked much concern but nowhere does it approach the maldistribution recorded in Colombia where almost 3 out of 4 doctors reside in the principal cities, and serve less than 1/3 of the total population; only 10% of the medical manpower in Colombia is available to the 2/3 of the population residing in places of 20,000 population or less. (4-o). Probably of even greater significance is the observation that with the resources at present in sight, it would take no less than 100 years for the medical training institutions of Colombia to produce the number of physicians required to approach current U.S. physician/population ratios. Herein lies an important inference for Colombian health planners: It would be folly for them to set as their goal the uncritical adoption of health care patterns and norms observed in the so-called advanced countries of the world. Rather, by applying innovative approaches they must devise new techniques and new concepts appropriate to their own health problems and their available or potential resources. For example, impressive evidence is rapidly accumulating in Colombia and elsewhere demonstrating that the skills and professional knowledge of a limited number of physicians can be extended to serve a larger segment of the population. This can be accomplished by the greater utilization of auxiliary workers trained to work as members of an integrated health care team. The role of the physician remains a dominant one. However, his functions assume more of a directing and supervising nature and he becomes more the manager of health services than the sole provider of medical care. Thus, in utilizing data presented in this report the purpose to be served is less to compare the Colombian situation unfavorably with that of the more advantaged areas of the world, but more to provide suitable starting points or bench marks to Colombian health planners, and those who would assist them in their tasks, to develop unique and even experimental approaches to realistic goal objectives.
3. The Health Care System

I. Governmental Programs

9. Governmental health activities are conducted on each of three administrative levels: National, Departmental, and Intendencias or Comisarías (29), and at the local level where services to the public are provided through 1500 health centers and health posts, dispensaries, and similar facilities for ambulatory medical care, and through about 500 hospitals offering both in-patient and ambulatory services. These public hospitals, with about 12,400 beds comprise 88% of all such facilities available in the country.

10. At the national level, the Ministry of Health is charged by law with formulating national health policy, "the preparation of national plans and programs, the supervision, coordination and control of all activities relative to health, the establishment of regulations and supervision for their fulfillment." There are other national organizations concerned with the provision of health services for specific population groups and these include the Colombian Institute for Social Security, the Military Health Services, the Ministries of Education, Labor, Public Works, Police, the National Railways, the Ports of Colombia and other agencies with smaller programs which either provide health services directly to their employees or through Welfare Funds (cajas). These special health programs, focused on both publicly and privately employed workers, are limited to approximately 1.3 million beneficiaries out of a labor force estimated in 1970 to be about 6.5 million and a total population of 21.6 million.2/ (3). The Colombian National Red Cross Association has also been recognized by the National Government and assigned responsibilities for "attending to every class of accidents, calamities, catastrophes, epidemics and other humanitarian works." In addition, the beneficiencias and lotteries are legally recognized as autonomous regional organizations which devote part of their income to the support of hospitals and medical care institutions.

II. As a consequence of recent legislation (Decrees 3224, (1963); 1499, (1966); and 2170, (1968)) most, if not all, of these separately administered programs are coordinated through a National Health Council, chaired by the Minister of Health. This legislation also authorized internal reorganizations within the Ministry and provided for the coordination of regional and local health programs and the unification of their financial resources. For the first time a national network of health activity now exists with consolidated mechanisms established within the Ministry for supervision, control, programming and periodic evaluation.

1/ Public hospitals, many of which are governed by independent or semi-autonomous boards of directors, are defined as receiving all or part of their funds from the public treasury; the medical care services they provide are subject to the supervision of the Ministry of Health.

2/ In general, health benefits in these plans are restricted to the employed workers; some provide limited benefits to dependents of insured workers, e.g., maternity care and infant care during the first six months of life.
at all levels. In addition a series of semi-autonomous institutes were either assigned to or created under the aegis of the Ministry with the authority and flexibility to undertake urgent and major health programs of national significance. As a consequence of these recent organizational adaptations the Ministry of Health currently includes the following functional elements: (17).

a. Policy Determination and National Planning
   i. Office of the Minister
   ii. Office of Planning
   iii. Office of Human Resources for Health
   iv. Office of the Legal Counsel

b. Assigned Agencies
   i. Colombian Institute for Family Welfare (ICBF) (includes Division of Nutrition -- formerly, National Nutrition Institute).
   ii. National Institute for Municipal Development (INSFOPAL) (responsible for water supplies and sewerage systems for communities over 2500 population).
   iii. National Institute for Special Health Programs (INPES) (includes the formerly separately administered National Institute of Health and is responsible for water supplies and environmental sanitation in rural areas).
   iv. National Hospital Fund (responsible for financing the construction of hospitals and health centers with funds loaned by the Colombian Institute for Social Security).
   vi. Supplies Corporation for Social Welfare Institutions (CORPAL).

c. Administrative Divisions
   i. Medical Care
   ii. Direct Campaigns
   iii. Environmental Sanitation
   iv. General Administration

2. The Private Sector

12. In Colombia, as in many other developing countries, the privately operated and financed health sector is of relatively small magnitude when compared with governmentally directed or controlled operations. Through various channels, however, the private sector exerts considerable influence on national policies and governmental programs. As was stated earlier,
approximately 20 percent of all hospitals, with about 12 percent of the available beds, are privately operated. Yet, the vast majority of the public hospitals throughout the country were established by local groups and municipalities and continue to be directed by independent charity or other boards. These institutions are now dependent in preponderant degree for support from the public treasury and the medical care provided is subject to the supervision of the Ministry of Health, yet they still retain considerable autonomy and independence in their operations.

13. As for the medical profession, private practice appears to be the ambition of most physicians, though this may be as much due to lower remuneration and less satisfactory working conditions in salaried positions as to philosophical orientation. Only 14 percent of physicians in Colombia are engaged exclusively in private practice and 24 percent exclusively in salaried positions; the majority, 62 percent, combine private and non-private work in various proportions. However, after age 50, two-thirds or more physicians concentrate their efforts on the private sector whereas under age 35, over 75 percent of doctors are dependent on salaries as the major source of their income. (40). Also in the private sector the drug and pharmaceutical manufacturing and distribution industry appears to be a large and profitable one. In 1966, its gross product exceeded 1,200 million pesos, about 7 percent of total soft consumption goods manufacture in the country. (33). This sum is larger than the total public expenditures for health that year. (See paragraph 16 below).

14. No discussion of the role of the non-governmental sector in meeting the health needs of the Colombian population would be complete without reference to the Association of Colombian Medical Colleges. This association representing the seven (now nine) university medical schools in Colombia has provided outstanding leadership in the health sector over the 10 years of its existence. It has contributed particularly to the development of public awareness of health as a necessary condition of social and economic development of the country. In addition, it has cooperated with and supported the efforts of the Ministry of Health in a series of unique studies encompassing a national health survey of Colombia as well as an investigation of health manpower resources and professional education. (3.4.5). These studies conducted in 1965-66 have placed in the hands of Colombia policy makers and planners a wealth of vital data that is the envy of their counterparts in many advanced countries of the world. What is more, the Association has been instrumental in seeing that many of the findings, which are still in process of analysis and publication, are utilized as the basis for new national programs now in process of implementation.

C. Sources of Funds and Major Outlays for Health and Medical Care

15. In the 10 year interval 1961-1970 there has been a dramatic rise in recorded health expenditures in Colombia. In 1961, 543 million pesos were devoted to these purposes at all levels of governmental expenditure...
and by 1969 this figure had reached 2,763 million pesos, a fivefold increase. In the former year health expenditures represented 1.8 percent of the gross national product and in the latter, 2.5 percent. For 1970 an additional rise is planned to 3,507 million pesos, 2.8 percent of the gross national product, a further reflection of the established national policy to give greater emphasis to health activity and an equivalent reflection of the surging demand on the part of at least some elements of the Colombian population for health and medical care services.

16. Table I-1 shows the recorded expenditures for public health and medical care for each of the years 1961-1969 and budget estimates for 1970. The major sources of these funds are also displayed. It should be noted that expenditures for water and sewerage in urban communities (population 2,500 and over) have been omitted from the tabulation. Some, but probably a minor fraction, of the annual increases in total health expenditures is attributable to improved accounting and reporting procedures. The depreciation in the purchasing value of the pesos during this ten year interval also must be considered. However, the increase is so substantial and the accelerating rise in annual increments so notable in recent years that there can be little question that with improving economic conditions in the country the Government of Colombia has established as national policy the earmarking of larger and larger expenditures for public health and medical care services.

17. In the same table it may be noted also that appropriations for the Ministry of Health have risen from 162 million pesos in 1961 to 578 million pesos in 1969. This represents a rise of approximately 140 percent, in terms of the 1961 purchasing power of the peso, in the eight year period. However, during this same interval appropriations for the Ministry of Health have become a significantly smaller fraction of the total expenditures for health and medical care, falling from 30 percent of the total in 1961 to 20 percent in 1969. If expenditures through the National Institute for Social Security, the Cajas and by other national agencies -- i.e., costs of providing medical care for special employed groups -- are subtracted from the totals it becomes apparent that general health care for the total Colombian population has not been as much the beneficiary of this rising tide of health expenditures as might be initially surmised. In 1961 general health care represented 72 percent of total costs and about 1 percent of the gross national product; in 1969 general health care had fallen to 47 percent of total costs and remained at about 1 percent of gross national product.

18. Conversely, the beneficiaries of the social security system and of the Cajas and other special programs are now receiving a substantially different level of health care than that received by their own dependents and by the balance of the population. It has been estimated that such beneficiaries now number about 1.3 million workers, or about 5 percent of the total population. In their behalf about 785 pesos were spent in 1969 for medical care for each of them, an increase of 240 percent per individual since 1961. For the general population about 52 pesos were expended per individual in both 1961 and 1969 with the intervening years showing lower average annual expenditures (see Table I-2). No
### Table I-1. Expenditures for Public Health, by Source of Funds, 1/
**Colombia, 1961-1970**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pesos</td>
<td>%</td>
<td>Pesos</td>
<td>%</td>
<td>Pesos</td>
<td>%</td>
<td>Pesos</td>
<td>%</td>
<td>Pesos</td>
<td>%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>542.9</td>
<td>100</td>
<td>599.5</td>
<td>100</td>
<td>790.6</td>
<td>100</td>
<td>1,101.5</td>
<td>100</td>
<td>1,371.5</td>
<td>100</td>
</tr>
<tr>
<td><strong>I. Internal Sources</strong></td>
<td>538.2</td>
<td>99</td>
<td>589.7</td>
<td>99</td>
<td>781.8</td>
<td>99</td>
<td>1,091.4</td>
<td>99</td>
<td>1,361.1</td>
<td>99</td>
</tr>
<tr>
<td>a) Ministry of Health</td>
<td>162.4</td>
<td>30</td>
<td>181.5</td>
<td>30</td>
<td>178.6</td>
<td>23</td>
<td>203.5</td>
<td>21</td>
<td>208.5</td>
<td>19</td>
</tr>
<tr>
<td>b) Other Ministries</td>
<td>23.6</td>
<td>4</td>
<td>37.5</td>
<td>6</td>
<td>35.4</td>
<td>4</td>
<td>57.3</td>
<td>6</td>
<td>63.5</td>
<td>6</td>
</tr>
<tr>
<td>c) Social Security and National Cajas</td>
<td>121.9</td>
<td>22</td>
<td>122.0</td>
<td>22</td>
<td>212.4</td>
<td>27</td>
<td>245.1</td>
<td>26</td>
<td>349.2</td>
<td>32</td>
</tr>
<tr>
<td>d) Other Central Agencies</td>
<td>10.2</td>
<td>2</td>
<td>21.5</td>
<td>3</td>
<td>23.6</td>
<td>3</td>
<td>30.9</td>
<td>3</td>
<td>31.6</td>
<td>3</td>
</tr>
<tr>
<td>e) Lotteries, 5 and 6, Totogol, etc. (Beneficencias)</td>
<td>112.8</td>
<td>21</td>
<td>99.2</td>
<td>17</td>
<td>181.4</td>
<td>23</td>
<td>230.0</td>
<td>21</td>
<td>254.6</td>
<td>23</td>
</tr>
<tr>
<td>r) Departments and Municipalities</td>
<td>88.3</td>
<td>16</td>
<td>93.1</td>
<td>16</td>
<td>118.1</td>
<td>15</td>
<td>137.0</td>
<td>14</td>
<td>146.0</td>
<td>13</td>
</tr>
<tr>
<td>g) Payments for Hospital Services</td>
<td>22.0</td>
<td>4</td>
<td>24.9</td>
<td>4</td>
<td>32.3</td>
<td>4</td>
<td>35.4</td>
<td>4</td>
<td>38.0</td>
<td>3</td>
</tr>
<tr>
<td>h) Taxes on Beer</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>II. External Sources</strong></td>
<td>4.0</td>
<td>1</td>
<td>9.8</td>
<td>2</td>
<td>8.8</td>
<td>1</td>
<td>13.8</td>
<td>1</td>
<td>10.1</td>
<td>1</td>
</tr>
<tr>
<td>Gross National Product</td>
<td>30,067.0</td>
<td>34,199.2</td>
<td>43,525.5</td>
<td>53,760.3</td>
<td>60,797.6</td>
<td>73,612.3</td>
<td>83,525.2</td>
<td>96,550.5</td>
<td>(109,100.4)</td>
<td>(126,897.8)</td>
</tr>
</tbody>
</table>

**Health Expenditures as percent of GNP**

|        | 1.8% | 1.8% | 1.8% | 1.6% | 1.8% | 1.9% | 2.0% | 2.1% | (2.5%) | (2.5%) |

1/ Does not include expenditures for water and sewerage in urban areas.
2/ 1970 figures represent budget as opposed to expenditures; bracketed figures are estimates.
3/ Included in 1969 and 1970 figures are World Food Program contributions.

Sources: Study of Human Resources for Health and Medical Education in Colombia - Ministry of Health, Association of Colombian Medical Schools, 1967; National Hospital Plan, Bank of the Republic; Economic Investigations - National Planning Department.

Note: The listings for Beneficencias, Departments and Municipalities, Payment for Services and Ministry of Health take into account data from the historical series up to 1965 and estimates for 1969 prepared by the Ministry of Health; for other years figures have been developed by interpolation and projection - Human Resources Unit - Department of National Planning - March 5, 1970.
data on medical care expenditures are available for the estimated 15 percent of the total Colombian population which is believed to receive such services through private channels. Roemer estimates that in other developing countries of the world health services as a whole consumed between three and four percent of the gross national product. (20). Assuming for Colombia a median figure of 3.5 percent, this would imply that the true health expenditures for Colombia are at the level of 3,826 million pesos (1969) rather than the 2,762 million pesos shown in Table I-1. It would follow that private medical care expenditures are at the level of 1,062 million pesos annually or about 328 pesos per person for the 15 percent of the total population that receives care through private channels. This figure is obviously quite low compared with expenditures under the ICSS - Caja systems suggesting that Roemer's assumptions do not apply to Colombia, the 15 percent private care estimate is too high, or social security and other welfare fund beneficiaries are receiving an unusually costly form of medical care services when compared with recipients of private medical practice. It also follows that public expenditures for medical care for the general population are very low. These issues deserve further study and analysis.

19. Considerable difficulty is encountered in analyzing available Colombian data to differentiate continuing operational expenses from those of an investment nature - expenditures for the construction of new facilities and their initial equipment. This is in part due to recent changes in the organizational structure of agencies at the national level of government involved in the provision of health and medical care services and in part to changing patterns of budget formulation, along with changing definitions of "investments" as opposed to "operational expenditures".

20. For example, for 1965, 5 percent of the total expenditures for health of 1,101.5 million pesos, or 55.5 million pesos, were allocated to capital investment; 50.4 million pesos were devoted to construction of hospitals and other facilities and 5.1 million pesos for construction of rural water supplies. (3). Costs of construction of water supply and sewerage systems in communities larger than 2,500 population were omitted from this tabulation, presumably because national responsibility for financial assistance in this area to such communities had been assigned to the Ministry of Economic Development. This situation was changed in 1969 with the transfer of the National Institute for Municipal Development (INSFOPAL) from the Ministry of Economic Development to the Ministry of Health. In the 1970 national budget investment expenditures for water supply and sewerage systems are consolidated in the 507 million pesos Ministry of Health capital investment budget; 137 million pesos of these funds are earmarked for INSFOPAL subsidies of water and sewerage systems in communities larger than 2,500 population. An additional 61 million pesos are also earmarked for municipal water supplies and sewerage systems. (In Table I-1, these 198 million pesos are not included in the Total Tabulation for 1970 to maintain the consistency of the historical series of health expenditures).

21. On the other hand, more detailed scrutiny of the 1970 budget reveals that the 507 million pesos capital investment budget of the Ministry of Health includes in addition to (a) the 198 million pesos, mentioned
Table I-2. PUBLIC EXPENDITURES FOR HEALTH BY AGENCIES WHICH SERVE THE GENERAL POPULATION, AND WHICH SERVE SPECIAL POPULATION GROUPS, COLOMBIA, 1961-1970

(in millions of current pesos)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Expenditures for the General Population 1/</th>
<th>Expenditures for Specific Population Groups 2/</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pesos</td>
<td>Index</td>
</tr>
<tr>
<td>1961</td>
<td>642.2</td>
<td>387.1</td>
<td>100</td>
</tr>
<tr>
<td>1962</td>
<td>599.5</td>
<td>309.2</td>
<td>106</td>
</tr>
<tr>
<td>1963</td>
<td>790.6</td>
<td>471.1</td>
<td>155</td>
</tr>
<tr>
<td>1964</td>
<td>956.4</td>
<td>677.5</td>
<td>162</td>
</tr>
<tr>
<td>1965</td>
<td>1,101.5</td>
<td>683.7</td>
<td>171</td>
</tr>
<tr>
<td>1966</td>
<td>1,371.3</td>
<td>776.2</td>
<td>201</td>
</tr>
<tr>
<td>1967</td>
<td>1,642.1</td>
<td>841.5</td>
<td>217</td>
</tr>
<tr>
<td>1968</td>
<td>2,017.1</td>
<td>936.0</td>
<td>212</td>
</tr>
<tr>
<td>1969</td>
<td>2,762.5</td>
<td>1,266.0</td>
<td>335</td>
</tr>
<tr>
<td>1970</td>
<td>3,507.0</td>
<td>1,516.1</td>
<td>392</td>
</tr>
</tbody>
</table>

1/ Includes: Ministry of Health, National Nutrition Institute, National Cancer Institute, Health Services of the Departments, cities, and health care institutions which receive support from the "beneficencias" through lotteries, 5 and 6, (fotogol), and own income.

2/ Includes: Health services of the Ministry of Defense, Military Hospital, Colombian Institute of Social Security, Medical Services of National Employees, of Ministry of Communications, of the National Telecommunications Corporation, of the Ministry of Labor, of the Ministry of Public Works, of the National Railways, of the Ports of Colombia, and other agencies with smaller programs.

Sources: Study of Human Resources for Health and Medical Education in Colombia - Ministry of Health, Association of Colombian Medical Schools, 1967; Economic Investigations - Department of Natural Planning - March 5, 1970.
above, for water and sewerage systems of communities with populations of 2,500 or more, (b) another 4 million pesos for Departmental water and waste disposal plants, and (c) a fourth item for water and waste disposal resources, in this instance in rural areas, administered by INPES - the National Institute for Special Health Programs. Thus, in the aggregate, the Ministry of Health, in 1970, is making capital investments for water supply and sewage disposal totaling 286 million pesos. The balance of the 507 million pesos capital investment budget of the Ministry of Health includes:
(d) about 1.7 million pesos for hospital and health center construction and equipment, and (e) approximately 173 million pesos, for a variety of activities in which construction or the purchase of fixed equipment - the usual basis for inclusion in a capital investment budget - are minor or absent elements in the uses of these funds. Included in such "investments" are the malaria eradication campaign (61 million pesos), Mass vaccination programs (24 million pesos), leprosy control (12 million pesos), tuberculosis control (3 million pesos), maternal and child health services (49 million pesos), and education and training of personnel (17 million pesos).

22. Other factors to be considered in assembling a national investment budget for health include the new roles recently assumed by the Colombian Institute for Social Security and the National Hospital Fund in the direct construction or the funding of construction of medical care facilities throughout Colombia. In 1969, for example, the former built, with its own funds, medical care facilities to meet the needs of its beneficiaries and invested for this purpose approximately 43 million pesos; in 1970 its budget provides for about 56 million pesos for similar construction. In 1969 the National Hospital Fund borrowed from ICBS about 43 million pesos to assist the construction of hospitals and health centers meeting the requirements of the now approved National Hospital Plan; in 1970, the Fund anticipates similar borrowing in the range of 50 million pesos.

23. Based on the above, a reasonable approximation of a minimum investment budget for health facilities construction in Colombia assumes the following proportions:

<table>
<thead>
<tr>
<th>Total Health Budget - 1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Table I-1</td>
</tr>
<tr>
<td>+ Urban water &amp; sewage</td>
</tr>
<tr>
<td>+ National Hospital Fund</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>3,507 million pesos</td>
</tr>
<tr>
<td>198 million pesos</td>
</tr>
<tr>
<td>50 million pesos</td>
</tr>
<tr>
<td>3,755 million pesos</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment Budget - 1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Health</td>
</tr>
<tr>
<td>Hospital Construction</td>
</tr>
<tr>
<td>Water &amp; Sewerage</td>
</tr>
<tr>
<td>Institute for Social Security</td>
</tr>
<tr>
<td>National Hospital Fund</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>47 million pesos</td>
</tr>
<tr>
<td>286 million pesos</td>
</tr>
<tr>
<td>56 million pesos</td>
</tr>
<tr>
<td>50 million pesos</td>
</tr>
<tr>
<td>439 million pesos</td>
</tr>
</tbody>
</table>
Accordingly, national capital investments in health facilities construction in 1970 are estimated to be 11.7 percent of the total public expenditures for health and medical care services this year. (439 million pesos/3,755 million pesos). This ratio is not directly comparable with the figure of 5 percent for 1965, quoted above, inasmuch as the estimation made for that earlier year does not include capital expenditures made by the Ministry of Economic Development for water supply and sewerage systems in urban communities or any investments for hospital construction that the Colombian Institute for Social Security may have made that year. It also is not clear whether Departmental or municipal expenditures for health facilities construction are included in total health expenditures for either years (Table I-1).

For the period 1961-1968, financial assistance in the health sector from external sources has been small ranging from 4.0 to 13.8 million pesos per year with an average of 9.7 million pesos. Such assistance has amounted to well under 2 percent of total public expenditures for health and for the most part has been earmarked for special projects in the form of stimulatory or initiating grants. These figures undoubtedly under-reflect the amount of external assistance received over the years by Colombia for many of the assisting agencies have, in addition, provided substantial technical consultation and assistance, supplies and fellowships for the training of professional personnel abroad. The Pan American Health Organization and the United Nations Children's Fund have been major donors as has been the U.S. Agency for International Development and its predecessor agencies. In the non-governmental area the Rockefeller Foundation, the Milbank Memorial Fund and the Hope program have been conspicuous for their assistance in recent years. Since 1969, the World Food Program in cooperation with UNICEF and PAHO has been a substantial source of external financial assistance to meet the requirements of the current country wide nutrition campaign. This aid, amounting to about 133 million pesos per year for five years, brings the percentage of foreign aid to the total health expenditures to just under 5 percent in 1969.
II. ASSESSMENT OF THE PRESENT HEALTH SITUATION

A. Significant Demographic Variables Associated with Health and Medical Care in Colombia

1. Population Characteristics

25. The Colombian demographic picture is very similar to that of many countries in the process of development: a fast growth in size of population, a high fecundity rate, a declining mortality rate, a concentration of population in childhood and young adult years, great movements in the spatial distribution of the population, a rapid growth of the urban nucleus and the incipient formation of a middle class (see Table II-1).

26. In 1970, the population of Colombia is estimated to number 21.6 million individuals. The next national census is planned for 1972; the last, in 1964, which, because of technical problems may have resulted in an under-enumeration, placed the population at 17.5 million inhabitants residing in an area of 439,519 square miles. At that time about 98.7 percent lived in the Departments making up 53.6 percent of the national territory. Population density of these Departments was about 73 inhabitants per square mile. The remaining 1.3 percent of the population occupied the 46.4 percent of the territory included in the Llanos Orientales. The population density of that area is about one inhabitant per square mile.

27. In 1905 the country had 4.4 million inhabitants; 33 years later, in 1938 the population had doubled (8.7 million); 26 years later, (1964) the phenomenon was repeated (17.5 million) and it is possible that it will double again in 22 years. This period of duplication is in contrast with that of some other countries, such as Italy (117 years), Portugal (100 years), Spain (88 years), Uruguay (58 years) and Argentina (47 years).

28. This rate of growth varies in different sections of the country. For example, Bogota, the capital city, is doubling its population every 10-15 years, whereas some of the predominantly rural Departments require over 55 years to double their population. Table II-2 illustrates the relative change in the population of localities in the last three censuses. It may be observed from this table that, over a brief span of years, the Colombian population has shifted from predominantly rural (69 percent in 1938) to one almost equally divided; the largest rate of growth may be seen in the metropolitan centers. Estimates for 1970 place 41.5 percent of the country's inhabitants in the 30 largest cities.

29. The economic resources of this population are limited. The average per capita production in 1966 was 1,622 pesos, representing a 20 percent rise from the 1,300 pesos figure for 1950. (In dollar equivalents to 1958 pesos these figures represent a rise in per capita production from $203 in 1950 to $253 in 1966.) Associated with this low per capita production are the uneven levels of family income: one-third of the population earns 3,600 pesos or less per year and only 11 percent 12,000 pesos or more. In the rural areas almost half (48 percent) have family incomes in the lower category and less than 5 percent in the higher.
Table II-1. DEMOGRAPHIC DATA FOR SOME LATIN-AMERICAN COUNTRIES

<table>
<thead>
<tr>
<th>Countries</th>
<th>Population</th>
<th>Rate of Increase (per 1000)</th>
<th>Years Required to Double</th>
<th>Birth Rate (per 1000)</th>
<th>Death Rate (per 1000)</th>
<th>Life Expectancy at birth in years</th>
<th>Population under age 15 (percent)</th>
<th>Inhabitants/Km²</th>
<th>Cultivable Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina (1960)</td>
<td>20,010</td>
<td>17</td>
<td>42</td>
<td>23</td>
<td>8</td>
<td>66</td>
<td>31</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Bolivia (1960)</td>
<td>3,696</td>
<td>23</td>
<td>31</td>
<td>44</td>
<td>21</td>
<td>41</td>
<td>42</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>Brazil (1960)</td>
<td>70,119</td>
<td>29</td>
<td>25</td>
<td>39</td>
<td>10</td>
<td>56</td>
<td>43</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Colombia (1964)</td>
<td>17,485</td>
<td>32</td>
<td>21</td>
<td>47</td>
<td>15</td>
<td>51</td>
<td>47</td>
<td>15</td>
<td>92</td>
</tr>
<tr>
<td>Chile (1960)</td>
<td>7,374</td>
<td>25</td>
<td>28</td>
<td>37</td>
<td>12</td>
<td>57</td>
<td>40</td>
<td>10</td>
<td>57</td>
</tr>
<tr>
<td>Ecuador (1962)</td>
<td>4,476</td>
<td>34</td>
<td>21</td>
<td>48</td>
<td>14</td>
<td>53</td>
<td>45</td>
<td>17</td>
<td>88</td>
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<tr>
<td>Mexico (1960)</td>
<td>34,923</td>
<td>33</td>
<td>21</td>
<td>45</td>
<td>12</td>
<td>58</td>
<td>44</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>Peru (1961)</td>
<td>9,907</td>
<td>29</td>
<td>24</td>
<td>45</td>
<td>16</td>
<td>52</td>
<td>43</td>
<td>8</td>
<td>46</td>
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<tr>
<td>Uruguay (1963)</td>
<td>2,593</td>
<td>13</td>
<td>54</td>
<td>22</td>
<td>9</td>
<td>69</td>
<td>28</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Venezuela (1961)</td>
<td>7,524</td>
<td>38</td>
<td>18</td>
<td>46</td>
<td>8</td>
<td>-</td>
<td>45</td>
<td>8</td>
<td>39</td>
</tr>
<tr>
<td>Latin America</td>
<td>214,000</td>
<td>29</td>
<td>24</td>
<td>40</td>
<td>11</td>
<td>57</td>
<td>42</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>Total World (1960)</td>
<td>3,005,000</td>
<td>18</td>
<td>39</td>
<td>34</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>-</td>
</tr>
</tbody>
</table>

1/ Figures for Colombia taken from census data and some estimates based on special studies.

Source: United Nations, Demographic Yearbooks.
### Table II-2. RELATIVE CHANGE IN THE POPULATION OF LOCALITIES OF DIFFERENT SIZES

<table>
<thead>
<tr>
<th>Size of Locality</th>
<th>1938</th>
<th>1951</th>
<th>1964</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thousands</td>
<td>%</td>
<td>Thousands</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>608</td>
<td>7.0</td>
<td>1,698</td>
</tr>
<tr>
<td>(100,000 or more)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1,900</td>
<td>5.6</td>
<td>4,880</td>
</tr>
<tr>
<td>(20,000-99,000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-urban</td>
<td>1,594</td>
<td>18.3</td>
<td>1,890</td>
</tr>
<tr>
<td>(2,000-19,000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total of Above</td>
<td>2,692</td>
<td>30.9</td>
<td>4,468</td>
</tr>
<tr>
<td>Rural</td>
<td>6,010</td>
<td>69.1</td>
<td>7,080</td>
</tr>
<tr>
<td>Total Country</td>
<td>8,702</td>
<td>100.0</td>
<td>11,548</td>
</tr>
</tbody>
</table>

Source: National Department of Statistics.

### Factors Involved in Population Transition

30. **Birth Rates.** In Colombia as well as in many other developing countries, vital statistics are recorded with considerable error and are underestimated. Throughout the country baptismal certificates are still used as a substitute for civil registration and the baptismal ceremony usually takes place about seven months after birth. Lopez Toro, a leading Colombian demographer, has calculated this under-registration of births as amounting to 28.8 percent for the period 1938-1951, and to 18.6 percent for the period 1951-1964. (7).

31. As may be noted in Table II-3, the official birth rates, reported by the National Department of Statistics, indicate that a peak of just under 41 live births per 1,000 total population was reached in 1959 and these rates have since declined. By 1965, the last year for which official data are available, the birth rate had fallen to approximately the 36.5 level reported for 1950, sixteen years earlier. On the other hand, Lopez Toro has concluded that for the country as a whole, the crude birth rate has remained constant for a relatively long period of years. Taking into account the corrective factors he had developed, he estimated the average annual crude birth rate in the intervals 1938-1951 as 46.5 and 1951-1964 as 47.2 live births per thousand population (7).

32. It is well recognized that differences in birth and death rates exist between urban centers and rural areas. These differences are compounded by less complete registration as one moves away from the major population centers. These variations are reflected in the birth rates reported by the National Department of Statistics for the year 1965 for the different political subdivisions of the country. The lack of a statistically reliable birth and death registration system in Colombia adds to the difficulties of deriving sound estimates of the rate of natural increase in the population, particularly during intercensal periods. These problems are given additional consideration later in this report and provide the bases for two of the high priority preinvestment study proposals recommended in Chapter VI.
Another study, undertaken in 1965-1966 as part of the National Health Survey, suggests that the López Toro estimates of the Colombian birth rate may be too high. Agualimpia and his associates reported, on the basis of household interviews of a carefully selected representative sample of Colombian families, a birth rate of 40.3 for the country as a whole (6). He also noted highly significant variations identifiable not only with urban-rural residence but with educational status of the parents and with family income. For example, for urban dwellers, an over-all birth rate of 34.4 prevailed, yet varied from 38.1 in families with incomes of 3,600 pesos or less down to 27.3 in families earning over 12,000 pesos. In contrast, the over-all rural birth rate was 45.9 ranging from 49.3 to 28.8 depending on family income.

It should also be noted that in a young population the crude birth rate may underestimate the potential for population increase. Accordingly, a more appropriate measure, the specific fertility rate (number of live births per 1,000 women in the child-bearing ages) is frequently used to reflect this potential for population increase. Based on Agualimpia's data the specific fertility rate for Colombia in 1965 has been calculated to be 193.7 for the country as a whole, 149.3 in urban areas and 251.6 in rural sections of the country. Comparing the specific fertility rate for the country as a whole (193.7) with comparable rates for other countries it is found that Colombia compares favorably with Venezuela (212.6) and Mexico (219.1) and unfavorably with Argentina (103.6) and the United States (117.8) (1).

<table>
<thead>
<tr>
<th>Year</th>
<th>Birth Rates 1/</th>
<th>Death Rates 1/</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>12.2</td>
<td>15.2</td>
</tr>
<tr>
<td>1945</td>
<td>14.7</td>
<td>15.7</td>
</tr>
<tr>
<td>1950</td>
<td>16.5</td>
<td>14.2</td>
</tr>
<tr>
<td>1955</td>
<td>18.8</td>
<td>12.3</td>
</tr>
<tr>
<td>1956</td>
<td>19.6</td>
<td>12.7</td>
</tr>
<tr>
<td>1957</td>
<td>19.1</td>
<td>12.1</td>
</tr>
<tr>
<td>1958</td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td>1959</td>
<td>10.8</td>
<td>11.8</td>
</tr>
<tr>
<td>1960</td>
<td>10.8</td>
<td>11.9</td>
</tr>
<tr>
<td>1961</td>
<td>10.4</td>
<td>11.0</td>
</tr>
<tr>
<td>1962</td>
<td>10.6</td>
<td>10.8</td>
</tr>
<tr>
<td>1963</td>
<td>39.2</td>
<td>10.4</td>
</tr>
<tr>
<td>1964</td>
<td>38.6</td>
<td>10.0</td>
</tr>
<tr>
<td>1965</td>
<td>36.8</td>
<td>9.9</td>
</tr>
</tbody>
</table>

1/ per thousand population.

Source: National Department of Statistics.
35. **Mortality Rates.** As shown in Table II-4, under-registration of deaths appears to be even greater than for births. Correction factors were calculated by Lopez Toro for the period 1938-1951 as 37.7 percent and for 1951-1964 as 32.8 percent indicating that about 1 out of 3 deaths are not officially registered for the country as a whole.(7). To correct for these deficiencies, Lopez Toro estimated the average annual death rate for the period 1938-1951 as 22.4 and for 1951-1964 as 17.4 deaths per thousand population. For 1965 a comparable estimate is 14.95 per thousand.

36. The infant mortality rate, deaths under one year per thousand live births, is widely considered as one of the most sensitive indicators of levels of public health accomplishment. In the U.S. this rate has remained almost constant around 25, for many years. In Colombia, the infant mortality rate is reported to have declined from 114.4 to 88.5 between 1951 and 1964, a reduction of almost 23 percent. There is no basis for challenging that a true decline has occurred. On the other hand the underreporting of deaths suggests that the "corrected" infant mortality rate is still over 100 indicating that one child in ten born alive fails to reach his first birthday.

37. Age specific death rates have been utilized to calculate life expectancies at birth; these indicate that an infant born in 1965 has a 50-50 chance of surviving to age 57 whereas for children born earlier the comparable figure for 1951 was 53 years and for 1938, 45 years.

38. Based on the calculated average annual birth and death rates (17.2 and 14.95 respectively), and since immigration and emigration are negligible factors, Colombian authorities have assumed that the gross rate of population increase is in the range of 3 percent. For 1964 this figure has been set at 3.3 percent. Obviously this estimate is an approximate one but until a markedly improved system of vital registration is adopted, no better approximations are available.

39. Compounding the problem of incomplete registration of deaths is the fact that actual causes of death are not reliably identified. Forty percent of registered deaths occur without medical certification; another 17 percent, though medically certified, occur without a physician in attendance during the terminal illness. Thus, in only 43 percent of deaths, is there medical certitude of the cause of death.

40. **Migration Patterns.** Two classifications are used in Colombia for the spatial distribution of the population. The first, at the municipal level, makes a distinction between the county seats and the rest of the county; the second, at locality levels, between the urban population (more than 1,500 inhabitants) and the rural. At the national level the two classifications have a similar numerical value; however, at the regional level the differences become very large because many of the county seats are not urban (335 counties out of a total of 888). Boyaca, for example, with a total of 127 counties in 1964, has 102 counties whose seats had less than 1,500 population.
Table II-4. BIRTH AND DEATH RATES FOR DEPARTMENTS OF COLOMBIA, 1965

<table>
<thead>
<tr>
<th>Department</th>
<th>Birth Rates 1/</th>
<th>Death Rates 1/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antioquia</td>
<td>41.8</td>
<td>10.8</td>
</tr>
<tr>
<td>Atlantico</td>
<td>36.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Bolivar</td>
<td>31.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Boyaca</td>
<td>35.9</td>
<td>10.3</td>
</tr>
<tr>
<td>Caldas</td>
<td>38.3</td>
<td>12.5</td>
</tr>
<tr>
<td>Cauca</td>
<td>35.9</td>
<td>13.3</td>
</tr>
<tr>
<td>Cordoba</td>
<td>34.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Bogota DE</td>
<td>35.7</td>
<td>8.0</td>
</tr>
<tr>
<td>Cundinamarca</td>
<td>36.6</td>
<td>10.9</td>
</tr>
<tr>
<td>Choco</td>
<td>24.4</td>
<td>9.0</td>
</tr>
<tr>
<td>Huila</td>
<td>39.8</td>
<td>11.6</td>
</tr>
<tr>
<td>La Guajira</td>
<td>22.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Magdalena</td>
<td>29.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Meta</td>
<td>45.8</td>
<td>12.7</td>
</tr>
<tr>
<td>Narino</td>
<td>37.3</td>
<td>13.7</td>
</tr>
<tr>
<td>North Santander</td>
<td>43.4</td>
<td>11.4</td>
</tr>
<tr>
<td>Santander</td>
<td>38.5</td>
<td>11.1</td>
</tr>
<tr>
<td>Tolima</td>
<td>34.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Valle del Cauca</td>
<td>36.6</td>
<td>10.6</td>
</tr>
<tr>
<td>Intendencias y Comisarias</td>
<td>37.9</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36.7</strong></td>
<td><strong>9.9</strong></td>
</tr>
</tbody>
</table>

1/ per thousand population.

Source: National Department of Statistics.
In Colombia, as in other Latin-American countries, urban population has grown much more rapidly than the rural population. For the period 1951-1964 the population in county seats grew at the rate of 5.4 percent whereas the population "in the rest of the counties" increased at a rate of only 1.3 percent (see Table II-5). Also, while the urban population has grown faster than the rural, there is a strong tendency for these increments to concentrate in the major urban centers. In 1938, about 23 percent of the total population of county seats lived in cities with more than 100,000 people; by 1964 this ratio was 51 percent. During the intercensal periods (1938-1951 and 1951-1964) the municipalities that grew most were those with 200,000 and more inhabitants. Paralleling this, a slower rate of growth may be observed in the smaller centers (2,000-4,999) and the medium ones (20,000-49,999). The growth of the big centers has caused the small neighboring municipalities to become part of integrated social units which can now be identified as urban complexes. This development is notable in the areas around the four major cities of the country - Bogota, Medellin, Cali and Barranquilla but similar patterns can be identified elsewhere.

Up to 1951 about 1.62 million people lived in another Department from where they were born; by 1964 this figure increased to 3.16 million. However, consolidating in 1964 the same politico-administrative jurisdictions prevailing in 1951, the inter-departmental migration fell to about 2.76 million, the difference corresponding, in large measure, to the population flow between Cundinamarca and Bogota.

For the period between the 1951 and 1964 censuses it may be observed that the Departments registering positive migratory balances are the most prosperous ones -- Cundinamarca together with Bogota, Valle, Atlantic, Antioquia, Meta and Magdalena, whereas those that have a low development level, or were badly affected by guerrillas show negative balances -- Choco, Boyaca, Narino, Toluna and Caldas (see Chart II-6).

The movement registered in 1964 showed that outward flow from county seats was exceeded by the inward flow to the same county seats. In addition, migration has been heavily concentrated among the economically active segment of the population (ages 15-59), the majority being farmers, artisans, operators and domestic servants. However, when estimating the ratio of immigrants to the resident population, the most mobile groups are made up of professionals, technicians, officials, managers, salesmen and domestic servants. These and related aspects of the migration of special groups within the country have been accelerating the regional imbalance of various components of the Colombian population.

2. Socio-Economic Characteristics

The Colombian National Health Survey, conducted during the years 1965 and 1966 and previously referred to, provides a wealth of socio-economic data which can be directly correlated with measurements of the amount of

1/ The sources of data presented in this section, unless stated otherwise, are: Study on Health Manpower and Medical Education in Colombia, International Conference, Maracay, Venezuela, June 1967; Volume II - Preliminary Findings (Reference 36) or Hechos Demograficos, 1968, Estudios de Recursos Humanos para la Salud y Educacion Medica en Colombia, Investigacion Nacional de Morbilidad, Ministerio de Salud Publica y Asociacion de Facultades de Medicina (Reference 4-1).
Table II-5. THE CONCENTRATION OF THE POPULATION IN COLOMBIA: 1938-1964

<table>
<thead>
<tr>
<th>Population in Principal Cities</th>
<th>1938 Population (%)</th>
<th>1951 Population (%)</th>
<th>1964 Population (%)</th>
<th>Rate of Increase 38-51 (%o)</th>
<th>Rate of Increase 51-64 (%o)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than - 2,000</td>
<td>67.41</td>
<td>50.15</td>
<td>48.31</td>
<td>-16.4</td>
<td>-0.5</td>
</tr>
<tr>
<td>2,000 - 4,999</td>
<td>22.72</td>
<td>25.33</td>
<td>26.80</td>
<td>11.9</td>
<td>10.8</td>
</tr>
<tr>
<td>5,000 - 9,999</td>
<td>6.05</td>
<td>7.68</td>
<td>12.61</td>
<td>17.7</td>
<td>43.2</td>
</tr>
<tr>
<td>10,000 - 19,999</td>
<td>1.85</td>
<td>3.43</td>
<td>6.76</td>
<td>48.1</td>
<td>59.4</td>
</tr>
<tr>
<td>20,000 - 49,999</td>
<td>1.23</td>
<td>1.92</td>
<td>2.70</td>
<td>39.9</td>
<td>35.6</td>
</tr>
<tr>
<td>50,000 - 99,999</td>
<td>37</td>
<td>7.75</td>
<td>1.46</td>
<td>49.2</td>
<td>61.1</td>
</tr>
<tr>
<td>100,000 and more</td>
<td>37</td>
<td>22.60</td>
<td>38.01</td>
<td>77.9</td>
<td>76.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population (thousands)</th>
<th>100.00</th>
<th>100.00</th>
<th>100.00</th>
<th>100.00</th>
<th>100.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Cities</td>
<td>2,744</td>
<td>4,468</td>
<td>9,093</td>
<td>37.7</td>
<td>53.9</td>
</tr>
<tr>
<td>Other Municipalities</td>
<td>5,958</td>
<td>7,080</td>
<td>8,392</td>
<td>13.6</td>
<td>12.9</td>
</tr>
<tr>
<td>Total</td>
<td>8,702</td>
<td>11,548</td>
<td>17,485</td>
<td>21.9</td>
<td>31.5</td>
</tr>
</tbody>
</table>

| Per Capita/Total (%)          | 31.53               | 38.69               | 52.01               |                             |                             |
| Per Capita over 100,000/Total (%) | 7.13               | 14.71               | 26.65               |                             |                             |
| Concentration Index           | .638                | .747                | .795                |                             |                             |

Source: National Census of Population.
illness and disability and the receipt of health services. Household interviews were conducted on a representative sample of 8,961 households comprised of 51,476 individuals. A clinical examination was made of a sub-sample of 5,000 persons. The survey covered the civilian, ambulatory, non-institutional population of the 18 "Departments" existing in 1964. The universe from which the sample was drawn included 98.7 percent of the national population living in 52.7 percent of the country's area.

46. In interpreting the following data it should be kept in mind that they are now five years old and that changes undoubtedly have taken place, particularly in economic status, in several parts of the country. It is probable that such changes are more pronounced in the urban centers of the country and that less or no changes have occurred in the rural areas. However, these are surmises and though Colombia is fortunate among developing countries to have such background information available on which to plan its health programs the continuing need for current and precise data demands special emphasis.

47. Urban-Rural Residence. The survey found 51.5 percent of the population living in towns with 1,500 or more inhabitants. The remainder, 48.5 percent, lived in small villages or farms. For Colombia as a whole 49.1 percent of the males lived in towns and cities and 50.9 percent were country dwellers. In contrast, 53.8 percent of females were town dwellers and 46.2 percent were in rural areas.

48. Household Size. The average size of households for the nation is 5.9 members. 24 percent of the population lived in households with five or six members, 25 percent in households with seven to eight members, 18 percent in households with nine to ten members and 17 percent in households with eleven or more members. Thus only about 1 in 6 Colombians share living space with 3 or less other household members. In urban households, the average size is 5.8 members in comparison with 6.1 members among their rural counterparts. Although large families are characteristic of both urban and rural areas, small families are more prevalent in towns. Among women who have reached the age of 30, the modal range of previous live births is 6-9, with significant numbers having had 15 or more children born alive.

49. Housing. Fifty-nine percent of households live in a house or apartment, 10 percent in a room, 26 percent in huts or shacks, 1 percent in other types of accommodations and information is lacking for the remaining 4 percent of households. Among city dwellers 85 percent live in apartments, houses or rooms, with 10 percent in huts or shacks; in the country only 51 percent reside in houses or rooms and 44 percent made their homes in huts or shacks.

50. Over two-fifths (44 percent) of the households have water piped into their home, while an additional 25 percent had a source outside their dwelling. Thus, almost one-third of the households (31 percent) had no water supply. Twice as many of the homes in the towns and cities (89 percent) were supplied with water as rural homes (46 percent). (3b). Over half of the homes in the countryside (54 percent) do not have a near supply of water (Table II-7).
51. Even fewer homes are supplied with sewage facilities than with running water (Table II-8). Forty-two percent have toilets, 15 percent latrines and 43 percent are without any sanitary facilities. While the majority of urban dwellings (86 percent) had either toilets or latrines, only 24 percent of rural homes have such facilities.

Table II-7. AVAILABILITY OF WATER SERVICE IN COLOMBIA IN URBAN AND RURAL AREAS, 1965

<table>
<thead>
<tr>
<th>Water Supply</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside house</td>
<td>44.3%</td>
<td>69.0%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Outside house</td>
<td>24.5%</td>
<td>20.2%</td>
<td>29.5%</td>
</tr>
<tr>
<td>No service</td>
<td>30.6%</td>
<td>10.2%</td>
<td>53.6%</td>
</tr>
<tr>
<td>No information</td>
<td>0.6%</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table II-8. AVAILABILITY OF SEWAGE DISPOSAL SYSTEMS IN COLOMBIA IN URBAN AND RURAL AREAS, 1965

<table>
<thead>
<tr>
<th>Systems</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet</td>
<td>41.5%</td>
<td>71.7%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Latrine</td>
<td>14.8%</td>
<td>11.0%</td>
<td>15.6%</td>
</tr>
<tr>
<td>No service</td>
<td>43.0%</td>
<td>13.6%</td>
<td>76.3%</td>
</tr>
<tr>
<td>No information</td>
<td>0.7%</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: National Household Survey, Study on Health Manpower and Medical Education in Colombia, Ministry of Health and Association of Colombian Medical Schools.

52. Education. Approximately one-fourth of the population, age 15 and over, has never been to school. Fifty-five percent more has not advanced beyond some primary education and for an additional 5.6 percent educational achievement is not known; it is probable that most of this latter group has little or no formal education. A firm level for effective literacy is difficult to establish, yet it is notable that about 85 percent of the country's population has had no formal education or less than six full years of primary school education. Thirteen percent of Colombians over the age of 15 have had some secondary schooling and 1.8 percent have some university or professional training.
53. The educational experience of the population varies by residence. In general, people in cities have had more educational opportunity than those in rural areas. Over twice as many of those living in rural areas as in the cities (35 percent and 14 percent respectively) have had no schooling. Twenty-six percent of the inhabitants of the cities have gone to secondary schools or to more advanced studies, but only 3 percent of the rural inhabitants (Table II-9).

54. Occupation. The most frequently reported occupations for the heads of households are farming and fishing (39 percent), followed in order by artisans and production workers (15 percent), salesmen (9 percent), housewives (8 percent) and service workers (8 percent). Relatively few are involved in professional (3 percent), managerial (2 percent) or clerical (3 percent) work. The occupations of the heads of the remaining 12 percent of households includes the armed forces, mining and transportation. These findings do not yield an occupational profile for persons other than the heads of household, many of whom are gainfully employed. Nor do these data indicate the degree of utilization of the manpower resources of the country for there are substantial evidences of unemployment, under-employment and, particularly in the agricultural sector, of seasonal employment.

55. Income. The median household annual income reported (1965) was 4,348 pesos. (In their current equivalents - $290 U.S.). This varied by residence, the median urban income being 6,645 pesos (U.S. $443) and the median for rural households only 2,872 pesos (U.S. $191). (Table II-10).

56. The median income (1965) has been calculated for each occupational grouping. There is a close correlation between what a man does and how much income he reports. The highest median incomes are found for professionals (19,962 pesos), followed by business executives (13,309 pesos), office workers (11,183), transportation (7,540 pesos) and salesmen (7,134 pesos). Farmers, who constitute almost two-fifths of the heads of households, have a median income of 2,818 pesos and ranked next to the bottom.

57. The median annual family income reported for each household varies not only by occupation and residence but is also related to the level of education of the head of the household and the size of his family. For example, 57.8 percent of those with a primary school education, 18.1 percent who have attended secondary schools and only 2.5 percent with an education beyond the secondary school level report an income of 6,000 pesos or less. Over 81.8 percent of those with a superior education have an annual income greater than 6,000 pesos, 59.7 percent with a secondary education and only 28.4 percent with a primary education earn a similar annual income.

58. Annual income also varies on a per capita basis by the size of a household. The median per capita family income for families with only two members was 1,715 pesos, for three to four member families 1,134 pesos, five to six member families 774 pesos, seven to eight member families 612 pesos and nine to ten member families 528 pesos.
Table II-9. EDUCATIONAL ACHIEVEMENT IN THE COLOMBIAN POPULATION 15 YEARS AND OLDER, URBAN AND RURAL, 1965

<table>
<thead>
<tr>
<th>Education</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>23.8</td>
<td>14.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Primary</td>
<td>55.4</td>
<td>55.1</td>
<td>55.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>13.4</td>
<td>22.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Higher</td>
<td>1.8</td>
<td>3.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Unknown</td>
<td>5.6</td>
<td>4.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table II-10. PERCENT DISTRIBUTION OF INCOME OF HEAD OF HOUSEHOLD IN COLOMBIA, URBAN AND RURAL, 1965

<table>
<thead>
<tr>
<th>Income (in Pesos)</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 3,600</td>
<td>36.2</td>
<td>22.2</td>
<td>52.2</td>
</tr>
<tr>
<td>3,601 - 6,000</td>
<td>18.0</td>
<td>17.2</td>
<td>18.9</td>
</tr>
<tr>
<td>6,001 - 12,000</td>
<td>17.5</td>
<td>25.2</td>
<td>8.7</td>
</tr>
<tr>
<td>12,001 - 30,000</td>
<td>8.3</td>
<td>13.5</td>
<td>2.4</td>
</tr>
<tr>
<td>30,001 and over</td>
<td>3.7</td>
<td>6.0</td>
<td>1.0</td>
</tr>
<tr>
<td>No information</td>
<td>16.3</td>
<td>16.0</td>
<td>16.8</td>
</tr>
</tbody>
</table>

Source: National Household Survey, Study on Health Manpower and Medical Education in Colombia, Ministry of Health and Association of Colombian Medical Schools.

B. Morbidity Indices and Their Socio-Economic Relationships (3a)

1. Illness and Restricted Activity

Based on the 1965-1966 household surveys four out of every ten Colombians reported that they had been ill during the preceding two week period, with more than half of these illnesses (57 percent) beginning during that period and slightly less than half (43 percent) of a more prolonged nature. A slightly higher rate of illness occurred in rural areas than in cities (399 versus 378 per 1000) and women were more prone to reported illness than were men (410 versus 363 per 1000), a difference which persisted over all ages. For males the minimum sickness rate was in the age group 15-24 years and for females in the age group 5-14; following these minima, the rates rose steadily with age to a maximum for ages 65 and over. Particularly noteworthy is the very high illness rate among infants.
Many of the illnesses reported were mild and caused no restriction of activity or disability. However, the activity of approximately one person out of ten (108 per 1000) was restricted during this same two week period. Again, the rate for those in the country was higher than for city dwellers (115 versus 154 per 1000). Females had a slightly higher rate of restricted activity than males (113 versus 103 per 1000) although over age 45 the rates for males were higher; for both males and females, restricted activity rates increased with age. From these data it has been calculated that the average Colombian loses about 13.6 days per year from his usual activity because of illness. The rates for women are slightly higher than for men (14.5 days versus 12.7 days) and there is a sharp increase with age. On the average, those between 25 and 44 years lose 3 weeks per year (19.8 days) those between 45-64 years over four weeks (29.6 days) and those over age 65 years almost two months (53.6 days).

In the course of a year disability in bed due to illness averaged about a week (7.3 days) for every Colombian. Variations by age and sex were similar to those reported for the number of days of restricted activity. As might be expected, the annual average was higher for women than for men (8.6 days versus 5.8) and for both sexes there were sharp increases with age. Men over 65 years old had almost three weeks a year of illness which confined them to bed in contrast to four weeks for women. Although the rural population reports more days of restricted activity they tend to be confined to bed less frequently (6.9 days versus 7.7 days) than city dwellers. Tables II-11, II-12 and II-13 show some of the above illness and restricted activity indices by age and sex.

Utilization of Health Services

How, when and to whom the Colombian population turns for medical attention are questions of more than passing interest. These questions were asked in the 1965 household sample survey for the two week period immediately preceding the interview. Almost 9 percent of the population (88.6 per 1000) sought consultation for reasons of health during that period. When persons are not ill they rarely seek consultation for health services (17.1 per 1000) but even when they are, only about one in five seek such aid (201.3 per 1000). The overall rate of consulting with a physician is 63.2 per thousand, constituting 72 percent of all contacts with health personnel. The rates for visiting a doctor are three times greater for the urban population than the rural.

When the sickness rates, reported above, are further compared with consultation rates it becomes even clearer that only a relatively small proportion of individuals when they are ill are consulting any type of health personnel for their complaints. In urban areas where the sickness rate was 363 per 1000, the consultation rate was 118, only a third as much, and the consultation rate for physicians was 93, about one-fourth of the sickness rate. Among the rural population, these differentials are even more pronounced. With a sickness rate of 410, the total consultation rate was 57; consultation with a physician, 31 per thousand. Thus, when an individual living in the country feels ill there is 1 chance in seven that he will seek any type of health assistance and 1 chance in 13 that he will be seen by a physician.
### Table II-11. Sickness During Two-Week Period, Per/1000 Population in Colombia, by Age and Sex, 1965

<table>
<thead>
<tr>
<th>Sex</th>
<th>All Ages</th>
<th>1</th>
<th>1-4</th>
<th>5-14</th>
<th>15-24</th>
<th>25-44</th>
<th>45-64</th>
<th>65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>363</td>
<td>429</td>
<td>403</td>
<td>289</td>
<td>284</td>
<td>389</td>
<td>489</td>
<td>630</td>
</tr>
<tr>
<td>Females</td>
<td>410</td>
<td>435</td>
<td>404</td>
<td>300</td>
<td>349</td>
<td>482</td>
<td>472</td>
<td>674</td>
</tr>
<tr>
<td>Both Sexes</td>
<td>387</td>
<td>432</td>
<td>403</td>
<td>294</td>
<td>319</td>
<td>439</td>
<td>531</td>
<td>654</td>
</tr>
</tbody>
</table>

### Table II-12. Restricted Activity During Two-Week Period, Per/1000 Population in Colombia, by Age and Sex, 1965

<table>
<thead>
<tr>
<th>Sex</th>
<th>All Ages</th>
<th>6-14</th>
<th>15-24</th>
<th>25-44</th>
<th>45-64</th>
<th>65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>103</td>
<td>74</td>
<td>74</td>
<td>111</td>
<td>160</td>
<td>250</td>
</tr>
<tr>
<td>Female</td>
<td>113</td>
<td>78</td>
<td>90</td>
<td>138</td>
<td>154</td>
<td>198</td>
</tr>
<tr>
<td>Both Sexes</td>
<td>108</td>
<td>76</td>
<td>83</td>
<td>125</td>
<td>157</td>
<td>222</td>
</tr>
</tbody>
</table>

### Table II-13. Days of Restricted Activity and in Bed Per Person Per/Year in Colombia, by Age and Sex, 1965

<table>
<thead>
<tr>
<th>Sex</th>
<th>All Ages</th>
<th>6-14</th>
<th>15-24</th>
<th>25-44</th>
<th>45-64</th>
<th>65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>12.7</td>
<td>8.8</td>
<td>9.8</td>
<td>16.2</td>
<td>31.1</td>
<td>57.4</td>
</tr>
<tr>
<td>Females</td>
<td>14.5</td>
<td>8.9</td>
<td>11.9</td>
<td>22.8</td>
<td>28.1</td>
<td>50.4</td>
</tr>
<tr>
<td>Both Sexes</td>
<td>13.6</td>
<td>8.9</td>
<td>10.9</td>
<td>19.8</td>
<td>29.6</td>
<td>53.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex</th>
<th>Ages 6+</th>
<th>6-14</th>
<th>15-24</th>
<th>25-44</th>
<th>45-64</th>
<th>65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>5.8</td>
<td>5.4</td>
<td>4.7</td>
<td>7.5</td>
<td>11.3</td>
<td>20.4</td>
</tr>
<tr>
<td>Females</td>
<td>8.6</td>
<td>6.1</td>
<td>7.7</td>
<td>13.8</td>
<td>13.9</td>
<td>28.8</td>
</tr>
<tr>
<td>Both Sexes</td>
<td>7.3</td>
<td>5.8</td>
<td>6.3</td>
<td>10.9</td>
<td>12.7</td>
<td>24.9</td>
</tr>
</tbody>
</table>

Source: See Table II-10.
64. Of all consultations provided by a physician about one-third took place in the physician's private office, an equal proportion in institutions (out-patient departments, clinics, health centers, etc.), 14 percent in house calls and the balance, about 17 percent through other arrangements. There is considerable variation between urban and rural areas. For the urban population, 13.4 per thousand saw physicians in institutions as compared to 13.3 per 1000 in rural areas, 12.2 per 1000 urban residents had house calls but only 9.1 in rural areas.

65. After the physician, the most frequently consulted health workers were pharmacists (9.2 per 1000) and nurses (2.2 per 1000). The urban-rural difference in the consultations with health personnel persisted but were less pronounced. /Note: it is not possible to differentiate whether nurse consultations were with professionally trained nurses, practical nurses (auxiliary nurses) or aides.

66. Approximately 13 percent of the consultations about health are with other types of health workers -- the tegua, the midwife and others -- unsanctioned and often unrecognized by the medical profession. These groups provide a significant proportion of all medical care available to the population. If patterns of health care consultation with unsanctioned, so-called indigenous, practitioners common to other parts of the world apply in Colombia these figures may be gross understatements of the true picture of the population's search for relief from their medical ills.

67. Hospital utilization - Almost 23 percent of the population has had some past experience with hospitals and 5 percent has been hospitalized within a year. Of the latter group 89 percent had been hospitalized once, 8.6 percent twice and over 2 percent three or more times. More urban residents seek hospitalization than rural dwellers. In a year, more women are hospitalized than men, 64.2 and 35.9 per 1000 respectively. This differential is even more striking in the age period 15-54 years when women in the child bearing period are hospitalized primarily because of complications of pregnancy, delivery or in the post partem.

3. Socio-Economic Correlates of Morbidity and the Utilization of Health Care Resources

68. The close associations of disease, malnutrition, lack of sanitation, poverty, crowding, illiteracy and the other stigmata of underdevelopment are all well recognized and well documented. In Colombia, data are available from the National Health Survey to demonstrate some of these direct correlations and a few are selected in this section for illustrative purposes.(3b)

69. As shown in Table II-11, the rate of reported illness is twice as high for individuals with no formal educational experience (111 per 1000) as for those with education beyond the secondary level (59 per 1000). Similar differences characterize the association of reported illness with income.
and occupation. Restricted activity due to illness can also be correlated inversely with these three social variables -- education, income and occupational level. Those whose annual income is over 30,000 pesos have half of the rate of restricted activity experienced by those who earned less than 3600 pesos (64 versus 126 per 1000), and almost half the number of days of restriction due to illness (9.4 versus 17.0). The correlation between the rate of restricted activity and education and occupation follows a similar trend as well. Those with high incomes spent on the average fewer days in bed at home due to illness and are hospitalized slightly less than those with more modest incomes.

70. Social circumstances are also directly correlated with access to health care and the type of consultation sought for illness (Table II-15). Urban dwellers visit all types of health workers twice as frequently as the rural population (118 versus 57 per thousand and the rate of visiting a doctor in the cities is three times that in the country (93 versus 31 per 1000). Although those with high incomes living in the country see a doctor almost twice as often as the rural poor (49 versus 27 per thousand), their rate of medical visits is still lower than for the poorest urban dwellers (49 versus 66 per 1000). The decision to visit a doctor or another type of health worker is influenced by income and place of residence. Those with high incomes living in the city will turn to a physician nine times out of ten when they seek health care. The rural poor utilize other personnel just as often as they turn to doctors when they seek health care. Similar correlations are found with levels of education.

Table II-14. RATE OF ILLNESS, PER 1000 POPULATION, IN COLOMBIA BY EDUCATION AND URBAN OR RURAL RESIDENCE, 1965

<table>
<thead>
<tr>
<th>Education</th>
<th>National</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>198.7</td>
<td>200.7</td>
<td>161.0</td>
</tr>
<tr>
<td>Secondary</td>
<td>323.4</td>
<td>322.4</td>
<td>332.3</td>
</tr>
<tr>
<td>Primary</td>
<td>385.8</td>
<td>373.3</td>
<td>400.7</td>
</tr>
<tr>
<td>None</td>
<td>411.3</td>
<td>418.9</td>
<td>407.2</td>
</tr>
<tr>
<td>Don't Know</td>
<td>436.6</td>
<td>404.1</td>
<td>475.7</td>
</tr>
<tr>
<td>No Information</td>
<td>391.4</td>
<td>400.2</td>
<td>383.3</td>
</tr>
<tr>
<td>Total</td>
<td>381.1</td>
<td>377.0</td>
<td>397.8</td>
</tr>
</tbody>
</table>

Source: See Table II-10.
Table II-15. RATES OF CONSULTATION WITH HEALTH PERSONNEL
PER 1000 POPULATION, BY INCOME AND ZONE, 1965

<table>
<thead>
<tr>
<th>Median Income</th>
<th>M.D.</th>
<th>Pharmacist</th>
<th>Nurse</th>
<th>Tegua</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 3,600</td>
<td>38.6</td>
<td>8.8</td>
<td>2.7</td>
<td>9.8</td>
<td>9.2</td>
<td>71.1</td>
</tr>
<tr>
<td>3,601-6,000</td>
<td>47.4</td>
<td>10.9</td>
<td>1.6</td>
<td>7.3</td>
<td>5.6</td>
<td>85.8</td>
</tr>
<tr>
<td>6,001-12,000</td>
<td>86.9</td>
<td>10.7</td>
<td>2.1</td>
<td>4.1</td>
<td>6.0</td>
<td>112.1</td>
</tr>
<tr>
<td>12,001-30,000</td>
<td>107.6</td>
<td>10.3</td>
<td>1.9</td>
<td>1.4</td>
<td>3.1</td>
<td>127.7</td>
</tr>
<tr>
<td>30,001 +</td>
<td>105.7</td>
<td>5.5</td>
<td>.8</td>
<td>3.1</td>
<td>3.4</td>
<td>125.0</td>
</tr>
<tr>
<td>No information</td>
<td>55.9</td>
<td>6.4</td>
<td>2.2</td>
<td>6.9</td>
<td>5.8</td>
<td>83.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>63.2</td>
<td>9.2</td>
<td>2.2</td>
<td>6.7</td>
<td>5.9</td>
<td>91.0</td>
</tr>
</tbody>
</table>

| **Urban**           |      |            |       |       |       |       |
| Under 3,600         | 65.8 | 14.0       | 4.5   | 9.3   | 9.3   | 104.3 |
| 3,601-6,000         | 85.8 | 12.9       | 1.5   | 4.5   | 5.6   | 110.8 |
| 6,001-12,000        | 102.5| 12.1       | 1.8   | 2.2   | 6.4   | 125.4 |
| 12,000-30,000       | 120.0| 10.1       | 2.1   | 1.4   | 3.0   | 136.7 |
| 30,001 +            | 116.1| 6.2        | .9    | 1.0   | 3.3   | 127.6 |
| No information      | 82.6 | 7.2        | 3.2   | 3.7   | 6.3   | 105.3 |
| **Total**           | 93.3 | 11.1       | 2.5   | 4.0   | 6.1   | 117.7 |

| **Rural**           |      |            |       |       |       |       |
| Under 3,600         | 27.2 | 6.6        | 1.9   | 10.0  | 6.2   | 54.0  |
| 3,601-6,000         | 32.8 | 9.2        | 1.6   | 9.7   | 5.5   | 59.4  |
| 6,001-12,000        | 43.0 | 6.6        | 2.9   | 9.2   | 4.8   | 67.0  |
| 12,001-30,000       | 46.8 | 11.4       | .9    | 1.7   | 3.8   | 66.3  |
| 30,001 +            | 48.9 | 1.4        | -     | 14.6  | 3.8   | 68.6  |
| No information      | 29.5 | 5.7        | 1.3   | 10.1  | 5.3   | 53.1  |
| **Total**           | 31.3 | 7.1        | 1.8   | 9.6   | 5.7   | 56.8  |

Source: See Table II-10.
C. Major Categories of Health Problems in Colombia

71. Dependable data on the frequency of specific disease entities or other major health problems - either as causes of death or of morbidity - are limited for a variety of reasons. First, there are severe shortages of physicians or other health personnel qualified to reach even reasonably accurate diagnoses. Those who are available are highly concentrated in the few large cities of the country. Secondly, the system for registration of important vital events is poorly manned, inefficient, cumbersome and very tardy in the tabulation and publication of even annual summaries. As pointed out in a previous section (Section B.2), for large parts of the country, only 1 in 13 of those reporting illness of any type were seen by a physician during that illness. Also, it has been estimated that up to one-third of the deaths occurring in Colombia fail to reach the notice of the official registrars; of the notified deaths less than 60% are medically certified, even though such certification does not imply that the individual concerned received medical attention during his terminal illness.

72. The National Health Survey of 1965 and other special studies conducted more recently, indicate that this situation is improving, at least in some areas of the country. However, considerable caution must be applied in interpreting currently available data for they undoubtedly underestimate the magnitude of each of the major developmental health problems that confront the health authorities of the country. The following brief summaries of selected major disease categories and health problems are included for illustrative purposes.

1. Diarrheal Diseases and Related Conditions

73. This group of conditions is clearly associated with the low levels of environmental sanitation still prevalent in the country particularly outside of the major cities and in the rural areas (see Tables II-7 and II-8). It can be estimated that no less than one in eight of all deaths are associated with enteric infections. They give rise to almost 8.5 percent of all consultations with health personnel and comprise the second, or possibly the third, most frequent cause of hospitalization. The toll of diarrheal diseases is greatest in the early years of life but no age group is spared. Linked to these conditions are the parasitic infections of the gastrointestinal tract which in addition to causing their own morbidity and mortality add a significant burden to the nutritional requirements of the population. As a special phase of the National Health Survey it was found that over 80 percent of the population harbors one or more varieties of pathogenic intestinal worms and other parasites; infestation is heaviest in childhood and the young adult years and in the rural areas where lowest income and levels of education prevail and where there is the least access to sanitation of water supplies and sewage disposal. (up).

2. The Common Acute Infectious Diseases (of childhood)

74. Deaths and morbidity in infancy and early childhood remain high in Colombia even though appreciable reductions have been noted in recent years. Underlying malnutrition and gastrointestinal infections are, in all
probability, the most significant factors for even in mild form they can also severely increase the toll of the common infections of childhood. Modern medical technology has developed simple and relatively inexpensive immunization procedures to prevent many of these common infections but only limited success has yet been attained in protecting the Colombia population. For example, only 13 percent of the susceptible population (under age 5) have been immunized against whooping cough, 9 percent (under 15) against diphtheria and 5 percent against polio (under age 5). Measles vaccination, one of the newest yet most useful prophylactic procedures, has not yet been supplied through public health channels and tetanus toxoid has been given to about 1 percent of the general population. On the other hand smallpox vaccination has been given to 56 percent of all age groups, a level of protection which is considered low were this devastating infection to be reintroduced into the population. The health authorities have adopted the policy of giving BCG vaccination as a means of protection against tuberculosis but efforts to date have not exceeded the immunization of 8 percent of the population.

3. Malnutrition

Malnourished children are more vulnerable to acute and chronic infections. Modern medical technology has developed simple and relatively inexpensive immunization procedures to prevent many of these common infections but only limited success has been achieved in protecting the Colombia population. For example, only 13 percent of the susceptible population (under age 5) have been immunized against whooping cough, 9 percent (under 15) against diphtheria and 5 percent against polio (under age 5). Measles vaccination, one of the newest yet most useful prophylactic procedures, has not yet been supplied through public health channels and tetanus toxoid has been given to about 1 percent of the general population. On the other hand smallpox vaccination has been given to 56 percent of all age groups, a level of protection which is considered low were this devastating infection to be reintroduced into the population. The health authorities have adopted the policy of giving BCG vaccination as a means of protection against tuberculosis but efforts to date have not exceeded the immunization of 8 percent of the population.

3. Malnutrition

Colombian authorities and external assistance agencies have recognized the need for correcting the severe nutritional deficiencies of the Colombian population and currently extensive programs, costing in the range of U.S. $15 million annually, are in progress and will be continued for at least a five year period. No other major health problem in Colombia has been so intensively studied, nor has so well planned or so ambitious a program been devised against other major health problems equivalent to that currently under way in this country-wide attack on malnutrition. Yet the extent of the problem is so great, the factors contributing to it so complex and the implications for the total economic and social development of Colombia so pervasive that measures short of those planned would be ill advised. Table II-16 shows the categories of nutritional deficiencies identified in sample studies conducted by the Institute of Nutrition, according to urban-rural residence and family income. For all classes of the population only two nutritional requirements are adequately met - those for iron and vitamin C, whereas caloric, protein, mineral and other vitamin needs are significantly deficient. Additional data are available demonstrating that malnutrition is heavily concentrated in early childhood where growth requirements are high and where nutritional deficits are directly reflected in increased susceptibility to intercurrent infections and retarded physical and intellectual development. A second highly vulnerable group is made up of pregnant and lactating mothers. Although direct measurements are lacking in Colombia substantial evidence derived from studies in other countries indicate that the efficiency and productivity of the total working population is reduced when their nutritional requirements are unmet and that absenteeism and learning curves of school children are comparably impaired under similar conditions.

4. Tuberculosis and Other Chronic Infectious Diseases

In recent years both the mortality rate and the prevalence of tuberculosis disease have been following a steadily downward trend.
Table II-16. Adequacy, in percent, of daily per capita intake of calories and nutrients for urban and rural zones and for socio-economic classes in 10 of the 11 localities studied in Colombia by the National Institute of Nutrition in 1963-1965 /1

<table>
<thead>
<tr>
<th>Zone and Socio-Economic Class</th>
<th>Calories</th>
<th>Proteins</th>
<th>Calcium</th>
<th>Iron</th>
<th>Vitamin A</th>
<th>Thiamine</th>
<th>Riboflavin</th>
<th>Niacin</th>
<th>Vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>URBAN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>76</td>
<td>67</td>
<td>39</td>
<td>109</td>
<td>56</td>
<td>82</td>
<td>47</td>
<td>77</td>
<td>91</td>
</tr>
<tr>
<td>Low</td>
<td>80</td>
<td>80</td>
<td>43</td>
<td>108</td>
<td>54</td>
<td>67</td>
<td>55</td>
<td>87</td>
<td>191</td>
</tr>
<tr>
<td>Average</td>
<td>93</td>
<td>106</td>
<td>69</td>
<td>112</td>
<td>107</td>
<td>77</td>
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<td>135</td>
<td>110</td>
<td>124</td>
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<tr>
<td>All Classes</td>
<td>88</td>
<td>87</td>
<td>50</td>
<td>126</td>
<td>86</td>
<td>85</td>
<td>71</td>
<td>93</td>
<td>127</td>
</tr>
<tr>
<td><strong>RURAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low</td>
<td>77</td>
<td>64</td>
<td>40</td>
<td>108</td>
<td>50</td>
<td>81</td>
<td>54</td>
<td>89</td>
<td>174</td>
</tr>
<tr>
<td>Low</td>
<td>90</td>
<td>82</td>
<td>54</td>
<td>125</td>
<td>68</td>
<td>77</td>
<td>92</td>
<td>192</td>
<td>192</td>
</tr>
<tr>
<td>Average</td>
<td>87</td>
<td>82</td>
<td>49</td>
<td>140</td>
<td>56</td>
<td>88</td>
<td>93</td>
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<td>216</td>
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<tr>
<td>High</td>
<td>98</td>
<td>97</td>
<td>66</td>
<td>124</td>
<td>84</td>
<td>98</td>
<td>95</td>
<td>90</td>
<td>178</td>
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<tr>
<td>All Classes</td>
<td>83</td>
<td>72</td>
<td>46</td>
<td>115</td>
<td>56</td>
<td>83</td>
<td>61</td>
<td>90</td>
<td>178</td>
</tr>
</tbody>
</table>

/1 Exclusive of study in El Trebol which did not include tabulations for socio-economic class.

These improvements are reflections, in part, of better case finding procedures and the institution of modern therapeutic methods, including chemotherapy, BCG immunization and chemoprophylaxis. Current death rates, in the range of 20 per 100,000, can be compared favorably with those of other major Latin American countries but are 5 or more times higher than those currently being observed in North America. Deaths and known cases are heavily concentrated in the older age groups but the true extent of this, as yet uncontrolled problem, is obscured by the seriously underreported number of cases. In order to make international comparisons, it is still necessary to adopt an arbitrarily selected "corrective factor" and apply this to the reported number of cases or deaths.

77. Syphilis appears to be on the increase in Colombia and this rise has been noted by some observers as reflecting greater frequency of transmission to new cases and not merely an increase in recognition and larger numbers under treatment. Leprosy and yaws are two other chronic infectious diseases noted in Colombia and though their frequency is not so great as to constitute major health problems they have absorbed significant public health effort to maintain them under reasonable control.

78. Malaria. Beginning in 1958 an extensive program of malaria eradication was initiated in cooperation with PAHC and UNICEF with additional bilateral, technical and financial assistance from the U.S. A survey conducted at that time indicated that nearly 8 percent of the population was infected and that it was the 4th highest cause of illness in the country producing an annual economic loss estimated in the range of 58 million pesos. Initial success permitted the opening up of large areas of the country to exploitation and colonization but by 1960-1963 much of the campaign's momentum was lost due to the unavailability of sufficient funds. Since 1966 the program has been reorganized and now is an integral part of the 10 year National Health Program (1968-1977) with concentrated attack operations scheduled for the first five years and the consolidation phase completing the ten year schedule. At the conclusion of the mass campaign, continued vigilence in the maintenance phase of eradication will rest with the local decentralized health services. The highland areas of the country are essentially free of risk of malaria transmission. (17 percent of the land area and 44 percent of population have been designated as free of malaria). An additional 22 percent of the land area and 42 percent of the population are now designated as in the consolidation phase; the balance, with 61 percent of the land area but only 14 percent of the population, now fall into the active attack area. (Most of the Llanos Area with less than 3 percent of the population is excluded from the above analysis.)

79. Based on the application of modern case finding methods, conducted in the field, less than 3 per 1,000 of the population is now believed to harbor malaria plasmodia, a significant reduction in the foci and sources of infection which were estimated to approach about 80 per thousand about ten years earlier. The costs of this antimalarial program have been substantial with no less than $36 million (U.S.) having been invested in the period 1958-1967. To bring it to its ultimate fruition in 1977, fund requirements will continue to be large with the National Health Plan calling for an additional $33 million (U.S.) needed for this purpose.
5. **High Fertility and Abortions**

80. Factors associated with high rates of population increase -- a phenomenon commonly identified with early stages of economic and social development -- are not well known and even less well understood. The 1965-1966 National Health Survey has provided unique information for critical appraisal of some of these factors. Many of these analyses should have significant implications for health planning not only in Colombia but elsewhere.

81. The Colombian population is young; 46.6 percent is less than 15 years of age and only 6.8 percent is more than 54 years of age. A lower proportion of females less than 15 years old lives in the urban zone; a higher proportion of women between 15 and 54 years of age lives in the urban zone. In the lower-income group 49.6 percent of the population is less than 15 years of age; in the higher-income group 38.5 percent is that age. Inversely, the population between 15 and 54 years old amounts to 42 percent and 52.6 percent of the lower- and higher-income groups, respectively. The female population, age 15 to 54 years, is 24.2 percent of the total population of Colombia. Of that group, 22.7 percent has not attended school at all and only 16.1 percent has attended some years of intermediate or higher education.

82. The annual rate of pregnancies is 198.3 per 1,000 women of fertile age. The rate is higher in the rural zone (237.7) than in the urban zone (168.0), and diminishes as social and economic conditions improve.

83. Of each 100 pregnancies 11.7 terminate during the early fetal period, 2.0 in the intermediate fetal period and 86.3 in the late fetal period, 77 of which end at normal term. Fetal deaths account for 16.5 percent of the products of pregnancy.

84. The overall birth rate of the country is high. Even assuming the lower of the two rates discussed above (see para. 30) of 40.0 per 1,000 inhabitants, this figure is 8.6 percent higher than that obtained through the record of baptisms. The urban and rural birth rates, adjusted to the population of the country by age and sex, are 31.3 and 51.6 per 1,000 inhabitants, respectively.

85. The specific fertility rate is 165.0 per 1,000 women aged 15 to 54 years; the urban rate is 129.4 and the rural rate is 211.3. The

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1/ These data are derived from the 1965-1966 National Health Survey (Reference 3b). For age distribution of the population, 1970 population estimates show no essential change; the percentage under age 15 is also 46.6; and for 55 and over, 6.6 percent.

2/ These fertility rates are lower than those reported in para. 34 above. These differences arise from the fact that published rates for Colombia are based on the use of ages 15-54 to define the child-bearing ages whereas the usual practice is to include only women, ages 15-44. Rates reported in para. 34 were recalculated for the age period 15-44.
Table II-17. SPECIFIC FERTILITY RATE BY AGE, ZONE AND ANNUAL FAMILY INCOME
(Income in Pesos)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Unknown or no Information</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td>Number</td>
<td>Rate</td>
<td>Number</td>
<td>Rate</td>
<td>Number</td>
</tr>
<tr>
<td>15-24</td>
<td>26,042</td>
<td>172.7</td>
<td>17,990</td>
<td>121.1</td>
<td>4,747</td>
</tr>
<tr>
<td>25-34</td>
<td>25,703</td>
<td>237.4</td>
<td>26,618</td>
<td>267.5</td>
<td>1,017</td>
</tr>
<tr>
<td>35-44</td>
<td>16,337</td>
<td>138.3</td>
<td>10,158</td>
<td>131.1</td>
<td>6,179</td>
</tr>
<tr>
<td>45-54</td>
<td>1,057</td>
<td>25.5</td>
<td>19,405</td>
<td>242.0</td>
<td>7,679</td>
</tr>
</tbody>
</table>

In 1965-1966, 1,000 pesos = U.S. $67
Rates not shown when based on small number of cases.

Source: Aqualimpia M., Carlos, et al, Demographic Facts of Colombia, 1969 (Reference 6)
highest fertility by age is among the women aged 25 to 34 years, with a rate of 273.4 (see Table II-17). According to the specific fertility rates of the country, a woman might have six children during the course of her reproductive life. That figure would vary from 4.7 children in the urban zone to 7.7 in the rural zone. The different indicators of fertility consistently show that the fertility of rural women is 38 percent higher than that of urban women. In addition, fertility is 50 percent higher in some regions than in others. The differences are maintained in all age groups by zone and family income, although the differences are more accentuated in the extreme age groups.

86. The estimated 117,401 abortions among women aged 15 to 54 years amount to a rate of 136.1 abortions per 1,000 pregnancies, or one abortion for every six live births (Table II-18). The risk of abortion increases with age, is higher in women without children and is reduced as the number of children previously borne increases. The abortion rate is lower in women of rural areas with lower family income or little education. The rate is intermediate among women, urban or rural, who have more education or higher income. The highest abortion rate is found in women of the urban zone with a low level of education or low incomes.

87. The estimated number of induced abortions is 65,600 in one year. That figure corresponds to a rate of 76 per 1,000 pregnancies and is 65 percent of all abortions that occurred before 20 weeks gestation.

88. Rural women and women of low socio-economic level have a high fertility rate, probably attributable to their limited use of methods to control fertility. Urban women and women of intermediate socio-economic level have a lower fertility rate achieved by increased rates of induced abortions and prevented pregnancies. Women of high socio-economic level have the lowest fertility rate, a low rate of induced abortion and the highest rate of prevented pregnancies. The comparison by regions reinforces the inverse relation between the fertility rates and abortion rates. (See Chart II-19).

89. A total of 23,241 still-births were reported; a rate of 26.9 per 1,000 pregnancies or 32.9 per 1,000 live births. The risk of still-birth increased with age, but no significant differences could be found related to socio-economic level of the mother.

6. Accidents (4 e.)

90. Accidents cause about 4.5 percent of all deaths in Colombia with a death rate of 4.4 per 10,000 population. Males experience three times the risk of females and risk increases with age. Transportation accounts for more than one-fourth of all fatal accidents, with falls and deaths from burns following in that order. No major trend has been noted in recent years in the rate of fatal accidents although accidental death due to vehicles appears to be increasing slightly.
### Table II-18. ESTIMATES OF INDUCED ABORTIONS BY ZONE, REGION, ANNUAL FAMILY INCOME AND EDUCATION

<table>
<thead>
<tr>
<th>Zone</th>
<th>Total Rate/a of Induced Abortions (Observed Minus 60)</th>
<th>Induced as Per Cent of Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Rate/a Observed</td>
<td></td>
</tr>
<tr>
<td>Urban I</td>
<td>159.9</td>
<td>99.9</td>
</tr>
<tr>
<td>Urban II</td>
<td>204.2</td>
<td>144.2</td>
</tr>
<tr>
<td>Rural</td>
<td>79.6</td>
<td>19.6</td>
</tr>
<tr>
<td>Total</td>
<td>136.1</td>
<td>76.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Rate/a Observed</th>
<th>Rate/a of Induced Abortions (Observed Minus 60)</th>
<th>Induced as Per Cent of Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>118.3</td>
<td>58.3</td>
<td>49.3</td>
</tr>
<tr>
<td>Oriental</td>
<td>60.8</td>
<td>0.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Bogota, D.E.</td>
<td>101.0</td>
<td>41.0</td>
<td>40.6</td>
</tr>
<tr>
<td>Central</td>
<td>109.1</td>
<td>109.1</td>
<td>64.5</td>
</tr>
<tr>
<td>Pacific</td>
<td>211.6</td>
<td>151.6</td>
<td>71.6</td>
</tr>
<tr>
<td>Total</td>
<td>136.1</td>
<td>76.1</td>
<td>55.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income (Pesos)/a</th>
<th>Rate/a Observed</th>
<th>Rate/a of Induced Abortions (Observed Minus 60)</th>
<th>Induced as Per Cent of Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,600 or less</td>
<td>110.0</td>
<td>50.0</td>
<td>45.5</td>
</tr>
<tr>
<td>3,601 to 6,000</td>
<td>131.3</td>
<td>71.3</td>
<td>54.3</td>
</tr>
<tr>
<td>6,001-12,000</td>
<td>174.4</td>
<td>114.4</td>
<td>65.6</td>
</tr>
<tr>
<td>12,001-30,000</td>
<td>201.5</td>
<td>141.5</td>
<td>70.2</td>
</tr>
<tr>
<td>30,001 and over</td>
<td>120.6</td>
<td>60.6</td>
<td>50.3</td>
</tr>
<tr>
<td>Total</td>
<td>136.1</td>
<td>76.1</td>
<td>55.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Rate/a Observed</th>
<th>Rate/a of Induced Abortions (Observed Minus 60)</th>
<th>Induced as Per Cent of Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>113.1</td>
<td>53.1</td>
<td>47.0</td>
</tr>
<tr>
<td>1-8 years</td>
<td>144.8</td>
<td>84.8</td>
<td>58.6</td>
</tr>
<tr>
<td>High school and beyond</td>
<td>128.4</td>
<td>68.4</td>
<td>53.3</td>
</tr>
<tr>
<td>Total</td>
<td>136.1</td>
<td>76.1</td>
<td>55.9</td>
</tr>
</tbody>
</table>

/a In 1965-1966, 1,000 pesos = U.S. $67.

Source: See Table II-17.
91. With respect to morbidity, in any one year approximately 7.5 million accidents of all types occur, a rate of 416 per thousand population. Stated alternatively, four of every ten Colombians experience a significant accidental injury in any given year. More than one-fourth result from falls, one-fifth from cutting and piercing instruments, 8 percent from falling or flying objects, 7 percent from vehicles and 5 percent from fire and burning objects. Excluding vehicular accidents, the most hazardous place from the point of view of accidental injury, is the home, followed by street accidents, farm accidents and accidents at the place of work. The risk of occupational accidents is high, accounting for the 562 accidents per 1,000 workers, a rate 30 percent higher than the rate experienced by non-workers. Such occupational accidents are equivalent to 106 incapacitating accidents for each million hours of work.

92. All told, in addition to deaths, permanent invalidity, damage to property and loss of income, accidental injuries account in any one year for 17 million days of invalidity, 1b million medical care visits, 98 thousand hospitalizations (10 percent of all hospitalizations, 12.7 percent of hospital days and 1.3 million days in bed).

7. Dental Disease

93. In most countries, developed or developing, the extent of dental pathology is subject only to gross estimates. In Colombia, however, extensive information has been gathered indicating that 43.5 percent of the population over the age of three are in need of dental care with the highest prevalence during the age span 5-14, reaching a peak of 55.7 percent at ages 15-24. No marked differentials occur with income levels or geographic location although women appear to have a higher need than men.

94. Not all those who need dental care receive such attention. Only 24.3 percent of the population consult dental attendants, slightly more than half of those who express need for such care. Those who seek dental assistance average 2.5 visits per year and this attention is concentrated in urban areas, in the higher income groups and in the active working age groups of the population. Extractions account for over two-thirds of services rendered with fillings and dental prostheses making up most of the remainder of care given. Dental prophylaxis, so important in early life, makes up only a small fraction of dental care services.

8. Mental Illness

95. Substantial evidence exists that mental illness and psychiatric disorders are serious and important health problems in Colombia. An estimate made in 1967 indicates that about 710,000 persons or almost 4 percent of the population is disabled or chronically impaired by the psychoses, neuroses, mental deficiency, epilepsy and alcoholism. One in six of all hospital beds are devoted to psychiatric care and almost 2 percent of all medical consultations arise from mental health problems. About 3 percent of physicians select psychiatry as their area of specialty practice. Regrettably neither time nor opportunity permitted an appropriate survey of the mental health area or a proper evaluation of the proposed mental health program incorporated in the Ten-Year National Health Plan.
D. Institutional Resources for Health

As of December 31, 1966, there were 658 hospitals in the country providing 46,735 beds (approximately 2.5 beds per 1000 population). 523 of these hospitals, with 87.4 percent of the beds, receive all or partial support from the public treasury and their medical policies are guided by the Ministry of Health. The remaining 135 hospitals, representing 12.6 percent of total beds, make up the private sector. About one bed in five is devoted to special health problems: chronic diseases (tuberculosis) and mental illness. (Note: In the last four years the ratio of available beds has fallen slightly due in part to an increase in the population and to the closing of some hospitals and the deactivation of some beds.) In addition to these hospitals, there are operating about 1120 health centers and health posts rendering primarily preventive services and ambulatory care.

Although the overall ratio of available beds compares reasonably favorably with resources available in other countries, subdivision of the country reveals serious maldistribution of these essential health care facilities. For example, dividing the country into three major categories: major towns of over 20,000 population (45.8 percent of total population), towns of 1,500 to 20,000 population (42.6 percent of the population), and smaller communities with less than 1,500 inhabitants (11.6 percent of the total population) interesting disparities of availability of hospital care become apparent: (Table II-20). Whereas 23.2 percent of the population is judged to lack access to hospital care this proportion rises from 1.1 percent in the more populous areas to 87.5 percent in small communities and rural areas. Concurrently the bed/population ratio falls from 3.5 per 1000 in larger centers to 2.0 per 1000 in intermediate size communities and to 0.8 per thousand for the rural balance of the country.

Other important comparisons indicate that hospital resources are utilized more efficiently in the more populous areas with shorter average hospital stays (12.3, 10.9 and 15.1 days respectively per admission) and higher occupancy rates (75.4, 51.5 and 53.3 percent respectively).

An interesting attribute of the health facilities situation is reflected in the number of partially constructed and unequipped and unutilized hospital (or other health care) facilities scattered throughout the country. A recent inventory of these facilities places the number of such structures in the vicinity of 856 buildings partially erected at various times during a 15 or more year interval. Political pressures, local charity boards and other sources contributed to this situation without reference to clearly assessed needs, national or regional plans and, all too often, with insufficient funds to either complete construction and equipment objectives or to initiate and maintain operation. One estimate places the already made investments in these structures in excess of 2,000 million pesos. As will be noted in a later section, the new National Hospital Plan has not only assessed these structures but proposes the completion, equipment, and placing in operation of such of these facilities as will contribute to a rational national plan for comprehensive health care coverage of the total population. Also as part of the National Hospital Plan the estimated deficit of needed hospital beds by 1975 is in the range of 15,400 additional beds (see Table II-21).
Table II-20. POPULATION WITH AND WITHOUT ACCESS TO HOSPITALS /a
ACCORDING TO SIZE OF COMMUNITY

COLOMBIA 1966

<table>
<thead>
<tr>
<th>Population Size</th>
<th>WITH ACCESS TO HOSPITALS</th>
<th>WITHOUT ACCESS TO HOSPITALS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Comm.</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Over 20,000</td>
<td>56</td>
<td>8,529,707</td>
<td>98.9</td>
</tr>
<tr>
<td>1,500 to 20,000</td>
<td>313</td>
<td>5,645,058</td>
<td>70.5</td>
</tr>
<tr>
<td>Under 1,500</td>
<td>37</td>
<td>272,605</td>
<td>12.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>406</td>
<td>14,447,370</td>
<td>76.8</td>
</tr>
</tbody>
</table>

/a Includes both public and private hospitals.

SOURCE: Study of Human Resources for Health (Reference 4, h)
Table II-21. ESTIMATION OF THE NEED FOR GENERAL HOSPITAL BEDS \(^b\) BY 1975

<table>
<thead>
<tr>
<th>Strata</th>
<th>Population 1966</th>
<th>%</th>
<th>No. Beds per 1,000 General Population 1966</th>
<th>Population 1975</th>
<th>%</th>
<th>No. Beds per 1,000 General Population 1975</th>
<th>Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>7,501,099</td>
<td>39.9</td>
<td>14,861,946</td>
<td>14,861,946</td>
<td>57.0</td>
<td></td>
<td>+ 15,923</td>
</tr>
<tr>
<td>PR</td>
<td>1,121,286</td>
<td>5.0</td>
<td>37,895</td>
<td>37,895</td>
<td>2.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td>8,622,385</td>
<td>45.9</td>
<td>21,975</td>
<td>21,975</td>
<td>2.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>2,650,162</td>
<td>14.1</td>
<td>3,220,088</td>
<td>3,220,088</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td>5,352,968</td>
<td>28.4</td>
<td>18.0</td>
<td>18.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td>8,003,130</td>
<td>42.5</td>
<td>14,240</td>
<td>14,240</td>
<td>1.78</td>
<td></td>
<td>- 572</td>
</tr>
<tr>
<td>III.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>243,515</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td>1,931,176</td>
<td>10.3</td>
<td></td>
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</tr>
<tr>
<td>PT</td>
<td>2,177,691</td>
<td>11.6</td>
<td>788</td>
<td>788</td>
<td>0.36</td>
<td>2,229,292</td>
<td>2.11(^c)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>18,803,206</td>
<td>100.0</td>
<td>37,003</td>
<td>24,769,910</td>
<td>100.0</td>
<td>52,368</td>
<td>15,365</td>
</tr>
</tbody>
</table>

\(^a\) PC = Urban Population  
\(^b\) PR = Rural Population  
\(^c\) PT = Total Population  
\(^b\) Change in total rate resulting from the change in the distribution of the population in each stratum.  
\(^c\) Includes pediatric and obstetrical beds.  

Source: Study of Human Resources for Health (Reference 44).
Table II-22. COMMUNITIES AND POPULATION ACCORDING TO EXISTING RESOURCES OF PERSONNEL, BY COMMUNITY SIZE

COLOMBIA 1967

<table>
<thead>
<tr>
<th>COMMUNITY SIZE</th>
<th>PERMANENT RESOURCES WITH MEDICAL ASSISTANCE /a</th>
<th>WITH AUXILIARY ONLY</th>
<th>SPORADIC RESOURCES</th>
<th>WITHOUT RESOURCES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>1</td>
<td>2,406,215</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>7,711,633</td>
<td>96.8</td>
<td>175,356</td>
<td>2.2</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1,239,714</td>
<td>53.8</td>
<td>783,771</td>
<td>37.0</td>
<td>30,902</td>
</tr>
<tr>
<td>Total</td>
<td>18,257,562</td>
<td>93.7</td>
<td>959,169</td>
<td>4.9</td>
<td>40,902</td>
</tr>
</tbody>
</table>

/a Includes communities without health center but with a hospital.

Source: Estimates of Sectional Health Services, Ministry of Health.
100. Ambulatory care facilities -- of the total of 1,120 health centers and health post facilities, 710 fall in the former category and 410 in the latter. In addition, 657 hospitals provide out-patient or ambulatory care services as do 205 offices of the Social Security System and the National Welfare Funds. About 5,500 private physicians offices and an indeterminate number of private care centers contribute to the ambulatory care services for the population.

101. Based on the above compilation, it has been postulated that for the country as a whole over 94 percent of the population has reasonable access to ambulatory care resources. This figure ranges from 95 percent in the larger towns down to 90 percent in the less populated areas. However, the comprehensiveness of services available is disparate. For example, health centers and health posts which are called upon to render over 30 percent of all consultations for the country as a whole (57 percent in small towns and 83 percent in villages and rural areas) offer only limited facilities and equipment and limited personnel. Health centers are staffed primarily by nurse auxiliaries with occasional visits by physicians and health posts, many of which are open only on a sporadic basis, are staffed only by nurse auxiliaries. In consequence, as shown in Table II-22, whereas for the total population 94 percent is believed to have access to medical consultation when needed, an additional 5 percent to similar attention provided by a nurse auxiliary and less than 1.5 having access to none or only sporadic care, the same situation does not prevail in the smallest communities and rural areas. There, only 54 percent has access to medical assistance and 37 percent must depend solely on the resources of a nurse auxiliary; the balance, 9 percent, is unprovided for or exposed only to sporadic and then severely limited services.

E. Health Personnel-Supply and Distribution

1. Physicians

102. Few countries have as much or as precise information on the number, qualifications, location and other characteristics of its medical profession. Using December 1966 as a reference point there were then 8,100 physicians practising in the country or a ratio of 4.5 physicians per 10,000 population (1 physician per 2,200 population). Much of the following analysis is based on data received from each of the 6,323 physicians who responded to inquiries incorporated in the 1965-1966 National Survey of Human Resources for Health.

103. Comparing physician resources in Colombia with those in other countries, Colombia falls slightly below the mean of 6.0 physicians per 10,000 population for North America and considerably below the national averages of 15.1 for North American countries; for Brazil the ratio is 4.0; Ecuador, 3.3; Bolivia 2.9; Chile 5.8 and Argentina 14.9. The physician population in Colombia is young with 56 percent under 40 years of age; 65 percent have completed their medical training since 1950. The practice of medicine is essentially a male occupation with less than 2 percent women, a rate even lower than in the U.S. All but 3 percent are native born although 9 percent received their medical training abroad.
104. The distribution of physicians is uneven with 74 percent located in the principal cities of the country serving the needs of the 31 percent of the population that resides in such centers. Thus, in these cities there is one physician for 1000 of the population whereas elsewhere the ratio drops to one for 6400 persons. Only 9 percent of physicians are in practice in communities of under 20,000 population, where almost 64 percent of the population reside. This disparity would be even greater were it not for the fact that since 1957 every graduating physician is required to render obligated service for at least two years, usually in a rural area designated by the Ministry of Health.

105. Only 27 percent of physicians devote their energies to general medicine and an additional 53 percent are involved in the specialized practice of surgery, internal medicine, pediatrics and obstetrics. Only a small fraction of physicians specialize in public health, 1.3 percent, and an even smaller fraction, 2.5 percent, specialize in psychiatry.

106. Because the public treasury is responsible for funding so large a fraction of health care services in Colombia it is not surprising that more than half (53 percent) of the physicians indicate that all, or the major share, of their practice is devoted to non-private care. This figure varies, however, with non-private care rendered by 68.7 percent of physicians located in towns of under 20,000 population. In cities of intermediate size, this proportion drops to 40 percent rising again to 54 percent in the capital cities. It is also of interest that concentration of interest on private versus non-private practice varies with the age of the physician. Early in their careers up to 80 percent of physicians are totally or predominantly dependent on salaried income whereas beyond age 40 the emphasis in their practice turns more in the direction of private patient care. In mature life only 25-40 percent of doctors derive all or the majority of their income from salaries.

107. The mean income of physicians for the country as a whole is about 92,000 pesos per year, this mean varying from 93,000 in the largest population centers down to 54,000 in communities under 20,000 population. In the larger centers about one-third of physicians have incomes of over 100,000 pesos and only 20 percent earn less than 50,000 pesos annually. In smaller communities 40 percent fall into the lower category and only 4 percent in the higher.

108. A significant finding of the 1965-1966 study focused on the utilization of the professional time and skills of the physicians; almost half (47.3 percent) is consumed in non-medical duties or tasks which in the view of medically trained observers could be done as well, and in some instances better, by other personnel without the long and expensive educational preparation requisite for the awarding of a medical degree. This observation and others to be considered later strengthen the argument for a greater use of auxiliary personnel and thereby extending the availability of physicians for duties that cannot be delegated to less well qualified workers.
As stated earlier, 3 percent of Colombian physicians were born outside of the country and a total of 9 percent are foreign trained. However, a recent development arousing the concern of Colombian authorities is the increasing trend of Colombian physicians to migrate to other countries, particularly to the U.S. In recent years this "professional drain" has averaged about 70 physicians a year equivalent to about 17 percent of the annual number of physicians graduating from Colombia medical schools. Regrettably, during the last several years this trend has been accelerating and this migration rate may now be approaching 25 percent of production, a serious economic drain both on the limited educational facilities of the country and on its long-term social resources. Ostensibly the main motivation for this emigration is to seek professional graduate training and experience in U.S. hospitals and institutions and many such trained physicians contemplate return to Colombia at the conclusion of this specialization experience. However, data are incomplete or unavailable in this area and it is commonly believed that a large number remain as expatriates.

2. Dentists

Studies similar to those summarized above for physicians have recently been completed in Colombia for professional dentists. Unfortunately, delays in the publication of these more recent studies preclude the incorporation of the major findings in this report. However, the 3,400 graduate dentists who have been identified as in professional practice in the country establishes a dentist population ratio of 2.1 per 10,000, a figure slightly below the average of 2.8 for all of South America and considerably below the average of 5.4 for the North American countries. Comparable figures for several other Latin American countries are: Argentina, 5.4; Bolivia, 1.6; Brazil, 2.7; Chile, 3.3; Ecuador, 1.2; Peru, 1.5; and Venezuela, 1.9.

3. Professional Nurses (4c)

Data similar to those covering the physician supply are also available for a segment of the nursing resources; namely, the supply and distribution of professional nurses, those who have had training beyond secondary school level, usually, if not exclusively provided in a university medical center setting. The 1965 survey indicated that there were at that time just under 2,000 nurses in Colombia of whom 82 percent (1,618) responded to the study questionnaire. Of the respondents, 73 percent were engaged in nursing in Colombia, 21 percent were inactive and the balance, about 6 percent, were outside the country. Secular nurses made up 77 percent of those covered in the survey but the balance, belonging to religious orders, constituted 25 percent of the active professional nurse supply.

The ratio of nurses surveyed to the population as a whole was 8.2 per 100,000; in the capital cities this ratio was 22.7, 15 times greater than in the rest of the country where it was 1.5 per 100,000. In contrast to some other countries where there are usually twice as many graduate nurses as physicians, (e.g., U.S.), in Colombia, physicians outnumber nurses about 5.5
to 1. The internal distribution of nurses in Colombia is further remarkable in that about 67 percent of nurses are concentrated in the three principal cities, Bogota, Medellin and Cali, which make up less than 19 percent of the total population.

113. About 42 percent of active professional nurses are working in public hospitals and an additional 11 percent in private hospitals; together these nurses provide a ratio of one graduate nurse to about 40 hospital beds. Another 43 percent of nurses are employed, about equally divided among public health services, Social Security and National Welfare Fund clinics and in teaching. For the most part professional nurses provide little or no bedside care, inasmuch as 57 percent serve as chiefs of nursing services; another 21 percent as directors, assistant directors or supervisors of health institutions, 11 percent in teaching roles and 4 percent in other supervisory functions. Only 6 percent are engaged in other duties including private practice.

114. Nurses are not well remunerated with the average monthly income of religious order nurses about 800 pesos per month and secular nurses averaging about 1500 pesos per month. In recent years there has been a slightly upward trend in the availability of professional nurses but this trend is paralleled by an increasing emigration of nurses from the country, with about 21 percent of the graduate nurse supply in foreign residence, about half of these in the U.S.

4. Auxiliary Nurses

115. Auxiliary nurses or nurse aides provide the bulk of traditional nursing services available in Colombia. However, no inventory comparable to those undertaken in medicine, dentistry and professional nursing has yet been initiated and thus only crude and somewhat contradictory estimates of their number in actual working situations are available. One estimate (1965) places the number of nurse auxiliaries at about 11,000 or 8 for each professional nurse. Another estimate (also in 1965) places the number of employed nurse auxiliaries at just under 4,000 and a more recent assessment (1967) indicates that there were then 3,500 "certified" auxiliary nurses known to health authorities and that an additional 12,000 "untrained" auxiliary nurses are employed by hospitals, health centers, and health posts throughout the country. This estimate would place the total number of "certified" and "untrained" auxiliary nurses in excess of 15,000.

116. These disparities arise, in part at least, as a consequence of differences in definitions and terminology. Until recently no formal educational requirements were established for nurse auxiliaries and nurse aides, both categories being trained on an in-service basis in hospitals or other health care institutions. In contrast, professional nurse training has been directed by accredited educationally oriented institutions. By-and-large, nurse auxiliaries have completed one or two years of secondary school education and receive two years of supervised practical experience in a
hospital setting; nurse aides usually have less formal educational background and receive less than a year of practical training on the job. Accordingly, large numbers of young women employed in hospital or ambulatory care services, many fulfilling complex and highly responsible tasks, cannot now meet newly established standards for certification. Nor would many of the institutions in which they were prepared for work satisfy even modest criteria for training accreditation of nurse auxiliaries or nurse aides.

5. Other Health Manpower

Modern medical and health care services have become singularly dependent upon a large number of specialized aides, technicians, and other supporting personnel. These skills now represent, in developed countries at least, 10-60 percent of the total supply of specialized health workers. This differentiation of health manpower and the need for delegation of responsible functions by the physician is clearly recognized in Colombia particularly in the University Medical Centers. However, this recognition is only now reaching the stage at which national authorities are beginning to take inventory of this segment of the health manpower pool and to establish standards and norms of personnel requirements in order to assure the smooth and effective operation of the health care system. Among the categories of health workers that are due for such consideration are: health administrators, pharmacists, opticians and optometrists, laboratory and other technicians, dieticians and nutritionists, medical and dental aides, health educators and health promoters, hospital and clinical attendants, sanitary and sanitary inspectors and engineers.

F. Education and Training for the Health Occupations

1. Medical Education

In the 20 year period since 1950 the medical educational system of Colombia has made a remarkable forward thrust. Despite limited internal resources the university medical schools making up the Association of Colombian Medical Faculties, have made major revisions in their organization, teaching programs and objectives and simultaneously have provided unprecedented leadership to the development of progressive national health policies, resources and programs. (The reader is referred to the report: Study of Human Resources for Health and Medical Education in Colombia, Methods and Results. January 1969, Bogota, for an excellent review of the subject).

Prior to 1949, three medical schools graduated about 200 physicians annually. Enrollment was open, faculties were small and almost entirely part-time and the teaching plan was based largely on the older Continental European pattern. A relatively small fraction of students beginning medical studies completed their course and graduates were not uniformly of high caliber. Four additional schools began contributing graduates in the early 1950's and together the seven medical schools have almost doubled the output of physicians. Two newer schools are now accepting students and with planned increments of admission to all schools the number of graduates should approach 600 annually by 1973.
120. Only two of these university medical schools are sponsored by private institutions. Almost 1,900 medical students are currently matriculated in the seven year courses of education. Admission requirements are not completely uniform although basic entrance standards have been agreed to by all 9 institutions. The number of applicants is increasing with an overall average of 1 in 3 applicants being accepted. Attrition due to academic failure remains high but has declined to about 10 percent for the total seven year period with the greatest loss occurring in the first two years. The enrollment of women has increased from under 2 percent to 12 percent.

121. The educational plan approaches the curriculum in leading U.S. and Canadian institutions with increasing emphasis being given to basic science training and carefully supervised clinical experience. Preventive medicine and public health are recognized as having particular significance in the curriculum - in view of the nature of Colombia's unmet needs and major health problems. However, this field has not yet achieved the same degree of acceptance among medical students as have the more glamorous and traditional clinical specialties. In general, medical faculties are growing with increasing emphasis on collective and full-time staff, although half-time and part-time faculty members continue to represent more than 50 percent of the total medical school staffs. In addition to providing undergraduate medical education, the faculties of medical schools are engaged in post-graduate education, the care of patients in the university teaching hospitals, research and, increasingly, in community health affairs as well as in the training of allied health personnel.

122. The cost of maintaining the medical schools is high and the six schools (of a total of 9) for which data are available required over 50 million pesos a year for operational costs, without reference to capital outlays or those for replacement or purchase of new equipment. None of the schools has income of its own. The two private schools which receive the smallest public contributions are almost entirely dependent on enrollment fees for their support. Only one school has received substantial financial aid from abroad and only three have private funds from Colombian sources. The seven public schools charge an annual enrollment fee scaled to the income declared by the parents of the students; the two private institutions charge a fixed enrollment fee considerably higher than is charged at the public institutions. The degree to which this system affects the choice of medical careers is not clear; yet the sons of merchants represent more than 25 percent of medical school matriculants.

123. Projections for the future supply of physicians have been developed by the Association of Colombian Medical Faculties based on current and anticipated resources of the training institutions. The population of Colombia is expected to rise from its present level (1969) of 20.5 million to 28.8 million in 1980. With medical graduates rising to about 600 annually and with a loss by death of 70-90 physicians a year (emigration of physicians is not considered) the physician population ratio will rise slightly from
its present level of 4.3 per 10,000 to about 4.9 in 1980. It is thus apparent that Colombian authorities are not counting on a major improvement in the existing physician-population ratio as the means of overcoming the large backlog of health problems now confronting the Colombian health system.

2. Nursing Education

124. Nursing education in Colombia has remained relatively static over a period of years. Seven nursing schools were in operation in 1956, the same number as in 1965 when the survey of this field as well as of medical education was made. One of the seven schools is not included in that study; of the six schools providing data three are located in Bogota and one each in Medellin, Cali and Cartagena. Five of the six are integral parts of a university education system.

125. Between 1955 and 1963 the number of applications for admission to the six schools rose from 150 to 348 and the number of first year students from 134 to 167. However, only one nursing school was able to select one in four of its applicants; the other accepting all or a considerable majority of theirs.

126. Two-thirds of all students come from major cities and less than 1 percent from rural areas where half of the country's population resides. Three quarters of the matriculants completed their secondary education in private schools and though educational fees are low there is evidence to suggest that candidates for nursing education are drawn from reasonably well-off economic strata of Colombia though perhaps somewhat less so than are students choosing medicine as their career. On a national average 75 percent of the students entering nursing school complete the program although this figure ranges from 97 percent in one school down to 57 percent in another.

127. The lack of appeal of nursing education appears to be linked with high academic requirements for admission to the schools and more recently to the lengthening of educational requirements. In the past the nursing training program varied from two to three years depending on the individual school. More recently with the introduction of the general studies program in schools of nursing the duration of the required course has been lengthened to four years and on graduation the term "general nurse" has progressively replaced "licenciate in nursing."

128. The cost of nursing education is also high and is largely borne by the university budget. The range of cost per student per year varies from a low of 2,800 pesos in one school to 16,600 pesos with an average of 6,740 pesos per student.
3. **Auxiliary Nurse Education**

It is stated that 30 schools of auxiliary nurse education are now in operation in the country. Other information suggests that this figure is low and is limited to "accredited" training institutions. The Ministry of Health estimates the number of "graduates" each year from these "accredited" schools in the range of 700. In all probability twice or three times that number of new recruits annually enter employment as auxiliary nurses without proper training or preparation. By crude calculation it is possible to arrive at an estimate that no less than 100 "accredited" auxiliary nurse training schools are needed with each turning out no less than 30 or 40 graduates annually.

4. **Dental and Other Health Professions and Occupations Education**

These systems have been or are in the process of being studied but published or other data are not presently available for inclusion in this report.
III. THE NATIONAL TEN YEAR HEALTH PLAN FOR COLOMBIA (1968-1977)

A. Origins and Evolution of the Plan

131. A number of strong, converging forces have been at work in initiating and consolidating the Ten Year Health Plan now in effect in Colombia. This document, Plan Nacional de Salud, 1968-1977, critically assesses the significant health problems of the country, catalogues the resources available and needed to resolve these problems and, equally importantly, crystallizes a series of long-term national policies and plans to guide the governmental and private sectors in achieving attainable national goals. In the brief period of time in which it has been in effect many of its innovations have proven feasible. Moreover, though a period of ten years appears to be a short span in which to accomplish its multiple objectives its practical directives have aroused the confidence of the health administrators of the country and have mustered widely based support both within the country and among international authorities and observers.

132. Among the prominent forces that have given rise to the plan is the clear recognition, at the foremost levels of the Colombian Government, that economic and social development are inseparably interwoven, each with the other; advances in the former area cannot proceed at the expense of parallel progress in the levels of health, the educational status and the living conditions of the Colombian people. Stated alternatively the development of modern social institutions are not dependent solely on, and cannot be delayed until, the prior accumulation of industrial capital and economic power. Rather, a healthy population, educated to participate actively in a modern society and living in relative homeostasis with its domestic and working environment is, in fact, an essential condition of full economic development. Such a national determination has also been incorporated in the charter of the Alliance for Progress signed by Colombia and 18 other republics in 1961. That document calls for a national health plan as an integral element of a national plan for total economic and social development.

133. But even in advance of the Punta del Este Declaration, the Government of Colombia began in 1966 to draft a long-term public health plan. The technical assistance of the World Health Organization and the Pan American Health Organization was enlisted as was the help of the United Nations Children's Fund. These efforts gave rise to an initial ten-year health plan (1966-1971) but, even more significantly, revealed many of the severe limitations and constraints under which the health authorities in that country were forced to function. Dispersed and fractionated responsibilities were the order of the day, funds from a multiplicity of sources in inadequate amounts were expended without reference to priority needs or national plans and unqualified personnel subject to patronage appointment and removal were completely
devoid of professional guidance and supervision. But not the least of
the difficulties identified was the lack of reliable data characteri-
zizing even the most prevalent of major health problems and providing a
reasonable basis for evaluating the effectiveness of established activ-
ities or the shortcomings of traditional organizational patterns some
of which dated back to the colonial era.

134. It was in this framework that the Ministry of Health was able
to respond creatively in 1963 to the overtures of the Colombian Associa-
tion of Medical Faculties which was then seeking to plan a course of
action for its own, then seven, institutional members for the development
of an adequate national supply of physicians and other health manpower
and to adapt their educational strategies to contemporary internationally
accepted professional standards. The Pan American Health Organization
and a private international foundation, the Milbank Memorial Fund of New
York, agreed to provide technical assistance and financial aid. Thus,
the way was paved for the nationwide collaborative study of Health Man-
power and Medical Education in Colombia (1965-1966) incorporating a
scientific appraisal of the health conditions and total health resources
of the country - a truly National Health Survey.

135. This National Health Survey, a unique undertaking in a develop-
ing society, has placed, for the first time, in the hands of health
authorities and planners in Colombia a fund of scientific knowledge on
which to base a sound national health plan and program. Its findings
form an integral part of the National Ten Year Health Plan, 1966-1977.
But its benefits have not stopped there for, in addition, the study’s
economic and social profiles of the population, its analyses of rates
and patterns of population increase and of other demographic characteris-
tics have been of invaluable assistance to other national ministries and
agencies of government as, for example, the Ministries of Education and
Labor as well as the National Departments of Planning and Statistics. It
is also noteworthy that the design and applications of this national
health planning procedure is being increasingly emulated in other Latin
American countries as well as elsewhere.

136. Important national legislative enactments have accompanied and
paralleled the formulation of the National Health Plan, including Decrees
3224 of 1963, 1499 of 1966 and 2470 of 1968. These have authorized and
formalized institutional and administrative reorganizations required for
sound development of national, regional and local activities in the health
field. Specifically, the above legislation provides for the reorganization
of regional (Departamento) and local (Municipio) health services as a
desentralized function of the Ministry of Health; fosters the coordination
through a National Health Council, chaired by the Minister of Health, of
the efforts of previously dispersed entities of government responsible
for fractional health functions and for the unification of their financial
resources; the organization and consolidation within the Ministry of
Health of the mechanisms for supervision, control, programming and
periodic evaluation of health activity at all levels of government; and
finally, defines the fields of activity as well as creating the new
organizational structure required to carry out the new health programs
called for in the National Plan. A more detailed appraisal of the new
organizational pattern in the health sector is presented elsewhere in this report (See Chapter I, Section B, above).

B. Major Elements of the Plan

137. Following a general description of the geography and climate of Colombia, the major demographic attributes of its population and the significant economic and social circumstances influencing the standards of life throughout the country, the National Health Plan, 1966-1977, critically assesses current mortality and morbidity rates for Colombia and takes note of recent time trends. Each of the major causes of death and of illness are reviewed (see Chapter II, above) for various age groups of the population. An appraisal is then made of the availability and utilization of health care resources in the various geographic zones and among the various social strata of the population. Thus, utilizing the extensive data assembled in the National Health Survey, the health authorities of Colombia, have been placed for the first time, in a position to formulate on defensible grounds a series of health priorities to guide both immediate and long-range programs.

138. For purposes of planning, diseases or other health problems have been arbitrarily categorized into those that are "reducible" or "non-reducible". Among the former are listed the major communicable diseases in the following order: the diarrheal diseases, intestinal parasitism, tuberculosis, measles, whooping cough, malaria, syphilis and gonorrhea, diphtheria, tetanus, leprosy, poliomyelitis, smallpox, rabies and yellow fever. Two other conditions not of infectious origin, are included in this list of "reducible" conditions - abortions and endemic goiter -- and it is somewhat surprising that at least two other conditions known to be highly prevalent in the country, contributing significantly to high morbidity and mortality and also clearly susceptible to preventive measures, are conspicuously omitted from this list. Malnutrition and to a lesser extent, accidents are, in fact, given high priorities in the subsequently developed health plan. Additional challenges can be raised to the justifications for placing other significant health problems in the category of "non-reducible" conditions, but, in the main, those too are covered in the subsequent development of programatic plans.

139. The major programs developed in the Ten Year Plan are listed as follows:

(a) Reduction of morbidity and mortality from "reducible causes":

1. Program of basic sanitation (diarrheal disease and intestinal parasitism).

2. Tuberculosis program (preventive vaccination and treatment of the sick).
3. Five-Year mass vaccination campaign (measles, whooping cough, diphtheria, tetanus, poliomyelitis and smallpox).

4. Ten-year malaria eradication program.

5. Venereal disease program.

6. Family planning program (abortions).

7. Leprosy control program.

8. Goiter control program.

9. Rabies control program.

10. Aedes Aegypti eradication program (yellow fever).

11. Yaws eradication program.

(b) Reduction of Mortality from "non-reducible" causes:

1. Nutrition and feeding program.

2. Occupational health program.

3. Comprehensive health and medical care program (hospitals, health centers and health posts).

4. Mental health program.

5. Dental health program.

(c) Organization of the health sector.

1. Development of health policies and programs.

2. Evaluation and supervision of decentralized health activities.

3. The training and organization of health personnel.

4. Health investigations and research.

5. Budgeting for health operations and investments for health.

C. The Ten-Year Health Plan - Analysis and Comments

Neither space nor time permits a detailed analysis of each of the programs and activities outlined in The Plan, and now in the process of implementation, beyond the observations and discussions provided in earlier sections of the report. In general however, each
of the projected programs and activities is based on a sound assessment of the magnitude and vulnerability to attack of the problem, a clear appraisal of the resources needed and available and reasonable projections of the time and funds required to achieve desirable objectives. Whether the goals sought by the Plan will be achieved or whether it will fail or fall short of its goal - as was the case in earlier Colombian efforts - depends less on its scientific and technical elements - which appear sound - than on the political climate in which this Plan has evolved. In this connection a number of items bearing on the prospects for success of the Ten Year Plan warrant further consideration.

1. National Support for the Plan

1.1. In the past, and even in the present, health as one of the social sectors in development has not been assigned a high priority by the governmental, industrial and economic leaders of the emerging nations. Erroneously, health and medical care expenditures have been considered consumer goods and prevailing policies have tended to favor investment opportunities in physical capital. Only with rising national output has there been a willingness to devote part of the increment to the financing of additional health services. As mentioned above the charter of the Alliance for Progress did not precede the adoption of new policies by the Colombian government for concerted social as well as economic development for the country. Since the mid-50’s Colombia has been seeking to formulate a national health plan. Furthermore, the support given by the President of the country as well as by other high officials of the government to the National Health Survey attest to a revision of priorities that has been in process in Colombia for some time.

1.2. More recent legislative enactments implementing the Ten Year Plan, and others now pending, indicate that this national level support has been maintained and perhaps even strengthened (see next section). However, it should be recalled that these developments have all occurred during a period of continuing rises in national productivity when there has been a larger share of the gross national product available for the support of the social institutions of the country.

1.3. The National Health Plan has been able to provide reasonable estimates of the direct costs of health and medical care services now available and some approximations of the indirect costs accruing from losses due to premature death and preventable disability within its human capital resources. Unfortunately, technical skills are not yet sufficiently advanced to weigh in exact terms, the relative benefits of equal investments in extending health care services or in, for example, additional industrial plants. Thus, choices of alternatives or the determination of balance remains a political rather than a technical judgement. At present in Colombia, there is every indication that public expenditures for, and thus national support of, the national Health Plan will continue to receive favorable consideration.
2. Support Within the Health Sector

144. As has been pointed out earlier, the Ministry of Health, which has been responsible for the drafting of the Ten Year Plan and now has primary responsibility for its implementation, is only one of at least a score of national agencies - governmental, quasigovernmental and private - that share major responsibility for the provision of health and medical care services. Moreover, at regional and local levels previously independent and autonomous governmental agencies and their non-governmental counterparts render health care services to a greater or lesser degree. (The National Health Plan identified 22 Departamentos, 3 Intendencias and 5 Comisarias at the regional level and 890 municipios, 865 corregimientos and 1407 inspecciones de policia at the local level).

145. The National Health Plan, as one of its major elements, has provided for a total organizational and functional reorientation of this multiplicity of agencies into a unified, yet regionalized, countrywide health program. At the national level a National Health Council chaired by the Ministry of Health, provides representation for each of the national bodies in policy and program formulation. In addition, the Ministry of Health has been transformed into a coordinating entity with clearly defined responsibility for the supervision, evaluation and control of decentralized health activities.

146. In concept, such a plan fosters the establishment of clear lines of authority and accountability as well as the elimination of costly and wasteful duplication of scarce resources. However, the effectiveness of this plan will depend on two major considerations: a) the administrative skill and leadership provided by the top echelons of the Ministry of Health, backed up by a full complement of professional staff within its own organization and b) the support provided by other health organizations and health personnel who have become accustomed to functioning independently and who may have established loyalties to other power structures within the country.

147. The implementation of the new organizational plan is still too recent to assess its effectiveness. At the national level, however, the observer can not fail to be impressed by the vigorous support being given the plan by leaders in the medical profession, particularly in academic circles, who through the Association of Colombian Medical Schools have worked so effectively with the Health Ministry in conducting the National Health Survey and in developing the total framework of the National Health Plan. Professional leadership within the Colombian Institute of Social Security and associated with the National Welfare Funds, to some degree competing with the Ministry in the provision of personal medical care services, has strongly endorsed and praised the coordinating machinery provided through the National Health Council.
148. The Ministry itself is unusually fortunate to have at the foremost levels of administration a small group of dedicated health authorities who, having formulated the Ten Year Plan, are now attempting to make it work. Unfortunately this group is severely limited in number, is overworked and forced to depend on supporting staff far less experienced and subject to excessive turnover in professional assignments. Several high level posts are currently occupied by individuals relatively recently graduated from basic medical education and whose graduate formal training and experience provide them with meager background for the responsibilities they now hold.

149. At the regional and local levels, one also observes the unevenness of qualifications of responsible personnel. Even in major population centers, to find an outstanding health professional in a key post is the exception rather than the rule. The principle of integrated and coordinated health services so strongly advocated and endorsed at the national planning level is only now beginning to filter down to operational levels. These shortcomings are recognized by the top levels of administration and their correction depends on the speed with which manpower training and organization plans, to be discussed below, can be implemented.

3. Financing of the Health Plan

150. As reported earlier (Chapter I, Section C) identifiable expenditures for health and medical care services in Colombia have risen substantially since 1961. In that year 1.6 percent of the gross national product, or 543 million pesos, was devoted to these purposes. Nine years later, in 1969, these costs had risen to 2,763 million pesos or 2.5 percent of the G.N.P. and budget estimates for the current year, 1970, will bring these figures to 3,507 million pesos (2.8 percent of G.N.P.). It can be inferred from these data that greater emphasis is being given to health care as a key element of national economic and social policy.

151. There is also complementary evidence that there is a surging demand for additional medical care services and this increased demand is particularly conspicuous among social security and other welfare fund beneficiaries. Expenditures for this small segment of the population, estimated to constitute no more than 5 percent of Colombia's total population, has risen 243 percent per individual. Expenditures for their hospital and medical care now represent over half of the total costs of health care in the country. The implications of this observation are worthy of special consideration with reference to the Ten Year Health Plan, 1966-1975. That Plan, having taken account of the major unmet health needs and the existing deficiencies and inequities in health resources availability, proposes new organizational arrangements and new health programs for the benefit of the general population. Yet expenditures for such general services have remained essentially constant on a per capita basis. (41.5, 52.0 and 54.5 pesos per capita for 1961, 1969 and 1970 respectively).
152. Granted that with the economies and greater efficiency of operation called for in the National Health Plan additional and improved general health services will be forthcoming at lower per unit cost as the Plan becomes established. Yet it appears unrealistic to assume that even the most urgent of the country's health problems can be overcome merely through the reallocation of available funds and without sizeable increments of new funds for general health services for the total population of Colombia.

153. All of the increase in appropriations for these purposes during the last ten years have been consumed in keeping pace with increases in the population and depreciation of the purchasing power of the peso. Although the various segments of the Plan indicate, in greater or lesser degree, the amounts of funds required to attain their objectives, the data are not presented in a format permitting a reasonable approximation of the total budgetary needs for a given year (whether this be 1972 or 1975) for general health programs conducted by or under direct supervision of the Ministry of Health. A crude calculation, which should be refined by further study and analysis, would place this estimate at about 70-80 pesos per capita compared with the present 50.5 pesos.

154. An additional parameter for assessing the financial requirements of the Ten Year Plan and its effective implementation can be derived from a special analysis of 1965 national health expenditures. Therein a dichotomy was developed dividing costs into those for care of the sick -- hospitalization and curative or palliative services -- and, secondly, all other services, primarily of a preventive or health promotive nature. Of the total of 1.691 million pesos expended that year, 51 percent (998 million pesos) was devoted to the former category and only 9 percent (95 million pesos) to preventive services. There are, of course, serious limitations to so sharp a differentiation of one category from the other since many duties performed by a physician or other attendant in providing medical treatment have significant preventive implications. However, in a country such as Colombia where so many of its serious health problems are amenable to strictly preventive measures such a differentiation can serve a useful purpose. The Ten Year Plan makes a strong case for the strengthening and reorientation of medical care services to provide a more comprehensive and readily available program for the total population. But sound planning dictates that a larger segment of this program be oriented toward preventing illness and promoting health through such activities as intensified maternal and child health activities, health education including nutrition education, vaccination, and improved environmental health services. It would not be unreasonable to increase expenditures for preventive services to 20-25 percent of health care cost instead of maintaining it at its present level of 9 or less percent of the total.

155. Another critical insight into the financial requirements of the Ten Year Health Plan is provided by its initial recognition of the need for the special funding of capital investments for health facilities. No consolidated estimate of construction and equipment costs or the present value of the existing health plant of the country is available. In view of the 658 operating hospitals (46,735 beds), the 1,120 health centers and health posts and the large number of water treatment and sewerage systems existing
throughout the country it is evident that large sums of money have already been invested in such health facilities in Colombia and their replacement costs, in terms of the present value of the peso, might even be considerably larger. Also to be noted are some 860 additional partially constructed but not, at present, utilized health structures existing throughout the country. The investments already made in these incompletely structures has been estimated to exceed 2,000 million pesos. The completion and equipment of some of these structures forms an integral part of the Ten-Year Health Plan and will require additional capital investment.

156. In the past, the building of health facilities was in almost total measure a responsibility or function of local authorities or of local philanthropic or charitable groups. No national plan or standards existed to guide or control such undertakings and not infrequently appropriations from the national treasury were made to assist local hospital or health center construction with funds awarded largely on the basis of political patronage. The Ten Year Health Plan establishes for the first time a rational and systematic approach to such long term capital investments in health facilities by creating the National Hospital Fund to set standards, review and approve construction plans and award funds on a competitive basis according to a National Hospital Plan; also, the National Institute for Municipal Development now incorporated within the framework of the Ministry of Health, will serve the same functions in connection with the construction of water supply and sewerage systems in communities with populations of over 2,500. (See Water Supply, Vol. IX).

157. The following table indicates the funds available at the national level for the building and equipment of hospitals, health centers and health posts:

<table>
<thead>
<tr>
<th>Year</th>
<th>Appropriations Ministry of Health</th>
<th>National Hospital Fund</th>
<th>T.G.S.S.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>11,025</td>
<td>-</td>
<td>*</td>
<td>11,025</td>
</tr>
<tr>
<td>1963</td>
<td>23,194</td>
<td>-</td>
<td>*</td>
<td>23,194</td>
</tr>
<tr>
<td>1964</td>
<td>20,822</td>
<td>-</td>
<td>*</td>
<td>20,822</td>
</tr>
<tr>
<td>1965</td>
<td>8,426</td>
<td>-</td>
<td>*</td>
<td>8,426</td>
</tr>
<tr>
<td>1966</td>
<td>46,887</td>
<td>-</td>
<td>*</td>
<td>46,887</td>
</tr>
<tr>
<td>1967</td>
<td>92,790</td>
<td>26,837</td>
<td>21,106</td>
<td>97,733</td>
</tr>
<tr>
<td>1968 /a</td>
<td>48,800</td>
<td>37,506</td>
<td>31,971</td>
<td>118,279</td>
</tr>
<tr>
<td>1969</td>
<td>42,500</td>
<td>43,000</td>
<td>31,971</td>
<td>120,471</td>
</tr>
<tr>
<td>1970 /b</td>
<td>50,000</td>
<td>50,000</td>
<td>96,000</td>
<td>156,000</td>
</tr>
</tbody>
</table>

* Data not available.
a National Hospital Fund established.
b Preliminary estimates.
158. It may be seen that in recent years funds available from the National level for hospital, health center and health post construction and equipment are increasing substantially. However, the National Hospital Plan, 1970-1972, assesses the immediate construction and equipment needs in this area in excess of 800 million pesos. Future needs, particularly those for facilities required for the training of essential personnel have not yet been firmly established (see Water Supply, Vol. IX, for estimates of capital requirements in that area).

159. As in the recent past both the Ministry of Health and the Colombian Institute for Social Security will allocate from their regular budgets, funds earmarked for capital construction. To these will be added the loan funds available through the National Hospital Fund and borrowed from the I.C.S.S. trust funds. Repayment and the financing of these loans will ultimately be borne by Ministry of Health appropriations. Since the effective life of constructed facilities and fixed equipment is a reasonably long one the new financing mechanism created by the National Hospital Fund offers a suitable device for the satisfactory management of external investment funds that would accelerate the construction and equipment of needed health facilities.

4. Manpower Requirements

160. Throughout the various segments of the Ten Year National Health Plan there are substantial references to and documentation of serious shortages of essential health manpower. These shortages apply not only to physicians, dentists and nurses but also to auxiliary nurses, nurse aides, nutrition workers, laboratory and other technicians, sanitary engineers and inspectors, statisticians and medical record aides and to administrative workers at all levels. These shortages are compounded by such factors as the concentration of health personnel in the larger urban areas at the expense of the smaller communities and rural areas, the emigration of trained personnel abroad and the lack of formal training and rapid turnover of auxiliary supporting workers. The National Health Survey further revealed that the full utilization of even the limited supply of trained professionals is critically impaired by inadequate facilities and equipment, the expenditure of too large a segment of the physician's, dentist's and nurse's time in non-professional tasks which could be done as well by auxiliary workers and faults in training which do not prepare or encourage the professional workers to use their skills efficiently and effectively. Thus, the combined problems of training, utilization and organization of health manpower give rise to probably the most difficult obstacle standing in the way of the full implementation of the National Health Plan within the ten year period set for its accomplishment.

161. The training of higher level personnel is expensive both to the individual and to the society which must underwrite the costs of needed educational facilities and subsidize a large fraction, if not all, of the operating expenses. Large investments of time are required before formal training is completed; for the physician seven to ten years for the dentist five or more and the nurse three to four years of univer-
At the present time, no consolidated and comprehensive plan has yet evolved for the whole health manpower area although there are indications that such an overall blueprint may be forthcoming within the next 12 to 18 months. Nonetheless, a number of important guidelines have already emerged indicating the direction this plan is expected to follow:

a. The nine medical schools, by increasing the combined number of their graduates from the present level of under 400 per year to 600, will be able to maintain the present physician-population ratio of 4.32 per 10,000 and possibly raise it to close to 5.00 per 10,000 despite the anticipated increase in the total population of the country. Curriculum changes now in process will give even greater attention to preventive medicine and will stress the role of the physician as the health team leader and the responsibility to delegate to and supervise the work of other members of the team.

b. Education for professional nursing, which has not been an attractive career with less than 150 graduates annually, must be greatly strengthened to provide at least 900 new trained professional nurses each year. This would ultimately bring the nurse-population ratio from its present level of 1 per 10,000 to 5 per 10,000, a figure comparable to the proposed physician-population ratio though still grossly below the availability of nurses in most developed countries of the world. Concurrently the training of auxiliary nurses will have to be increased and improved to at least double the present numbers of 3500 certified workers and at least similar augmentation must be achieved in the training of nurse aides and rural health promoters.

c. Specialized training at all levels of public health activity at the Colombian School of Public Health, University of Antioquia, is already underway and these programs are being strengthened.

d. Intensive efforts must be made to improve the working environment of health workers in hospitals, health centers and health posts through augmentation of equipment and facilities and by better organization of health staff. Through such efforts and the delegation of tasks to supervised auxiliary workers the efficiency and productivity of the total staff can be enhanced.
c. Improved salaries, opportunities for career advancement, and other rewards and benefits will have to be developed to attract and retain personnel, at all levels, to fill staff positions particularly those serving the rural and more remote areas of the country.

d. In the plan for decentralized and regionalized comprehensive health services the nine university medical centers are already assuming and will have to assume even greater responsibility for supervising the quality of health care provided as well as offering continuing educational opportunities for the health staff.

163. The cost of instituting, developing, and maintaining this health manpower training program is as yet undefined and is probably well beyond the present or anticipated resources of the educational institutions concerned or of the Ministry of Health. Moreover, to date, those grappling with the problem have largely, if not exclusively, been limited to the health professionals working within the confines of the health sector itself. Collaterally, there is little evidence that the Ministry of Education, and many educational institutions, other than the nine universities which operate a university medical school, have yet considered the roles they ultimately must play in the preparation and training of auxiliary and supporting health personnel.

164. Based on the above considerations the time seems right for a concerted extension of the analysis and planning activities of the Association of Colombian Medical Colleges and the Ministry of Health to a new level of national planning for essential health manpower training and development. Essential data are now available, reasonable goals and objectives have been determined but the means for meeting these educational needs and requirements have not been fully mobilized nor have the minimum costs and the appropriate sources of funds for meeting these costs been clearly identified. It is clear that the medical schools alone or even the nine universities which sponsor them cannot by themselves find adequate solutions to all of the problems and needs that must be met. Even the Ministry of Health working with these institutions is not capable of mustering all of the required resources. The overall problem is a national one involving multiple ministries and agencies of government and many other institutions as well. A tentative plan for an immediate and direct attack on these problems calls for a large scale developmental study over a period of 18 months to two years and is outlined in a suggested Preinvestment Studies Program (see Study 3-1 in appendix).

5. Suggested Areas for Further Development of the Ten Year Health Plan

165. During the period when the Plan was in process of preparation it was clearly recognized that neither all of the major health problems nor all of the possible approaches to their solution could be fully explored. Priorities, based on data then available or the likelihood of achieving reasonable goals in limited time spans, had to be established, leaving open for future consideration areas that might then warrant or be amenable to intensive study, analysis and planning efforts. Thus, the plan was offered not as a
static or fixed set of proposals but, preferable as a starting point
possible of extension and revision as circumstances and opportunities
permitted. Several areas touched on but not fully explored or developed
in the original Plan, published in November 1967, now appear to merit
special attention, 2½ years later.

Health Advances Dependent on or Arising
from Advances in Other Areas of Economic
and Social Development

166. Throughout the various segments of the Plan extensive atten-
tion is given to the positive correlations found in the National Health
Survey of a wide range of social and economic variables with the fre-
quency of illness and its severity and the equally significant negative
correlations of these same variables with the availability or the utiliza-
tion of health services. Such correlations do not always establish
cause and effect relationships but they do, at least, confirm the inex-
tricable bonds that make it impossible for the health planner to depend
solely upon his own limited resources. They also reinforce the need for
those responsible for planning at the overall level or in other sectors
to consider carefully the implications of their own planning efforts for
the health of the population.

167. Since 1968, and formalized by a legislative enactment, the
Ministry of Health has been working cooperatively with the Ministry of
Justice in tackling the multiplicity of problems arising from the special
need of protecting the welfare of mothers and children. Working through
the Colombian Institute of Family Welfare, a semi-autonomous agency attached
to the Ministry of Health, a concerted effort is now being made to bring
together the previously uncoordinated and dispersed institutions of social
assistance under the policy guidance of the Colombian Council for Social
Protection of Minors and the Family. The former National Institute of
Nutrition is now merged as an integral part of the new entity.

168. However, similar innovative approaches appear worthy of explora-
tion in the fields of education, housing and community development -- both
urban and rural -- and conjointly with agriculture, industry, public works
and other sectors of economic and social development. In education two
significant areas of activity deserve high priority. Even in developed
countries health instruction in the school system has been sadly overlooked
and downgraded. Content and teaching methods have completely escaped the
attention or concern of qualified health experts. Health instruction
materials devised 50 years ago, lacking relevance to modern day problems
and neglecting singular advances in technical knowledge, are being used by
unqualified teachers who do not fully understand the implications of the
instruction they are trying to transmit. This problem is serious enough
in an advanced society where deficiencies in the school may be made up by
instruction and example in the home. In a developing country such as
Colombia this augmentation of school instruction does not exist nor does
it capitalize on one of the few channels of bringing health instruction,
via the children, into the home. Health care and the proper utilization
of community health resources have always depended on an informed and sufficiently motivated public to do as much for their own health protection as possible and to use reasonable discrimination in turning to available resources for those measures which they cannot provide for themselves. The transplantation of modern and more complex health systems to a developing society will not take hold unless concerted efforts are made to inform and motivate, through public education, the people who are expected to benefit from improved health knowledge and health resources. These opportunities offer a special challenge to both educational and health leaders.

A second opportunity for conjoint health and educational effort lies in the training of sorely needed health manpower. Traditionally such educational needs have been left to and assumed by the health profession and particularly by the small fraction of those professionals identified with a specialized educational program. Colombian leaders have now recognized that the health problems of the country cannot be resolved merely by intensified training of more physicians, dentists, nurses or other highest level personnel. Far more auxiliaries must be recruited and trained and specified tasks within their competence to perform under supervision, must be assigned to them. It could be argued that the ideal locus for such training of supporting personnel is in the same environment in which higher level personnel are also being educated. However, the large numbers of auxiliary workers now needed in Colombia and the tremendous cost involved in adding requisite facilities in a medical school setting dictate that many other educational institutions in the country reaching down to the secondary and vocational school level, become engaged in health manpower training commensurate with their educational capacities. The university medical centers should concentrate their attention on the training of professional level personnel requiring university level instruction. In addition, there are special responsibilities that they must share jointly with the entire educational system. For example, the establishment of reasonable prerequisites, the development of curriculum content and teaching materials, the certification of accredited institutions, the training of teachers, the examination and licensure of graduates are all functions requiring the leadership and supervision of the highest levels of competence drawn from the established health professions and their institutions. To move in this direction appears to be the most promising next step in resolving the health manpower problems of Colombia. An outline of suggested developmental plan is included as an integral part of the Preinvestment Studies Program Study 3-1 (See Chapter VI).

The above are offered as examples of the types of multisectoral planning and conjoint activity involving the health sector with other prominent social and economic sectors. (A special report is devoted to the area of housing and community development). In agriculture, both the protection of the health of the large number of workers engaged in this essential occupation and the augmented and improved production, distribution and use of essential food resources offer special problems that cannot be
resolved by efforts in either sector alone. In the area of nutrition (See Chapter II, Section C2) interesting innovative approaches are currently being explored and Preinvestment Studies Program-Study 3-3 (See Chapter VI) suggests ways in which the amplification of these efforts might be attempted. In the industrial area, the Ten Year Plan refers to the increasing problems of industrial and occupational illness and accidents. The plan suggests a minimum program within the Ministry of Health's own operations designed to combat the most serious of these problems. But the need will not be met until industry itself recognizes the magnitude of the burden of ill health and loss of productivity identified with industrial operations and joins with health authorities in seeking jointly solutions to these problems. Closely associated with this area are the problems of air and water pollution and of the disposal of industrial wastes. Colombia has not yet reached the stages now faced by the advanced countries of the world where the costs of correcting mistakes in environmental sanitation in the past are reaching staggering proportions. A preventive approach initiated early in Colombia's industrial development is certainly indicated.

Population Control

171. In the Ten Year Plan itself no specific program was elaborated directed toward family planning per se nor was reference made to the already initiated national efforts to reduce or limit the rate of population increase. However, shortly after the issuance of that Plan, the Ministry of Health collaborated in the preparation of a special report and statement of policy on population issued by the National Department of Planning which reports directly to the Office of the President. This more recent document (14-b) is highly sensitive to the cultural, religious and political framework in which the government of Colombia must function and also takes into critical account the vast array of economic and social consequences of uncontrolled population growth in a developing society. These consequences are observable not only in the health sector but have direct bearing on the educational, housing and community development needs, and have serious implications for employment, the per capita gross national product and other components of the general standard of living. It can be stated, without reservation, that no single developmental problem basically identified with health and medical services has received so comprehensive a consideration from a multisectoral vantage point. It is of interest, however, that the major burden of effort to alter the rate of population increase still rests on the shoulders of the health sector which, as has been shown throughout this report, is seriously handicapped by severely limited financial, physical, manpower, organizational and even political resources.

172. Family planning activities in Colombia are not new. Data assembled by the National Health Survey in 1965-1966 clearly demonstrated that women in the higher economic strata, with highest educational attainment and with greatest access to the health care available in larger urban
centers have had notable success in lowering their fertility rate through measures involving the prevention of pregnancies. Interestingly, induced abortions as a means of restraining fertility is most commonly found in women of the urban zone with a low level of education or low incomes.

173. Since 1964, the Association of Colombian Medical Colleges has made family planning services available through university hospitals and affiliated health centers. In addition, it has undertaken rather extensive educational programs at the professional level and has been largely responsible for such research, primarily of an operational research nature, as has been carried on in the country. Almost simultaneously a private group, the Association for the Welfare of the Colombian Family, started to provide family planning consultations and services on an extensive scale through the offices of private medical practitioners and through independent clinics. These services are also almost entirely restricted to urban centers.

174. More recently, the Ministry of Health, concentrating on the less urbanized and rural population of the country, has begun a family planning program based largely on increasing the availability of information and appropriate medical consultations to those women who voluntarily seek such services through its established maternal and child health programs. Even more recently, the Colombian Institute for Social Security and the National Welfare Funds have similarly improved their capability to respond to requests for family planning assistance sought by their beneficiaries. A reasonable estimate of funds currently being spent on these family activities is in the range of 2.5-3.0 million dollars annually with all but minor amounts being derived from external sources, primarily from the U.S. It is apparent that lack of funds, earmarked specifically for family planning purposes, is not inhibiting progress in these programs.

175. Consolidated data on the exact nature and types of services rendered are meager as is information on the number of women reached and retention rates or on other indices essential for scientific appraisals of the success of these programs. This is not surprising in the light of the paucity, delayed nature and unreliability of all vital statistics data for Colombia except those derived from special studies such as those conducted in the National Morbidity Survey of 1965-1966. (In a previous section, Chapter II, Section A-1, the problems associated with analysis of birth rates were reviewed; see also Preinvestment Studies Program—Study Proposal 3-5). Barring the availability of far more accurate and current birth registration information and associated data, a critical reviewer of family planning activities in the present Colombian scene is unable to forecast, with any degree of confidence, future trends in the rate of natural increase of the population. This rate appears to be high, in the range of 3 percent per year. It is either stable or gradually declining but whether present family planning efforts will or will not have a demonstrable impact in the rate is highly conjectural.

176. The above assessment of present family planning activity in Colombia does not controvert the sound national policies recently adopted nor the sincere determination and efforts of national leaders both within and outside the government to apply available technical knowledge and
capability to such ends within the social and political framework of the country. Other and perhaps even more important constraints on these efforts are the limitations imposed by the sources of supporting funds which restrict expenditures to those which can be directly identified with the immediate process of prevention of pregnancy. So narrowly defined an approach to an objective could be self-defeating and under the developmental circumstances, faced by Colombia, with particular reference to the current problems in the health sector, such limitations may be doubly so.

177. On superficial analysis the strategy of reaching between 700 and 750 thousand additional women with family planning services over the next five years (increments of approximately 3 per cent of the women of the country, age 15-49, per year for each of the next five years) appears to be a reasonable one. Calculations have been made indicating that such efforts would cumulatively reduce the birth rate at least 4.4 per thousand and possibly as much as 12.5 per thousand. A substantial number of physicians and nurses have been or are being brought up to date on modern family planning techniques, health "promoters" are being recruited and given short training courses to prepare them to carry material and child health instruction into the homes and ample funds are available to support salaries and to purchase family planning commodities for the program. Questions can be raised as to the reliability of the above predictions since these depend not only on the number of acceptors - those who initially volunteer to accept these services - but of equal and perhaps crucial importance the number of women who are successful in adopting and continuing over long periods of time effective contraceptive procedures. Such prevention of conception requires medical instruction and supervision on a continuous basis and only time and experience will demonstrate whether the programs now initiated can meet these requirements.

178. The programs also appear vulnerable to serious shortfalls on other accounts. It remains to be seen whether the necessary responses can be obtained from the child-bearing segment of the population in a social and cultural milieu in which only 9 percent of the total population seeks aid when it believes it needs health care for illness and in rural areas only 3 percent turn to a physician for such assistance; less than half of the pregnant women receive care during pregnancy; only 37 percent have a physician in attendance at delivery, a figure dropping to 18 percent in rural areas. Even in the serious circumstances of a pregnancy terminating in an abortion (about 1 in 7.5 pregnancies) only slightly more than half (56 percent) are seen by a physician.

179. A strong case can be made for the view that an effective family planning program must be not only part of an inclusive maternal and child health program but linked with a comprehensive and total health and medical care program for the entire country. It is highly problematical that the infrastructure required for an effective family planning program can be established for this purpose alone or can prepare the way for the building of the same infrastructure required for more comprehensive services. Thus, it seems reasonable to question whether present family
planning activities in Colombia will really take hold until and unless far more adequate provision is made for supplying the facilities and manpower resources required for the comprehensive health and medical care program called for in the Ten Year National Health Plan and now in process of implementation. Moreover, as has been clearly demonstrated by the data available for Colombia, marked differentials in the acceptance and effective utilization of family planning practices can be identified with rising levels of education and family income. It follows, then, that augmented efforts to improve educational and job opportunities in Colombia also offer direct avenues to the effective slowing of the overall rate of population increase in the country.
IV. RECOMMENDED PROJECT PROPOSALS

180. Many programs and activities, forming integral elements of the Ten-Year National Health Plan, are now in various stages of implementation. Some of high priority and following approved plans of development are moving forward at a slower pace than the need for these programs dictate. This situation arises as a consequence of the severe competition of the multiplicity of approved health programs for an appropriate share of the Ministry of Health budget and the similar competition of the Ministry of Health with other ministries for an appropriate share of the national government's available resources.

181. Some of these programs have been singled out for careful consideration for external financing as a means of accelerating and consolidating the full implementation of the Ten-Year National Health Plan. The five recommended project proposals in this category are outlined on the following pages. These outlines should serve as a basis for further discussion with appropriate representatives of the Colombian government.
A.- HEALTH PROJECT PROPOSAL

COLOMBIA - I

1. Name of Project: Development of Institutional Resources for Health (Hospitals, Health Centers and Health Posts)

2. Executing Agency: National Hospital Fund (Ministry of Health)


5. Description of the Project: A National Hospital Plan (1970-72) has recently been inaugurated calling for 1) the modernization and re-equipment of existing hospitals, health centers and health posts, and 2) the completion of construction and equipping of a substantial number of partially erected health facilities in key locations throughout the country that have been in various stages of construction for periods up to 15 years. The National Health Survey (1965-1966) revealed large segments of the population failing to receive even minimal standards of medical care services. For those attending existing facilities the quality of care rendered is inadequate. The limited availability of professional health manpower heightens the need for enhancing productivity and efficiency of the existing staff which has been severely impaired by the absence, obsolescence or malfunction of basic and essential resources and equipment. In many instances the unsatisfactory working environment in existing health facilities frustrates efforts to recruit, train and retain required personnel. The National Hospital Plan provides a practical and feasible program for meeting the health care needs of all segments of the Colombian population at reasonable cost. Operational and maintenance costs can be covered through the regular operating budget of the Ministry of Health and other sources of operational income.

6. Present Status: The Ministry of Health has assigned this project highest priority in the National Ten Year Health Plan. This project, broken down into four component parts, appears on the list of 1970 projects proposed by the Government of Colombia to the Joint Consultative Group. Since 1967, the National Hospital Fund, a discrete national agency adscribed to the Ministry of Health, has been charged with the legal responsibility for reviewing and approving all proposals for the construction, renovation and major equipment of health facilities throughout the country. It directs the investment of health facilities construction funds derived from long term loans made from the trust fund reserves of the Colombia Institute of Social Security and earmarked for this purpose. Such funds are approaching 50 million pesos annually. The Fund is also responsible for evaluating and approving construction plans to be funded from the annual appropriations to the Ministry of Health also now fluctuating in the range of 50 million pesos annually. The National Hospital Fund thus provides an instrument of government to administer the management of external funds to be applied to the same purposes.
1. Name of Project: Control of Communicable Disease by Expansion and Acceleration of National Mass Vaccination Programs

2. Executing Agency: Ministry of Health

3. Total Estimated Cost: US $5.6 million

4. Estimated External Financing Required: US $3.4 million

5. Description of the Project: An important group of communicable diseases in Colombia are susceptible to control, if not eradication, by sustained but relatively simple means of mass vaccination. These include smallpox, diphtheria, whooping cough, tetanus, measles, poliomyelities and tuberculosis. Prevention of these illnesses would substantially reduce mortality and morbidity and would release scarce professional manpower and health facilities for other essential needs. Vaccinations can be given, under supervision, by trained sub-professional personnel.

A nationally directed campaign is currently under way to achieve satisfactory levels of protection in the most susceptible segments of the population. The aim of this project is to expand and accelerate this campaign and attain sufficient momentum in the next three to five years to permit delegation of continuing responsibility for revaccination, when required, and vaccination of new susceptibles to local health programs. The ultimate objective is to maintain this preventive program as an integral part of the comprehensive health service coverage now in process of development for all segments of the Colombian population.

6. Present Status: The Ministry of Health is now allocating approximately 10 million pesos annually to this direct vaccination campaign and at the present pace of accomplishments will require ten or more years of activity to realize desirable objectives. A doubling or tripling of the pace during the next three to four years, with external assistance, would result in no additional direct operational costs yet could significantly reduce indirect costs in the long run.
C. - HEALTH PROJECT PROPOSAL

COLOMBIA - III

1. Name of Project: Expansion and Completion of the National Laboratory of Health

2. Executing Agency: Ministry of Health

3. Total Estimated Cost: US $1 million

4. Estimated External Financing Required: US $.5 million

5. Description of the Project: The National Laboratory of Health has recently been incorporated as an integral part of the new National Institute for Special Health Programs, a semi-autonomous agency of the Ministry of Health. This laboratory is responsible for the production of biologicals and vaccines used in the prevention of the major communicable diseases in Colombia, the testing of drug products sold and distributed in the country and the scientific investigation of the significant health problems in the country both in the laboratory and in the field. The laboratory has recently been installed in a new and modernly equipped building in Bogota which, because of limitations of available funds, is only partially completed and does not meet the full requirements of its excellent scientific staff. The attack on a number of important health problems will have to be deferred pending acquisition of additional funds to complete and fully equip desirable additional facilities particularly those that would be used for the specialized training of personnel required for the operation of local health laboratories throughout the country and for the quality control of such decentralized health laboratory services. The laboratory is also providing, at cost, its own manufactured vaccines and other biological products to other Latin American countries and is serving as a regional reference laboratory in international public health activity.

6. Present Status: Construction and equipment costs of the recently inaugurated National Laboratory building have amounted to approximately US $1 million. The annually operating budget of the laboratory is approximately US $.5 million with increments contemplated up to a level of approximately US $.75 million by 1972. Doubling of existing facilities is a desirable objective in the next three years; additional operating costs could be absorbed in the annual Ministry of Health budget.
D. - HEALTH PROJECT PROPOSAL

COLOMBIA - IV

1. **Name of Project:** Expansion and Development of Training, Planning and Research Programs - Colombia School of Public Health (1970-1974)

2. **Executing Agency:** Ministry of Health

3. **Total Estimated Cost:** US $1.2 million

4. **Estimated External Financing Required:** US $1.6 million

5. **Description of the Project:** The Colombian School of Public Health (University of Antioquia, Medellin) constitutes the sole specialized training facility for public health practice in the country. Its major support (90 percent) is derived from annual subsidies from the Ministry of Health. During the five year period 1964-1968, 755 individuals received graduate, post-graduate, intermediate or sub-professional training at the school. A plan has been developed to overcome the acute and severe shortages of public health personnel by training at this institution during the next five years a total of 2700 physicians, dentists, nurses, engineers, statisticians, administrators, nutritionists, etc. The school is about to move into a new building constructed by the Ministry of Health which will facilitate the expanded training, research and consultation programs of this institution.

6. **Present Status:** A five year budget totaling approximately 75 million pesos is required to finance this essential program. Reasonable forecasts indicate that the Ministry of Health will be able to allocate about 2/3 of this amount (50 million pesos) from its annual appropriations during the next five years. The balance, approximately 25 million pesos is required from external sources to assure the underwriting of this basic budgetary financing.
E. - HEALTH PROJECT PROPOSAL

COLUMBIA - V

1. **Name of Project:** Fluoridation of Urban Water Supplies

2. **Executing Agency:** Ministry of Health

3. **Total Estimated Cost:** US $1 million

4. **Estimated External Financing Required:** US $1.5 million

5. **Description of the Project:** This project aims at the reduction by 1/3 to 2/3 of dental caries in the childhood population by fluoride treatment of urban community water supplies. Up to 4.5 percent of the population over the age of three is presently in need of dental care with a peak prevalence in the age group 15-24 (5.4 percent). Limited resources have restricted dental care. The bulk of services is confined to extractions and filling of cavities with relatively little attention given to dental prophylaxis. Twenty-five years of experience in developed countries of the world has demonstrated that controlled addition of fluoride salts into community water supplies can significantly reduce dental cavities in children at minimal cost and with no harmful effects. Almost 90 percent of the urban population has access to community water supplies providing a simple and direct channel for the application of an established preventive measure benefiting a substantial fraction of the country's childhood population.

6. **Present Status:** The dental and environmental health staffs of the Ministry of Health have developed detailed plans to reach 60 percent of the urban population in the five year period 1971-1976. Initial investments will provide essential equipment and the training of water supply personnel. Operational costs and supplies for continuation of the program are minimal.
182. As stated in the main body of this report, the Ten-Year National Health Plan, 1968-1977, is not considered by the health authorities of Colombia as a complete and all inclusive document. Rather it was designed to serve as a starting point of comprehensive activity based on data available at the time of the Plan's preparation. Goals set were determined by assessments of the urgency and priority of proposed programs and the reasonable likelihood of their attainment within the foreseeable availability of resources. Thus, refinements and extensions of the Plan were viewed as essential and continuing responsibilities of the Ministry of Health and other concerned agencies and groups.

183. To this end a series of studies have been initiated and are currently in progress. During the course of this review of the Colombian health sector a number of these developmental studies were explored with the principals engaged in their conduct. For purposes of illustration, six have been singled out here to indicate their nature and scope as well as the prospects of the availability of new data and/or plans to guide the further implementation of the Ten-Year National Health Plan.

A. Human Resources for Health - Phase II

184. As one of the major objectives of their 1965-1966 cooperative effort the Ministry of Health and the Association of Colombian Medical Colleges attempted to take stock of the available supply of health manpower in the country and the resources of the training institutions essential to maintaining or increasing this supply. These efforts were limited almost entirely to physicians and nurses. More recently similar studies of dental manpower have been completed and are shortly to be published. A continuing registry of physicians was established and is being maintained providing useful information on the location, nature of professional activity and other significant characteristics of the available medical manpower supply.

185. Currently, the Ministry and the Association are jointly engaged (Phase II) in extending this system of current registration to other health occupations and in adapting such a system to the need for a continuing evaluation of the critical manpower requirements of the new National Hospital Plan now in process of implementation and designed to provide comprehensive health coverage for the entire population. Out of these studies it is expected that within the next 12-18 months reasonably precise information will be available on the number of health workers in each category actually engaged in the general health care system, the number of currently vacant positions, and appropriate norms required to make the system function at desirable levels of productivity and efficiency. These and related data are essential to such important planning functions as: (1) the detailed organization of comprehensive health services; (2) the basic training of all categories of health personnel; (3) the extension of graduate and continuing education of such personnel; (4) the formulation
of appropriate salary scales and employment incentives; and (5) the revision of obligatory national service requirements now limited to medical school graduates. These studies are being financed out of the regular appropriations to the Ministry of Health with some assistance from the Pan American Health Organization.

186. When these studies are completed it will still be necessary to mobilize an ambitious national program of health manpower training. To that end a preliminary proposal is suggested in Chapter VI, Section A below - An Action Program for Education and Training in the Health Sector. References are also made in Chapter III, Sections C-4 and C5a to the need for such a program.

B. Experimental Study of Health Services in Colombia - Phase II

187. Since early 1969, the Ministry of Health and the Association of Colombian Medical Colleges have been conducting studies in the field designed to test the hypothesis that relatively simple, yet important, health tasks can be delegated by the physician and the professional nurse and performed under supervision by auxiliary nurses, nurse aides, and health promoters - personnel who do not require as lengthy or as expensive a training period as do the higher professional categories of health workers. Success in this program would reduce the cost of basic health services and extend the productivity and effectiveness of the physician. Studies are in progress in three centers, under university medical center auspices, and are focused primarily on health services rendered in ambulatory care facilities - health centers and health posts - and in home care services. The study design includes the definition of tasks appropriate for delegation, the development of health care manuals and instructions, the recruitment, training and supervision of necessary complements of auxiliary personnel and the careful evaluation of performance and results. Phase I involved the technical and field preparations for the study; Phase II - now in progress - is actually testing the plan under field conditions. Completion of observations and analysis of results is scheduled for early 1971. The Pan American Health Organization and the U.S. Agency for International Development are providing financial assistance to this study.

C. Development of a Comprehensive Health Planning System at the Local Level - Phase I

188. The Pan American Health Organization has long been in the forefront in the development of systematic approaches to the planning of comprehensive health services in the developing countries. The success in applying these techniques in recent years in Colombia can largely be attributed to the pioneering program sponsored by PAHO in association with the Institute of Economic and Social Planning in Santiago, Chile, in which more than 200 health planners from 20 countries have received intensive training since 1962. Many of the leading health authorities in Colombia have benefited by this program but the impact has largely been felt on the national level and is only now beginning to filter down to the levels of Departmental and local health activity.
More recently, the Division of Research and Communications Science (RECS) of WHO in Geneva has developed a plan of study and experimentation designed to foster comprehensive health planning approaches to local health problems based on the thesis that national programs should reflect sound planning and development processes in the community rather than the other way round. Moreover, methodologies applicable to macro analysis and planning may not be applicable in small systems. Thus, new planning procedures must be devised and tested in the field specifically oriented to the types of problems encountered in the day to day operations of local health programs and within the framework in which the multiplicity of local health agencies and personnel cope with specific health problems.

This study plan has gained the support of the Ministry of Health and other health organizations in Colombia. PAHO and a number of American research and training institutions have manifested their interest and desire to cooperate. The site for the initial experiment has been chosen as the Department of del Valle in South Western Colombia including its regional center and capital, the city of Cali. The University del Valle Medical Center has accepted responsibility for leading the study and WHO-RECS plans to install at least six of its staff members to work with locally selected counterparts at least for the initial year or 18 months of exploratory efforts. Financial support in the range of $150,000 a year has been pledged by WHO. If exploratory efforts are successful and a decision is reached to continue these efforts for at least a five year period additional support, including external assistance, will be required.

D. Integrated Nutrition Program of Applied Nutrition - Phase II

In the body of this report, Chapter II, Section C-3, the present ambitious program to combat malnutrition and to improve the feeding habits as well as the food sources of the people of Colombia has been reviewed. Activities are centered in the Department of Nutrition of the Colombian Institute for Family Welfare but affect the operations of all parts of the Ministry of Health, other ministries and agencies of the national government (Agriculture, Education, Interior and the Institute of Agricultural Marketing) and the decentralized health and other programs in the departments and communities. Such innovative programs are involved as the Integrated Program for Applied Nutrition (PINA), the National Program for Nutrition Education and Supplementary Feeding (PRONENCA) and the National Plan for the Development of Foods (PLANALDE). In brief, the total program consists of a wide variety of activities ranging from basic nutrition research, the training of nutritionists, technicians, teachers and "multipliers", the preparation of mass education materials, applied research (preparation of new food supplements and genetic adaptations of foods to improve their nutritional qualities and at the same time retaining their acceptability to Colombian dietary patterns), to large scale feeding programs and educational campaigns to improve eating and nutrition patterns.
Beginning in 1965, a pilot supplementary feeding program was initiated in Caldas Department (Nutrition Study - Phase I). The National Federation of Coffee Growers, assisted by the Inter-American Committee for Development and using food supplements provided by WFP, demonstrated the benefits accruing from special feedings for pre-school children and pregnant and nursing mothers. In 1969 this program was expanded (Nutrition Program - Phase II) to major scale and with its completion in 1975 will benefit no less than 900,000 pre-school and school children as well as pregnant and nursing mothers in all of the 29 Departments of the country. The total cost of the nutritional education and supplementary feeding of these vulnerable groups is estimated to reach about 75 million pesos with the WFP providing 57 percent of the cost (42.3 million pesos) in the form of food commodities. UNICEF, PAHO, AID and other international bodies are also assisting.

As vital as this program is, it can only reach a fraction of the population (5 percent and possibly 20 percent of the particularly vulnerable segment). Moreover, although this program does include the use of some local food supplies it is still largely dependent upon the importation of supplementary foods. The ultimate goal is, of course, the adequate nutrition of the total population, the full mobilization of indigenous food sources and the education of the Colombian families to select and utilize in their diet nutritionally adequate foods that are available to them within their financial resources.

As stated above, the program is planned to continue for approximately five more years, until 1975. However, there are indications that even at its conclusion it will not have achieved an essential objective, namely that of assuring Colombia an adequate nutritional status based on an indigenous complete food supply available to the entire population within the economic resources of each family and readily available to these families at the local level. To further consolidate the gains of the present program an additional and relatively modest development study is proposed as Phase III of the Integrated Program of Applied Nutrition and briefly outlined as Preinvestment Studies Program - Study 3-3 (see Chapter VI, Section C).

E. Family Planning Programs in Colombia

Although dating back to 1965, the family planning activities of the Association of Colombian Medical Schools, the Association for the Welfare of the Colombian Family and the Ministry of Health were intensified in 1969 through the combined technical and financial assistance of the Population Council, the Pan American Health Organization and the International Planned Parenthood Federation. Funds for all three of these programs originate in the U. S. Agency for International Development. Additional external assistance agencies are also involved, e.g., the Ford Foundation and the Pathfinder Fund; the Government of Sweden has also indicated its intention to provide assistance in the very near future. It is estimated that expenditure for these programs now approach $2 million a year.
Responsibility for the coordination of the total program rests with the Ministry of Health which also has assumed responsibility for family planning activities in the general hospitals of the country, the social insurance hospitals, largely in urban centers, and through local health centers and mobile units. The Association for the Welfare of the Colombian Family is concentrating its efforts in providing family planning services in the larger towns, through private hospitals, in the preparation and distribution of mass media publicity and working with other groups. The Association of Colombian Medical colleges plays a key role in conducting and directing both biomedical and sociological research through its own Division of Population Research and through its member university medical schools. It also plays a key role in conducting extensive training programs, evaluative follow up of the entire program and by conducting post-partum family planning services in the 20 or more university hospitals and health centers affiliated with its member medical schools. It is estimated that family planning services are now available in at least 200 centers and clinics and that more than 300,000 women in the child-bearing ages have already been reached with the goal of reaching over 700,000 more in the next five years.

The objectives of the Ministry of Health programs have been stated to be: (1) to increase coverage of prenatal care; (2) to prevent provoked abortions; (3) to gradually satisfy demand for information and medical services to space births or treat sterility in the couples who justifiably request them for medical and social reasons; and (4) to contribute to the early detection of cancer of the female cervix through vaginal cytology in women of reproductive age that request mother and child protection.

In the text of this report (Chapter III, Section C5-6) some of the shortcomings and possible points of weakness of these programs have been touched upon. It is too early to evaluate fully its likelihood of success or failure but it is quite clear that its limitations are not identifiable with lack of funds specifically earmarked for family planning activities.

F. Nutrition and Development - Phase II

Sound scientific data are lacking to firmly establish a causal relationship of malnutrition with physical and mental development in early childhood and the extent to which supplementation of the diet with essential nutrients can reverse developmental deficits once these stigmas, presumed to be due to malnutrition, appear. The Harvard School of Public Health and Cornell University are currently working with the Colombian Institute of Family Welfare (Department of Nutrition) in an effort to resolve this internationally important scientific issue.

The planning phase of this study is now completed and a two year pilot study is currently in mid-passage. If these preliminary investigations, being conducted in selected urban and suburban population groups in and around Bogota, are successful the large research team plans to undertake
a 5-6 year definitive study involving no less than 600 study families. A multidisciplinary team of nutritionists, psychologists, social anthropologists and ecologists are involved and have been drawn from university centers in the U.S. as well as from indigenous sources of trained research workers in Colombia. Approximately $250,000 have already been invested in this scientific investigation; the cost of the total definitive study, if undertaken, is not available at this time.
VI. RECOMMENDED PREINVESTMENT PROGRAM PROPOSALS

201. As a means of further refining and extending the Ten Year National Health Plan, and to accelerate its full implementation, a number of key program areas have been identified for additional intensive study, including the development of detailed operational plans and reasonably precise estimates of program costs. Each of those areas selected for such a Preinvestment Studies Program merit high priority based both on the importance assigned to them by the Plan and on judgments made in the course of this survey's evaluation of the Colombian health sector, its development problems, policies and prospects.

202. The six proposals outlined in the following pages (ANNEX 1) focus on program areas vital to the present effective operation of the total health and medical care system and to its future development. These areas include: health manpower training and the education of the public in health, the efficiency of health care institutions, national nutrition, health care and the extension of social security, improved vital statistics and periodic studies of improvement in the health status of the population. The proposals should serve as the basis for further discussions with appropriate Colombian authorities.
**PREINVESTMENT PROGRAM - STUDY DATA SHEET**

**Area:** South America  
**Country:** Colombia  
**Sector(s):** Health

1. **NAME OF PROPOSED STUDY:** ACTION PROGRAM FOR EDUCATION AND TRAINING IN THE HEALTH SECTOR

2. **PURPOSE:** To develop long range projections of the educational and training needs in the Colombian health sector and to formulate plans and strategy to meet these educational and training requirements.

3. **SCOPE:** This study is to be conducted in two interdependent yet separate segments. The first will focus on the manpower requirements at all occupational levels of the health "industry" - professional, technical and supporting personnel and will concern the nine medical training centers, all other universities, the technical and vocational training institutions and the secondary school system. The second segment of the study will concentrate its attention on achieving in the general population, a level of "health literacy" and effective capability to use readily and efficiently available health information and resources, thus involving the general educational system of the country.

4. **BACKGROUND:**
   - (a) **Related Studies**
     - The Colombian Study of Health Manpower and Medical Education (1965-1966) revealed gross shortages and maldistributions of physicians, dentists, nurses, auxiliaries and all other essential health personnel. A major result of the study is the recognition that greatest emphasis must now be given to the training of auxiliaries and supporting personnel to whom can be delegated, under supervision, responsible tasks that do not require the lengthy and costly training of higher-level professional personnel (See also Item 3 Study Data Supplement).
   - (b) **Other Available Data**
   - (c) **Expected Data Problems**

5. **TIMING:**
   - (a) **Duration and Phasing of Study**
   - Both segments of the study should be conducted simultaneously. Total time requirement: 18-24 months.
   - (b) **Desired Starting Date 1970**

6. **COMMENT ON POTENTIAL STUDY SPONSORS:**
   - The Association of Colombian Medical Colleges should be assigned the leading role in this study, with the active participation and support of the Ministry of Health, the Ministry of Education and other national ministries and associations.

7. **PROJECT(S) EXPECTED TO RESULT FROM STUDY**
   - (a) **Description**
     - Guidelines and plans for long range educational and training programs; definitions of curriculum content, training schedules and if needed text-books and teaching materials; also reliable forecasts of manpower needs and available manpower resources for the future.
   - (b) **Estimated Investment (US$ equivalent)**
   - (c) **Financing Need and Potential Source**

8. **ORDER OF MAGNITUDE OF STUDY COST (US$ equivalent):**
   - 400,000

9. **STAFF'S COMMENT ON PRIORITY RANKING OF STUDY:**
   - The need for the immediate and broadscale mobilization of all educational and training resources to meet urgent health problems, warrants the assignment of very high priority to this extensive study.
PREINVESTMENT PROGRAM - STUDY DATA SUPPLEMENT
(to be filled in when possible)

1. TENTATIVE STAFFING
   (a) Foreign Professional Staff:

   Type of Specialist
   Number on Team
   Total Man-Months

   Total:

   (b) Local Professional Staff:

   (c) Local Supporting Staff:

2. TENTATIVE STUDY BUDGET (US$ equivalent)
   Foreign Currency
   Local Currency
   Total

   (a) Professional Staff Costs:

   (b) Equipment:

   (c) Other (Travel, non-prof. staff, etc.):

   (d) Total:

3. OTHER COMMENTS

   The National Health Survey conducted concurrently with the Manpower Study indicated that
   most of the major health problems of the country are directly correlated with low
   educational achievement and that even the scarce though available health resources are
   seriously underutilized and used inefficiently or ineffectually - a finding also corre-
   lated with low educational levels. Studies in the educational field confirm that the
   general educational system is not achieving its goal of preparing the population to live
effectively in a modernized society nor to provide adequately for meeting their own needs
for healthful existence. No country has yet done an effective educational job in this
area yet the Colombian situation suggests that this country is a suitable one in which to
initiate a pioneering experimental approach.

   Much preparatory work has already been undertaken in Colombia. A number of international
   bodies - WHO(PAHO), UNICEF, UNESCO - as well as several foundations which have already made
sizeable health investments in Colombia, could provide technical assistance as well as
support to both phases of the proposed studies. Further detailed development of study
plans and scope, as well as a definitive budget schedule, will require additional consul-
tation with Colombian principals.

Supplement Prepared by: T. D. Dublin, M. D.
Dept. or Agency: Health Advisor, Colombia
Date: April 3, 1970 Mission
PREINVESTMENT PROGRAM - STUDY DATA SHEET

No.: 3-2 (1)

1. NAME OF PROPOSED STUDY: Study of Medical Care Institutions

2. PURPOSE:
To assess the effectiveness, efficiency and minimal operational requirements of the existing medical care institutions in Colombia as an integral step in the implementation of the new National Hospital Plan.

3. SCOPE:
The study will be conducted in two phases. Initially, each of the 534 general hospitals and the 800 ambulatory care institutions in the country will be visited by a team of specially trained investigators (medical students, supervised by competent senior personnel who will assemble uniform inventory data according to a carefully developed and pretested schedule. The second phase will involve an intensive in-depth study of preselected samples (116 of 534 hospitals and 100 of 800 ambulatory care institutions). The data to be collected and analyzed include information on: (a) physical plant, equipment and other resources; (b) sources of income and principal categories of expenditures; (c) staffing patterns, qualifications and utilization; (d) demands for medical care consultation and hospitalization; (e) systems of referral and movement of patients as well as cases and levels of satisfaction derived from services rendered.

4. BACKGROUND: (a) Related Studies
The new National Hospital Plan contemplates the construction (completion), equipment and staffing of many new health facilities over the next 2-5 yrs. However, the health care system will remain highly dependent on the efficient use and operation of existing resources - thus emphasizing the need for evaluating and upgrading currently operating facilities. Preparation for this study is already underway; survey materials have been developed and pretested in completed pilot studies thus facilitating the early initiation of the proposed inventory and in-depth analyses.

5. TIMING: (a) Duration and Phasing of Study
Phase I - Inventory 6-9 months
Phase II - In-depth Analyses 9-15 months
Total Study: 15-24 months

6. COMMENT ON POTENTIAL STUDY SPONSORS:
The study will be conducted jointly by the Ministry of Health-Institute for Special Health Programs (INFES) and the Association of Colombian Medical Schools (ASCOFAME) which have established records of effective scientific collaboration (See also Item 3 - Study Data Sheet).

7. PROJECT(S) EXPECTED TO RESULT FROM STUDY (if known):
(a) Description
Major hospital construction and renovation programs, expansion of other health care facilities and adaptation of existing buildings to modern medical requirements.

(b) Estimated Investment (US$ equivalent)
25-30 million dollars

(c) Financing Need and Potential Sources

8. ORDER OF MAGNITUDE OF STUDY COST (US$ equivalent):
250,000

9. STAFF'S COMMENT ON PRIORITY RANKING OF STUDY:
High Priority for immediate implementation.
1. TENTATIVE STAFFING

(a) Foreign Professional Staff:

See detailed budget incorporated in proposal: Study of Medical Care Institutions, Ministry of Health (INFES) and Association of Colombian Medical Colleges, Bogota, November 1969.

(b) Local Professional Staff:

(c) Local Supporting Staff:

2. TENTATIVE STUDY BUDGET (US$ equivalent)

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3. OTHER COMMENTS

No high level consultative and technical committees will assist the study, the former to include the Minister of Health, the President of ASCOFAME, the Director of the Colombian Institute for Social Security, the Director of the National Hospital Fund and the Executive Secretary of the Colombian Hospital Association. International advisors will be called on as needed. The technical committee will be comprised of the co-directors of the study. Three representatives of the Ministry of Health (Medical Care, Office of Planning and Office of Administration of Human Resources for Health) and two representatives of the Colombian School of Public Health. Such sponsorship and participation provide assurances that the study will be well executed and its findings utilized. This study has been under consideration by FONADE but was rejected for local funding as not the type of study funded by that agency. In discussions with FONADE the question was raised as to whether the in-depth phase should not include all institutions rather than only selected samples. Based on other findings of the health phase of the current Economic and Social Development Survey of Colombia the medical care problems of the Country are too central to the critical issues now being faced by the Government in implementing its new ten year National Health Plan to warrant either the abandonment or delay of this study. Investments in medical care facilities and equipment either already made or contemplated during the next few years are sizeable and operating costs of the health and medical care system are mounting rapidly from 1.1 billion pesos in 1965 to 3.4 billion pesos budgeted for 1970. The proposed study will assist the country in determining how to obtain the maximum return on expenditures.
**PREINVESTMENT PROGRAM - STUDY DATA SHEET**

| No.: | 3-3 (1) |

### Area: | South America | Country: | Colombia | Sector(s): | Health |

1. **NAME OF PROPOSED STUDY:** NUTRITION STUDY - PHASE III

2. **PURPOSE:** To improve the nutrition of the Colombian population through the adaptation and use of domestic food sources and by changing dietary patterns through public education.

3. **SCOPE:**
   Under the direction of the Department of Nutrition, Colombian Institute for Family Welfare (Ministry of Health) this study will develop practical and integrated plans for the extension and expansion of existing national nutrition programs, including (a) the National Program for Nutrition Education and Supplementary Feeding (PRONENCA); (b) the Integrated Program for Applied Nutrition (PINA); (c) The National Plan for the Development of Foods (PLANALDE); and (d) a group of other research, training and feeding programs supported domestically or by external agencies (AID, PAHO, UNICEF, WFP, FAO, etc.).

4. **BACKGROUND:**
   - (a) Related Studies
   - (b) Other Available Data
   - (c) Expected Data Problems
   The nutrition problems of Colombia have been studied intensively. Multiple programs are currently under way to meet the most immediate needs (Phase II). These programs are largely dependent upon the importation of foods from abroad for feeding supplementation. Long range solutions to the country's nutrition problems require the full mobilization of indigenous food sources and the education of Colombian families to select and utilize in their diet nutritionally adequate foods that are available to them within their financial resources.

5. **TIMING:**
   - (a) Duration and Phasing of Study
   - (b) Desired Starting Date 1972
   Approximately 2½-3 years will be required to complete all phases of this study - due in part to the complexity of organizational patterns and the multiplicity of programs and activities requiring coordination. Timing of completion of study should coincide with termination of present Phase II of the nutrition program.

6. **COMMENT ON POTENTIAL STUDY SPONSORS:**
   This planning and development effort will require the coordination of the programs and activities of many separate agencies of the national government including the Ministries of Health, Education and Agriculture. (See also Item 3 - Study Data Supplement).

7. **PROJECT(S) EXPECTED TO RESULT FROM STUDY (if known):**
   - (a) Description
   - (b) Estimated Investment (US$ equivalent)
   - (c) Financing Need and Potential Source
   The goal of this study is to demonstrate and assure that Colombia can be self-sufficient in meeting its food and nutrition needs. If successful, further external aid should not be needed.

8. **ORDER OF MAGNITUDE OF STUDY COST (US$ equivalent):**
   250,000

   **Sheet Prepared by:** T. D. Dublin, M. D.
   **Dept. or Agency:** Health Advisor, Colombia
   **Date:** April 1, 1970 Mission

9. **STAFF'S COMMENT ON PRIORITY RANKING OF STUDY:**
   This study merits very high priority but may not be possible to initiate before late 1971 or early 1972.

   **Sheet Revised by:**
   **Item(s) Revised:**
   **Dept. or Agency:**
   **Date:**
1. TENTATIVE STAFFING
   (a) Foreign Professional Staff:
   
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   (b) Local Professional Staff:
   
   (c) Local Supporting Staff:

2. TENTATIVE STUDY BUDGET (US$ equivalent)

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<th>Total</th>
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(a) Professional Staff Costs:

(b) Equipment:

(c) Other (Travel, non-prof. staff, etc.):

(d) Total: 250,000

3. OTHER COMMENTS

Additional consultations with Colombian principals are required to develop the detailed plan and scope of the proposed studies and an appropriate budget. As a bare minimum, 415-million (US) per year are now being invested in applied nutrition programs and these expenditures will be continued over the next five years. If the costs of other nutrition and food activities, the economic losses due to malnutrition and the costs attributable to the medical care of nutritional disease are added, the costs to the Colombian economy are far greater. Thus a relatively smaller expenditure for planning and development of a self-sufficient and continuing nutrition program for the total populations should be a sound investment.

Supplement Prepared by: T. D. Dublin, M. D.
Dept or Agency: Health Advisor, Colombia
Date: April 1, 1970
Mission

Supplement Revised by:
Item(s) Revised:
Dept or Agency:
Date:
**Preinvestment Program - Study Data Sheet**

**No.: 3-h (1)**

<table>
<thead>
<tr>
<th>Area:</th>
<th>Country:</th>
<th>Sector(s):</th>
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<tbody>
<tr>
<td>South America</td>
<td>Colombia</td>
<td>Health</td>
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</tbody>
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### 1. Name of Proposed Study:
**Health Care Under the Social Security System**

### 2. Purpose:
To plan the extension of health and medical care services, under social security coverage, to a larger segment of the Colombian population as part of the new Ten Year Health Plan.

### 3. Scope:
This study should comprise the following tasks: (1) assess the quantity and quality of health care services currently provided to Social Security beneficiaries, including present and anticipated costs in relation to premium payments; (2) determine the cost and other requirements of expanding comprehensive health care coverage to the spouses and other dependents of present beneficiaries; (3) assess the feasibility of merging the National Welfare Funds for governmental employees within the Social Security System; (4) explore possibilities of extending comprehensive health care coverage to other workers (and their dependents) not now covered; and (5) formulate long range plans for the further integration of health care services under Social Security with those administered by the Ministry of Health for the general population.

### 4. Background:
- **(a) Related Studies**
  The Colombian Social Security System now provides the largest single source of funds underwriting the costs of medical care services in the country. Legislation is now pending in the Congress, and approval is expected this year, to authorize the extension of social security coverage. The new law would direct the Colombian Institute of Social Security to develop new regulations extending such coverage, subject to final approval by the President. Also proposed is a plan to regionalize the administration of the program and involve the Institute of Agrarian Reform with the expectation of inclusion of agricultural workers.

### 5. Timing:
- **(a) Duration and Phasing of Study**
  Approximately one year.

### 6. Comment on Potential Study Sponsors:
This study should be undertaken by a national committee, under the chairmanship of the Director of the Colombian Institute of Social Security (see also Item 3, Study Data Supplement).

### 7. Project(s) Expected to Result from Study (if known):
- **(a) Description**
  As the purpose of a soundly planned social security system is to apply prepayment and savings principles to meet current and anticipated social needs on a national scale, the proposed studies should reduce, if not obviate, demands for future external financing in this area.

### 8. Order of Magnitude of Study Cost (US$ equivalent):
150,000

### 9. Staff's Comment on Priority Ranking of Study:
This study warrants high priority and should be initiated with a minimum of delay upon adoption of pending legislation.
1. TENTATIVE STAFFING

(a) Foreign Professional Staff:

<table>
<thead>
<tr>
<th>Type of Specialist</th>
<th>Number on Team</th>
<th>Total Man-Months</th>
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(b) Local Professional Staff:

(c) Local Supporting Staff:

2. TENTATIVE STUDY BUDGET (US$ equivalent)

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<th></th>
<th>Foreign Currency</th>
<th>Local Currency</th>
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<tr>
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<td>(d) Total</td>
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</table>

3. OTHER COMMENTS

The Colombian Institute for Social Security, the Ministry of Health, the Ministry of Labor, the National Cajas, the National Hospital Fund, the Institute for Agrarian Reform, the National Department of Planning and the Association of Colombian Medical Colleges are some of the national bodies that should be represented in the national study committee. International bodies (WHO, ILO) and external consultants could make significant contributions to the findings and recommendations of that committee.

Further details on scope, study plan and budget require supplementary discussion with Colombian principals. Travel to and study in other countries on the part of committee members and the extensive use of external consultants is essential to the study in the light of experience gained and mistakes made in recent years in other national social security systems. A significant fraction of the domestic costs can and should be borne by internal sources such as the Social Security System itself.

Supplement Prepared by: T. D. Dublin, M. J.
Dept. or Agency: Health Advisor, Colombia
Date: March 31, 1970 Mission
PREINVESTMENT PROGRAM - STUDY DATA SHEET

Area: South America  
Country: Colombia  
Sector(s): Health

1. NAME OF PROPOSED STUDY: VITAL STATISTICS AND MORBIDITY DATA - REGISTRATION AND ANALYSIS

2. PURPOSE: To modernize and improve the Colombian national system of registration, tabulation and analysis of essential vital statistics and current morbidity data.

3. SCOPE: This study should comprise the following tasks: (1) prepare recommendations for the revision of existing national legislation pertaining to the registration, collection, compilation, analysis and dissemination of essential vital statistics data on the population of Colombia; (2) develop detailed plans for a revitalized and efficient national vital statistics system; (3) define the requirements of physical resources, equipment and personnel needed to establish and maintain this new system at the national level and for decentralized activities, including capital investments and operating budget; and (4) prescribe the professional and technical job descriptions to be incorporated within national civil service personnel requirements for employment in the new vital statistics system and propose long range educational programs for the appropriate training of both professional and technical personnel.

4. BACKGROUND: (a) Related Studies  
(b) Other Available Data  
(c) Expected Data Problems  
Accurate, complete and current vital statistics data are required for the effective and efficient administration of the new 10 Year National Health Plan - particularly in connection with its recently decentralized health care services. The marked underregistration of births and deaths and the cumbersome, delayed and unreliable mechanisms for handling these and other essential vital statistics data, seriously impede appropriate program evaluation and planning not only in the health sector but in other critical areas of national economic and social development. Some preparatory work for the proposed studies has already been undertaken by each of the national bodies that will be involved.

5. TIMING: (a) Duration and Phasing of Study  
Approximately one year.  
(b) Desired Starting Date 1971

6. COMMENT ON POTENTIAL STUDY SPONSORS: A national Committee, under the chairmanship of the Minister of Health, and utilizing the advice of appropriate international agencies (e.g., PAHO and WHO) and consultants, should undertake this study. The Ministry of Health, the National Department of Statistics and the National Department of Planning are directly concerned and should be involved in the study. UNDP, UNICEF or UNFPA may support this study.

7. PROJECT(S) EXPECTED TO RESULT FROM STUDY (if known):  
(a) Description  
A new system for the registration and analysis of vital statistics and morbidity data.  
(b) Estimated Investment (US$ equivalent)  
(c) Financing Need and Potential Source

8. ORDER OF MAGNITUDE OF STUDY COST (US$ equivalent):  
75,000

9. STAFF'S COMMENT ON PRIORITY RANKING OF STUDY:  
As the absence of a proper system of vital statistics affects investment decisions in many areas, this study warrants high priority and early initiation.

Sheet Prepared by: T. D. Dublin, M.D.  
Dept. or Agency: Health Advisor, Colombia  
Date: March 30, 1970

Sheet Revised by: P. Engelmann  
Item(s) Revised: 5(b) & 6  
Dept. or Agency: IBRD/O.D.P.  
Date: October 18, 1970
## Preinvestment Program - Study Data Supplement

(to be filled in when possible)

<table>
<thead>
<tr>
<th>1. Tentative Staffing</th>
<th>Type of Specialist</th>
<th>Number on Team</th>
<th>Total Man-Months</th>
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<tr>
<th>2. Tentative Study Budget (US$ equivalent)</th>
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<td>(d) Total:</td>
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<th>3. Other Comments</th>
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<tr>
<td>Only the general outline of this proposed preinvestment study has been developed at this time. For additional and more specific details, further discussions with the Ministry of Health and the National Department of Statistics would be required. The suggested budget is offered as an initial approximation. Registration of births is still dependent on baptisms, a ceremony usually delayed for a period of approximately 7 months; underregistration of births has been calculated to range between 29 and 19 percent with even greater variations noted in different parts of the country. Underregistration in mortality rates appears to be even larger than in birth rates (between 36 and 33 percent) with most marked deficits in the early years of life. Procedures currently being followed involve an overcentralization of the registration system in Bogota with insufficient attention being given to the accuracy, completeness and quality of data being registered at the local level. Essential data remain untabulated and unpublished for long periods of time (up to 5 years). The registration of notifiable diseases and morbidity indices (admissions, discharges and duration of medical care) are equally cumbersome, delayed and unreliable.</td>
</tr>
<tr>
<td>For a period of more than 17 years, the Ministry of Health, the agency most dependent on the availability and reliability of vital statistics, has lacked direct responsibility and involvement in the major phases of vital record collection and tabulation. The National Department of Statistics, which enjoys a fine reputation for the quality of data it produces in other sectors of the national economy, is well equipped in Bogota with computer and other necessary central facilities. However, it lacks qualified and experienced staff in the health area and is dependent on an outmoded system of local registration employing untrained and technically unqualified personnel.</td>
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</tbody>
</table>

Supplement Prepared by: T. D. Dublin, M.D.

Dept. or Agency: Health Advisor, Colombia

Date: March 30, 1970

Mission

Supplement Revised by: |

Item(s) Revised: |

Dept. or Agency: |

Date: |
### PREINVESTMENT PROGRAM - STUDY DATA SHEET

**Area:** South America  
**Country:** Colombia  
**Sector(s):** Health

#### 1. NAME OF PROPOSED STUDY:

SAMPLE STUDIES OF THE HEALTH STATUS AND HEALTH RESOURCES OF COLOMBIA

#### 2. PURPOSE:

To reappraise the major health problems, health facilities and health manpower of the country in order to determine progress achieved since 1965 in meeting national goals and to establish objective bases for revision of national health programs and activities.

#### 3. SCOPE:

Under the aegis of the Ministry of Health and the Association of Colombia Medical Colleges a second series of investigations will be undertaken, utilizing modern sampling techniques and linked with the periodic national population census (1972), to determine the needs and demands of the country for health and medical services. These studies will take into account the socio-economic status of the population. They will be modeled on the pioneering and highly successful national studies of 1965-66, to facilitate comparisons and reliable measurement of progress and change, but will also incorporate newly developed survey methods and examination procedures.

#### 4. BACKGROUND:

Since the initial surveys in 1965-66 major reorganizations and reorientations of health programs and activities have occurred in Colombia. Concurrently significant advances have taken place in other sectors of the country's total economic and social development which have either direct or indirect bearing on the country's complex health picture. The scientific measurement of these interrelated changes, through national sample surveys, will provide essential data useful for program evaluation and planning in the health and other related sectors of national development.

#### 5. TIMING:

- **Duration and Phasing of Study**
  - Planning and Preparatory Phase (1971) - 12 months
  - Field Studies and Surveys (1972) - 12 months
  - Analysis and Publication of Data (1973-74) - 18 months

- **Desired Starting Date**: 1971

#### 6. COMMENT ON POTENTIAL STUDY SPONSORS:

The Ministry of Health and the Association of Colombian Medical Colleges have demonstrated their capacities to undertake this type of national health survey and their pioneering efforts are now being emulated in many of other developing countries.

#### 7. PROJECT(S) EXPECTED TO RESULT FROM STUDY (if known):

- **Description**
  - A more efficient and effective health and medical care system appropriately responsive to the health care needs and demands of the Colombian population.

- **Estimated Investment (US$ equivalent)**
  - 400,000

- **Financing Need and Potential Source**

#### 8. ORDER OF MAGNITUDE OF STUDY COST (US$ equivalent):

- **400,000**

#### 9. STAFF'S COMMENT ON PRIORITY RANKING OF STUDY:

- **High priority - initiation in 1971**

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**Sheet Prepared by:** T. D. Dublin, M. D.  
**Dept. or Agency:** Health Advisor, Colombia  
**Date:** April 2, 1970
PREINVESTMENT PROGRAM - STUDY DATA SUPPLEMENT
(to be filled in when possible)

### 1. TENTATIVE STAFFING

<table>
<thead>
<tr>
<th>Type of Specialist</th>
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<tr>
<td>(c) Local Supporting Staff:</td>
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### 2. TENTATIVE STUDY BUDGET (US$ equivalent)

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<tr>
<td>(d) Total</td>
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</table>

### 3. OTHER COMMENTS

Additional consultations with Colombian principals will be required to develop the detailed plan and scope of the proposed studies. Preliminary cost estimate is based on expenditures of 1965-66 studies (covering the period July 1, 1964-June 30, 1967) which amounted to $382,000. Forty percent of the cost of that study was defrayed by Colombian sources.

This proposed study complements rather than competes with preinvestment study proposal 3-5; Vital Statistics and Current Morbidity Data - Registration and Analysis; and will also complement the next Colombian National Census of 1972.

Supplement Prepared by: T. D. Dublin, M. D.
Dept. or Agency: Health Advisor, Colombia
Date: April 2, 1970, Mission
VII. EXTERNAL ASSISTANCE IN THE COLOMBIAN HEALTH SECTOR

203. Over a period of many years, international agencies, the governments of other countries and philanthropic foundations have extended technical assistance, commodities and equipment as well as financial aid to the health sector of Colombia. No list of the donors or a tabulation of the amounts of their contributions has been compiled. Conspicuous among the assisting international organizations are the World Health Organization and its Regional Office for the Americas, the Pan American Health Organization, the United Nations Childrens Fund and the World Food Program (FAO). The U.S. Agency for International Development and its predecessor agencies has supported many important health activities in the country for many years. The Rockefeller Foundation, the Kellogg Foundation and the Milbank Memorial Fund have also been involved in supporting specific health projects, particularly those related to medical education and research.

204. To illustrate the extent and nature of this assistance a recent compilation of FAO aid to Colombia can be found in Appendix A.
COLOMBIA-0200, Malaria Eradication

**Purpose:** Eradication of malaria.

**Probable duration:** 1957.

**Assistance provided:** 2 medical officers (1 of the posts was vacant during part of the year), 1 sanitary engineer, 1 entomologist, and 4 sanitary inspectors; antimalaria drugs and entomological supplies; and 2 short-term fellowships.

**Work done:** Early in 1968, on the basis of the evaluation conducted in November 1967, the malarious area of Colombia was divided as follows:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Population</th>
<th>%</th>
<th>Area (km²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>11,220,000</td>
<td>100</td>
<td>970,949</td>
<td>100</td>
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<tr>
<td>Consolidation phase</td>
<td>7,985,000</td>
<td>70.5</td>
<td>394,281</td>
<td>40.6</td>
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<tr>
<td>Attack phase</td>
<td>5,292,000</td>
<td>29.5</td>
<td>2,120,499</td>
<td>23.4</td>
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<tr>
<td>Preparatory phase</td>
<td>217,000</td>
<td>20</td>
<td>47,000</td>
<td>5.2</td>
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</table>

During the 9th spraying cycle, carried out in the first half of the year, 449,531 houses were sprayed (92.9% of the target), with 2,120,499 inhabitants protected. The 20th cycle was begun in July; according to estimates, 475,556 houses were to be sprayed. At the end of November, 394,281 houses (83.1% of the target) had been sprayed, with 1,324,415 inhabitants protected. In addition, 4 quarterly sprayings were performed in special problem areas.

During consolidation-phase areas it was necessary to spray (6,633 houses in the first 6 months and 6,510 houses in the second (up to November), with 69,766 inhabitants.

As of November, 790,229 blood smears had been examined, with 25,527 (3.2%) found to be positive. The percentages of positivity for consolidation- and attack-phase areas were 0.6% and 0.5%, respectively.

The land settlement areas and those that present problems hampering the work of the Malaria Eradication Service (SEM) continue to place difficulties in the way of the campaign. These areas cover 152,000 km² and have a rural population of some 750,000 persons. SEM does not work in 50,000 km². that is, a third of the area, where 200,000 inhabitants live. It is estimated that 64% of the cases detected in attack-phase areas and 70% of those detected in consolidation-phase areas come from this portion of the country.

Approximately a third of the blood smears are obtained through the passive search conducted by lay volunteers, public health agencies, and physicians in private practice. This search has recovered 40% of the total number of malaria cases diagnosed. The volunteers collect nearly 80% of the smears and detect 75% of the cases, and the public health agencies are responsible for approximately 25% of the smears and 30% of the cases detected; the role played by private physicians is very small.

With the signing in September of Decree 2470, which reorganized the Ministry of Public Health, SEM was placed under the Ministry's Division of Direct Campaigns, which encompasses, in addition to malaria eradication, leprosy control, mass vaccination campaigns, vares eradication, Aedes aegypti eradication, and the health education campaign.

Financing the program has not presented problems, inasmuch as the Government has assigned it an annual budget of 52 million pesos; moreover, the administrative organization is effective.

Meetings were held with malariologists from Venezuela, and at other meetings the campaign staff discussed problems and established channels of collaboration and coordination.

Research was started in the fields of therapy and entomology.

**PAHO/SMF, UNICEF**

COLOMBIA-0201, Study of the Chemotherapy of Malaria

**Purpose:** Assessment of the usefulness of a 3-day, 3-drug treatment for the radical cure of Plasmodium vivax infections.

**Duration:** 1966-1968.

**Assistance provided:** Advisory services by staff of Headquarters and of project Colombia-0200; a grant to the Malaria Eradication Service to cover part of the local costs.

**Work done:** A field trial was made of an experimental treatment with chloroquine, primaquine, and pyrimethamine given over 3 days as a radical cure of P. vivax infections, and the results were compared with those achieved with the classical 14-day treatment with chloroquine and primaquine, and with a control group. Groups of 3 persons (trials) were set up, matched by sex, age group, and place of residence; 2 were P. vivax cases treated, respectively, with the experimental and the classical treatment; the third, a person without malaria, was treated with primaquine during 14 days to ensure that no latent infection was present.

The trial was begun in April 1966 and continued until mid-1968. Because of the high rate of population mobility in the study area, and the fluctuating incidence of both P. vivax and P. falciparum, the number of complete trials which could be formed and followed up for the required 12-month period following treatment was limited; cases which could not be grouped into trials for lack of matching cases were therefore grouped in dozens, one malaria case with one control. A series of twoures were also formed, composed of a person receiving a second treatment (either experimental or classical) during the course of the study, and a control. A large number of persons who could not be grouped were also followed up. All these records were being utilized in the final analysis of the data, which was under way during the latter part of 1968.

The project did not produce as much data as was hoped, primarily because the turnover of population and the continued transmission rate were higher than anticipated. However, on the basis of the preliminary results, which had shown no striking difference between the two treatments, field work was continued and extended some months beyond the programmed date in order to complete the records of subjects which lacked the full 12-month follow-up. The final results will be published when available.
Work done: The treatment-verification cycles planned for
the city of Cárdenas continued to be carried out, with good
results.
During the year a reinfestation was discovered in La
Guzmán, and control measures were put into effect.
Surveillance of airports and ports along the Atlantic
coast was continued.
Eleven yellow fever cases were reported in the country
during the year.

PAHO/RB

COLOMBIA-3100, Health Services

Purpose: Preparation of a national health plan; strength-
eining of the Ministry of Public Health and the departmental
and local services; extension of integrated health services
to the entire population; and training of professional and
auxiliary personnel.


Assistance provided: 1 medical officer, 1 adviser in plan-
ning and 1 in administrative methods, 1 nurse, 1 sanitary
engineer, 5 short-term consultants (one of them made 2
visits), and 1 temporary adviser; equipment and supplies;
common services; and 20 short-term and 7 long-term fol-
lowships.

Work done: During the year the reorganization of the
Ministry of Public Health was carried out, giving it greater
administrative flexibility and more authority over the de-
centralized institutes engaged in health work.

The health planning process, which was carried forward,
had become the cornerstone of the health activities. Major
meetings were held to consolidate the process, evaluate it,
and put it into operation in 1960.

Efforts to coordinate the health institutions were con-
tinued, with a view to establishing a national health system.
Creation of a National Health Council at the ministerial
level signified major progress in this direction.

A policy and specific programs dealing with rural water
supplies were studied and drawn up, through the action of
a special PAHO/RH mission.

The basic sanitation program, which has an impressive
record of accomplishment, was carried forward. Its rural
aspect will become the responsibility of the National In-
stitute for Special Health Programs, so as to ensure greater
administrative flexibility.

The project on maternal and child care and family pro-
tection was in its final stages.

The program for supplementing the teaching staff by an
exchange of personnel between the health services of Tunja
and the Javeriana University (Bogotá) was continued and
expanded.

The health promoters program was reorganized, and the
team of physicians and nurses who will be in charge of the
program at the departmental level was trained.

A major, large-scale supervision program was conducted
at the national level.

PAHO/RB, WHO/RB, WHO/UNDP

COLOMBIA-3103, Special Public Health
Administration Programs

Purpose: Improvement in administrative methods and
practices through special public health administration pro-
grams.


Assistance provided: 1 short-term consultant and ad-
visory services by the PAHO/WHO Country Representative.

Work done: The legal structure and functions of the Na-
tional Institute for Special Health Programs (INPES), as an
autonomous agency attached to the Ministry of Public
Health, were established by executive decree. Its statutes
and 1969 budget were approved, in accordance with the
new legal provisions. Its organization, internal regulations,
and staff were under study. Under the reorganization of the
Ministry, the Institute's close working relationship with the
Ministry was clearly defined.

INPES is responsible for the following programs: train-
ing of personnel, hospital architecture, research projects,
basic rural sanitation, meat inspection, child welfare, demo-
graphic studies, and the National Institute of Health.

PAHO/RB

COLOMBIA-3301, National Institute of Health
(Carlos Finlay)

Purpose: Strengthening of the services rendered by the
Yellow Fever Section of the National Institute of Health to
other countries in connection with the hemispheric-wide
campaign against yellow fever, in the areas of research,
laboratory diagnosis, and vaccine preparation.

Probable duration: 1950.

Assistance provided: 1 laboratory consultant and advisory
services by the PAHO/WHO Country Representative;
grants.

Work done: Under the decree reorganizing the Ministry
of Public Health, the National Institute of Health became
an agency responsible to the National Institute for Special
Health Programs (INPES).

A committee, presided over by the Director of INPES,
was appointed to draw up the decree on the organizational
structure of the Institute. Work on the new installations
was continued.

Research on arbovirus infections, leprosy, trypanosomias-
is, and encephalitis was carried forward.

The production of biologicals during the period was as
follows: yellow fever vaccine: 1,625,000 doses (361,500
doses distributed in the country and 908,000 abroad); freeze-dried smallpox vaccine: 7,992,200 doses of which
300,000 were shipped to Ecuador; antitoxins for human
use: 40,429 14-dose treatments, 3,000 treatments
were shipped to Venezuela); antitoxins for canine
use: 251,136 doses (20,000 shipped to Ecuador); DPT
vaccine: 600,000 individual doses; diphtheria toxoid: 32,000
doses; Schick toxin 60,000 doses; antityphoid vaccine:
180,000 doses; BCG intradermic vaccine: 3,143,000 doses;
and BCG oral vaccine: 125,000 doses.

As of October, 6 cases of yellow fever were diagnosed.

PAHO/RB
Should the experimental treatment be shown to be usable, large sums could be saved in treatment costs and many eradication programs would be able to give radical-cure treatment in circumstances in which it is not feasible to do so with the classical 14-day schedule. On the other hand, should the treatment be proven to be low in percentage of radical cures effected, the Organization will have evidence with which to convince national services that its use would be counter-productive and wasteful of resources.

As a by-product of the project, a marked effect has been noted on the population of the study area. This population, living in an area which lacks general or private health services, was at first rather suspicious of the malaria eradication operations but ultimately came to rely upon the national project personnel and to call upon them for assistance with their malaria attacks and also with other health problems. Thus their attitude toward the Government's health activities was completely altered.

PAHO/SMF

COLOMBIA-0300, Smallpox Eradication

Purpose: Eradication of the disease from the country by means of vaccinating 90% of the population in a 4-year period.


Assistance provided: Advisory services by the medical officer assigned to project AMRO-0304; equipment and supplies; and 1 short-term fellowship.

Work done: During the year, 4,597,692 persons were vaccinated. Since the start of the campaign in July 1967, a 35.2% coverage of the population has been achieved. A total of 203,094 persons were vaccinated for the first time and 163,723 were revaccinated; the proportions of tanks were 89.9% and 77.7%, respectively.

The morbidity rate has remained at zero since 1967.

The horizontal nature of the program was setting a new pace of operations for the local health services of the 22 departments in which it is being carried out, and other immunization activities, such as BCG, DPT, and yellow fever vaccinations, were being incorporated into the program.

WHO/RB

COLOMBIA-0400, Tuberculosis Control

Purpose: Implementation of a national tuberculosis control program, beginning with a verification area in the Girardot health district, which includes 12 municipalities of the Departments of Cundinamarca and Tolima.


Assistance provided: Advisory services by the PAHO/WHO Country Representative and by the medical officer assigned to project AMRO-0404.

Work done: Within the structure of the Ministry of Public Health, tuberculosis control ceased to be a vertical program and was incorporated into the Division of Medical Care. The integration of tuberculosis programs into the regular activities of the health services proceeded normally. In this connection, a complete program was drawn up in Bogotá. National authorities and the PAHO Zone advisor made inspection trips to all the tuberculosis programs, making it possible to systematize the work in accordance with established guidelines. At the Girardot Pilot Center, which faced a crisis early in the year, the appointment of a full-time director contributed to a notable improvement in the work during the second half of the year. The model of operations prepared by Girardot was adopted in other parts of the country, particularly in Cali.

A consultant specialized in BCG production observed the preparation of vaccine at the National Institute of Health and submitted a series of recommendations, which were being put into effect.

At the School of Public Health of Antioquia University, in Medellin, the second course (3 months) in tuberculosis epidemiology and control was held, with 15 national students in attendance.

COLOMBIA-2200, Water Supplies

Purpose: Implementation of the national water supply program, including the planning, design, financing, construction, and operation of municipal water supply services.


Assistance provided: 1 sanitary engineer, 3 short-term consultants in administrative methods, and advisory services by Zone IV Office staff.

Work done: Recommendations on technical and administrative aspects of the program continued to be implemented, and an improvement was noted in the investment and operational capability of the National Municipal Development Institute (INSFOPAL). A good deal of emphasis was placed on administrative, operational, and maintenance aspects of the water supply systems.

INSFOPAL continued to implement IDB Plan No. 1, which as of 30 September represented an investment of Col$17,562,467.78 (86.7% of the total funds). The investment made during the year was Col$49,158,544.83.

At the same time, with national funds, INSFOPAL continued to carry out projects under the 1967-1970 Four-Year Plan, Col$13,133,310.51 having been invested during the first half of the year. By executive decree, the fields of action were defined and the institutes that will assume responsibility for the urban and rural water supplies were placed under the direction of the Ministry of Public Health. It is believed that this measure will lead to major benefits in this field.

The Autonomous Municipal Water Supply and Sewerage Authorities carried out a large-scale improvement and construction program during the year.

WHO/RB

COLOMBIA-2300, Aedes aegypti Eradication

Purpose: Eradication of A. aegypti.

Probable duration: 1951.

Assistance provided: 1 sanitary inspector and advisory services by the PAHO/WHO Country Representative; equipment and supplies.
COLOMBIA-6100, School of Public Health

*Purpose:* Strengthening of the School of Public Health of the University of Antioquia in order to adequately prepare professional and auxiliary health personnel to meet the needs of the country.


*Assistance provided:* 2 short-term consultants, 1 temporary adviser, and advisory services by the PAHO/WHO Country Representative; equipment; and 1 short-term fellowship.

*Work done:* Thirteen regular courses were offered to a total of 293 students, 14 of them from other countries.

Seventeen research projects dealing with various public health problems were completed or under way.

During the year the School was staffed by 70 full-time instructors, including a sociologist, an economist, and a nutritionist.

WHO/RB

COLOMBIA-6200, Health Manpower and Medical Education Studies

*Purpose:* Study of health manpower requirements and the means for meeting them; and collection of data for a reorientation of medical education and health planning and for developing a working methodology that may serve as a model for other countries.


*Assistance provided:* Advisory services by Headquarters and Zone IV Office staff and by the PAHO/WHO Country Representative; funds to cover printing costs; and a limited amount of supplies.

*Work done:* The publication *Study on Health Manpower and Medical Education in Colombia, Vol. III, Papers and Reports of the Maracaibo Conference (June 1967)* was issued in both Spanish and English. It was widely distributed, particularly to the health authorities of the Governments, to the Pan American Federation of Associations of Medical Schools, to the national associations, and to the schools of medicine, public health, nursing, and dentistry and the national libraries of the Americas.

PAHO/OF

Milbank Memorial Fund

COLOMBIA-6201, Continuing Medical Education

*Purpose:* Strengthening of continuing medical education, particularly for professionals working in small communities; and publication of a periodical medical bulletin containing bibliographic material and topical information.

*Probable duration:* 1965-1972.

*Assistance provided:* Advisory services by Headquarters and Zone IV Office staff and by the PAHO/WHO Country Representative; grants; and 2 short-term and 1 long-term fellowships.

*Work done:* With the cooperation of the various medical schools, more than 50 postgraduate courses were offered, 37 being held at the University of Valle. Approximately 600 physicians participated in these courses.

Training courses were held in the departmental capitals; one on clinical pharmacology was offered at the National University.

The Spanish medical bulletin *Carta médica* continued to be published and distributed regularly throughout the country. The index of Colombian Medical Literature was distributed to the entire faculty of the medical schools.

PAHO/RB

COLOMBIA-6203, Center for the Teaching of Pathology

*Purpose:* Establishment, in conjunction with the departments of pathology of the National University, the University of Valle, and the University of Antioquia, of an international center for the training of teaching, hospital, and research personnel in the field of pathology in Latin America; conducting of training programs for technical and auxiliary personnel in this field; and encouragement of research at the postgraduate level.


*Assistance provided:* 1 short-term consultant and advisory services by the medical officer assigned to project AMRO.3513 and by the PAHO/WHO Country Representative.

*Work done:* An assessment was made of the progress of the planning activities being carried out under the Latin American Program for Training in Pathology (PLAP).

The prospectus of the program was drafted; this pamphlet is mainly concerned with describing the current status of pathology and with promoting this specialty. The draft was reviewed by the members of the Coordinating Committee and forwarded to PAHO Headquarters for final review, approval, and publication. The pamphlet will be ready for distribution early next year.

At the meeting of the PLAP Coordinating Committee held late in July, the Organization was represented by the medical officer assigned to project AMRO.3513.

During the first half of the year, the departments of pathology of Antioquia University, the National University, and the University of Valle received the laboratory equipment acquired by PAHO with funds allocated in 1967.

A consultant visited 3 Central American countries and Mexico in order to promote the program, interview potential fellowship candidates, and lecture to advance students and interns on subjects related to pathology. He also attended the Pathology Congress of Central America and Mexico that was held in Mérida, Yucatán, Mexico, in December.

The selection of fellows was begun; the first fellowship awarded will go into effect in January 1969.

PAHO/RB

COLOMBIA-6204, Experimental Studies on Health Services

*Purpose:* Design of an operational study based on the findings of the Health Manpower and Medical Education Study and aimed at testing in specially selected health areas the optimum systems for the training; and utilization of auxiliary personnel.


*Assistance provided:* 1 temporary adviser and advisory services by the PAHO/WHO Country Representative; grants; equipment and supplies.
COLOMBIA-4101, Clinical and Social Pediatrics

*Purpose:* Organization of yearly social pediatrics courses for professors of pediatrics courses or departments in medical schools and for pediatricians in charge of child health services or pediatric hospitals.


*Assistance provided:* 1 short-term consultant and advisory services by the PAHO/WHO Country Representative; equipment and supplies.

*Work done:* The IV Latin American Course in Clinical and Social Pediatrics was held on schedule and with success in the Department of Social Pediatrics of the School of Medicine of Antioquia University (Medellin); it was attended by 16 students, 5 of them PAHO fellows from Brazil, Haiti, Paraguay, Peru, and Venezuela. The course lasted from 5 August to 31 October, and for the first time 4 nurses took part for purposes of a team-training trial.

As part of the course, and with the assistance of a sociologist and a planner, a field study of a rural community was carried out.

The students were given a field assignment on Puerto Berrío, where they conducted a nutrition survey and a seminar on maternal and child services. One of the course instructors spent a month at the Clinical and Social Pediatrics Course held in Chile, in order to gain additional experience in courses of this kind.

WHO/RB

COLOMBIA-4202, Nutrition Training Center

*Purpose:* Improvement of the nutritional status in the country, by providing training in applied nutrition and food economy to persons holding key government, management, and teaching posts related to agriculture and food policy.


*Assistance provided:* Advisory services by the PAHO/WHO Country Representative.

*Work done:* Approval was given the plan of operations for putting into effect this joint project of the National University, the National Nutrition Institute, UNICEF, FAO, and the Organization.

Arrangements for space and equipment for the Center were being made.

The 1st course on nutrition was held, with considerable success; 18 students from several countries participated.

Plans were made for holding a similar course in 1969.

COLOMBIA-4500 (-4507), Radiation Protection

*Purpose:* Establishment of a radiation protection service on a national scale in order to cope with the overall problem of radiation exposure, both occupational and of the general public.


*Assistance provided:* Advisory services by the PAHO/WHO Country Representative.

*Work done:* The Bogotá surveillance station continued its regular operations, sending samples for radiation analysis by the laboratories of the U.S. Public Health Service.

Milk samples were sent regularly for analysis.

A Colombian engineer was sent to Puerto Rico for specialized training.

COLOMBIA-4601, Air Pollution

*Purpose:* Planning and establishment of a national occupational health unit; and installation of air sampling stations in the major cities of the country.


*Assistance provided:* Advisory services by the PAHO/WHO Country Representative.

*Work done:* With the Organization’s assistance, a 70-hour course on industrial hygiene was offered to 50 professionals. A 1,000-page manual on the course was prepared.

During the year several studies related to ventilation problems were carried out.

In Bogotá the permanent stations for the determination of air pollution and radiation levels continued their operations, and plans were started for the installation of another station in Medellín.

Basic sampling for air pollution was carried forward in several provincial capitals.

An occupational health unit began operations in the Special District of Bogotá.

COLOMBIA-4900, Health and Population Dynamics

*Purpose:* Extension of maternal and child health and family planning services to rural areas.


*Assistance provided:* 1 medical officer.

*Work done:* Work was started on the development of the operational plan for the project.

PAHO/OF-AID

COLOMBIA-6000, Medical Textbooks and Teaching Materials

*Purpose:* Establishment of a system for the distribution, sale, and rental of textbooks.

*Probable duration:* 1967.

*Assistance provided:* Advisory services by the PAHO/WHO Country Representative.

*Work done:* All the medical schools of the 9 universities in the country had signed the letter-agreement of adherence to the basic agreement with the Government. The Organization made available to the schools the first 2 textbooks issued under the program, Tratado de patología and Biocinética, for distribution on the basis of requests. At the year’s end, 8 schools had requested a total of 1,078 copies of the former and 1,072 of the latter.

In addition, the Manual of Administrative Procedures and standard forms for the program (sales and rental receipts, control cards, monthly reports) were provided.

Each school appointed a staff member to handle the local administration of the program.
Work done: In accordance with the plan of operations, preparation of the theoretical model of activities was 90% completed and preparation of the manuals for that model was 80% completed. According to predetermined criteria, all the experimental study areas were selected and planning of the model for the initial appraisal of these areas was concluded. Application of the model in a test municipality was carried out, as were the selection and training of the necessary personnel and the collection of data for the initial appraisal in 2 of the 3 experimental areas. The data obtained were analyzed.

Implementation of the theoretical model programs and their evaluation were scheduled for 1969.

PAHO/OF

COLOMBIA-6300, Nursing Education

Purpose: Improvement in the nursing care provided in health services, through the establishment of continuing education programs in administration and supervision, in-service training, and training in specialized fields.


Assistance provided: Advisory services by the nurse assigned to project AMRO-3204.

Work done: The Standing Committee on Nursing of the Colombian Association of Universities continued working toward coordination of the nursing education programs.

During the year the number of students enrolled in nursing auxiliary courses increased. Under a change made in the basic program of the University of Valle (Cali), on a trial basis, students may be grouped according to their abilities after 2½ years; by continuing their studies for an additional 1½ years they can receive a baccalaureate degree in nursing or, if they continue their studies for 6 months, they can become general nurses.

PAHO/RB

COLOMBIA-6400, Sanitary Engineering Education

Purpose: Improvement in the technical training of professional personnel engaged in sanitary engineering; promotion of research; and expansion and diversification of sanitary engineering education in the regular civil engineering courses at the National University.


Assistance provided: Advisory services by the sanitary engineer assigned to project AMRO-6400; grants; equipment and supplies; and 1 long-term fellowship.

Work done: A short course on systems analysis in water resources was held at the University of the Andes, and another on industrial hygiene was offered at the National University. A total of 96 persons attended both courses.

Three research projects were started during the year.

PAHO/RB, PAHO/OF

COLOMBIA-6600, Teaching of Preventive Medicine and Dentistry

Purpose: Integration of the teaching of preventive medicine and preventive dentistry at the University of Antioquia in Medellin, and at the National University in Bogotá, under a department to serve the Schools of Medicine and of Dentistry in each of those universities; and establishment of a center for research in general and public health dentistry.


Assistance provided: 3 short-term consultants, 3 temporary advisers, and advisory services by the dental consultant assigned to project AMRO-4409; 1 grant; equipment and supplies; and 1 short-term fellowship.

Work done: In the Department of Preventive and Social Dentistry of the University of Antioquia, changes were made in the curriculum in order to introduce the teaching of preventive aspects of orthodontics and pedodontics. Training programs in cariology and microbiology were conducted for dentists working in local institutions, and a course in scientific investigation was given for the faculty. A seminar was held to discuss the utilization of auxiliary dental personnel in health programs in Colombia.

In November the Department conducted an international course in oral microbiology for 12 professors of this discipline from other dental schools in the Hemisphere. Studies were continued to evaluate the fluoride ion and pinhole table salt for the prevention of dental caries.

At the National University, attempts were being made to design an integrated departamental structure which would strengthen the teaching of prevention in dental health as well as in the other medical sciences. The program of studies was being revised to give emphasis to preventive dentistry. Studies on the training and utilization of auxiliary staff and on techniques for the furnishing of dental care were under way in a field center.

PAHO/IDB
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