NATIONAL DEVELOPMENT POLICIES
INFORMATION ON COUNTRIES' ACTIVITIES
AND RESEARCH NEEDS FOR DEVELOPMENT

COLOMBIA: CASE STUDY

Document No. 2

- Health Situation and Health Policy
- Research Activities
- Health Research Needs

Bogotá, May 1975

International Development Research Centre (IDRC)

Program Support Unit

IDRC-doc-266

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FOREWORD

The present document gathers the results of the first attempt to apply a methodology designed to detect development policies, sectorial activities and needs of research in a Latin American country. This first test has been performed for the specific case of the Health Sector in Colombia.

The purpose of CIID has been to know what each country considers are its needs of research, so as to have adequate criteria for the better orientation of its aid programs aimed at strengthening national endeavors in each particular sector of activity. For that purpose a methodology has been designed, in which, starting from the statements of those entities or persons responsible for establishing government policies and defining scientific research, it tries to sum up the needs for research that are explicit or implicit in such policies.

The study of the Health Sector in Colombia has provided us, on the one hand, with an approximation to the research needs in this sector and, on the other, with the basis for the elaboration of our methodology to detect these needs. The latter aspect has determined the limitations of the study given the fact that it was initiated with one methodological plan, which was considerably modified throughout the process. Therefore, the methodology has been re-appraised and redefined taking into account the results of the first experience. It is now more a result of the study, than its point of departure.

As a factor that influenced the study, especially in its last stages, it is important to mention the fact that the national government had undertaken the task of determining the research needs in health at the same time. The government project is part of a plan of action proposed for the unification of the national health system and of the national research sub-system as an element belonging to the former. Due to its reach and objectives, the government plan must achieve a degree of precision and detail more intensive than what CIID study requires for its own purposes.

The methodology that we have applied requires that once the study has reached a first synthesis of the needs for research, the results must be evaluated at a meeting with those government officials and members of the scientific community who are better equipped to

judge its validity. However, taking into account the activities being performed by the official research sub-system, this meeting shall not take place until the government fixes its research needs. Once we are informed of the official statements on this matter, we shall compare them with our results in order to make the indicated evaluation, if it proves to be necessary.

For these reasons, the results expressed in this document are of a provisional character and are subject to be modified by the conclusions resulting from the consultation to be carried out by the research sub-system; moreover, to the possibility of a partial reformulation of some aspects of the sector policy or of a better definition of the same.

The synthesis that we present immediately below has three parts. The first of these parts states the health policy and the following two parts state the research activities within the sector and the needs for research.

The account of the sector policy begins with a description of the health situation in the country which contains the basic elements of the diagnosis formulated by the agencies responsible of determining sector policies. This diagnosis is an inseperable part of the policy since it indicates the solution possibilities that may apply to the existing problems. The summarized account of the policy is followed by a chart which organizes its elements with the purpose of pointing out the areas and sub-areas of execution and their relationship to other elements such as the general objectives and support programs. This chart corresponds in its structure to the summary, and is the basis for the classification of the activities and needs.

The second part of the document, a report on the research activities in health, has used as its principal source the inventory made by Colciencias - Ascofame about research in the Medical University Faculties. This list of investigations was classified according to the areas and sub-areas of the sector policy, with the purpose of determining the approximate relationship between the research projects and the sector policy, and the degree of attention that the areas have received in research. The chart that comes at the end of this chapter synthesizes the conclusions from the above mentioned analysis.

The third part of the document has employed as sources for the information concerning the needs of research, those documents in which the scientific community and the government express their opinions on this matter, as well as interviews with persons holding a direct responsibility in the investigation and are well informed about it. These data, as well as those related to activities, previously mentioned, have been classified according to the chart on policies. From this chart we have gathered the needs of research, which in turn, express a group of problems considered by the sources as the most important needs of research; these have been glossed up to what can be called sub-areas and in some cases suggested subjects for research.

HEALTH SITUATION AND HEALTH POLICY

HEALTH SITUATION

The main facts of the health situation will be described based on the available national statistics.

1. Mortability (Table No. 2)

The mortality rate in 1971 was 8.3‰, the infant mortality rate was 67.9‰ and the maternal rate was 42‰, all taken for every 1,000 born alive. Of the total deaths in the country, 27.4% occurred in the first year of life and 15.8% between the first and fifth. In other words, 43.2% of the deaths correspond to children less than 5 years old. The ten principle causes of death appear in Table No. 3.

2. Morbidity

Morbidity is represented by a high percentage of diseases of infectious origin which can be reduced substantially through preventive measures. The 1965 morbidity survey showed the 10 principle causes of morbidity as being: intestinal infections, ankylostomiasis and other helminthiasises, tuberculosis, syphilis and gonococcus infections, measles, malaria, abortion, whooping cough, leprosy and diphtheria.

It was also shown that on-the-job accidents numbered 562 for every 1,000 workers per year and that 57% of the accidents produced some type of disability.

Malnutrition is the main cause of 45% of the deaths of children less than 5 years old. In addition, 77% of the adult population consumes deficient amount of protein foods, calories and various vitamins and minerals.

3. Immunization

Since 1967 there have been massive national campaigns for vaccination against smallpox, diphtheria, whooping cough, tetanus and polio, so that at present over 66% of the population has been immunized.

The measles vaccine has also been promoted since 1964 with the objective of immunizing 72% of the population less than 5 years old. The vaccination with BCG has been systematically administered by all health organizations with highly satisfactory results.

4. Health Attention

During 1971, medical visits in the country were approximately 25 million. There were registered 1,164,241 hospitalizations for 48,000 available beds (approximately 60% occupation rate)

The estimated coverage of medical visits by age group was:

- Children less than 1 year old: 69%
- Children from 1 to 4 years old: 42%
- School age children: 33%
- Pregnant patients: 53%
- Adult population (excluding women of childbearing age): 57.5%

5. Environmental Improvement

During 1971, 55% of the country's population had water supply and 49% had sewage services. Nevertheless, there exists a marked difference between the urban and rural sectors. In fact, 73.4% of the urban population has running water in comparison with only 28.9% in the rural sector. This indicates that 7 out of every 10 rural inhabitants lack protection in this sense. The situation described for the provision of water in the urban and rural areas is similar to the case of sewage disposal services.

6. Tropical Diseases

Approximately 85% of the national territory has climatic conditions conducive to the spread of malaria. At present, the anti-malaria campaign activities cover all this area.

7. Human Resources

a) Doctors - There exists a total number of 10,085 doctors for approximately 23 million inhabitants with 74.2% of the doctors concentrated in state capitals. This means there is an average of one doctor for every 1,000 inhabitants. The proportion for the rest of the country is one doctor for every 6,384 inhabitants.

b) Nurses - Practicing nurses in Colombia number approximately 2,000, or less than one for every 10,000 inhabitants. The urban-rural distribution is similar to that noted above for doctors.

c) Auxiliaries and Nurses' Aids - In 1972 the country had about 22,000 auxiliaries and nurses' aid, for a ration of 9.7 for every 10,000 inhabitants. The estimated number of practicing health educators was 2,000 at the end of 1972, covering just one-third of rural communities with populations less than 1,500 inhabitants.

8. Financial Aspects

The investments of the public sector during the period 1969-1974 increased from a base of 100 to 200.9. On the other hand, the investment index for the Ministry of Public Health and its agencies went from a base of 100 to 455.5, demostrating the importance given to the health sector by government programs.

HEALTH POLICY

The health policy, as an integral part of the development policy, will contribute to the general well-being of the people. Taking into account Colombia's demographical characteristics, its health situation and the recently created national health systems, the government has adopted a health policy for the population which can be summarized in the following twelve points:

1. Transformation of the health sector into an instrument of social progress, seeking to attain levels of health compatible with the level of economic development through the broadening of health services accessible to everyone.

2. Adoption of a unified national health system for all the agencies and institutions of the public sector, including those which receive funds from the public sector on any national, state or municipal level. (See chart 9)

3. Incorporation into a national plan of the public sub-sector, its agencies and institutions, and the private sub-sector in such a way that its institutions will be included in the planning process and also to attain an adequate coordination in the implementation of the health policy.

4. Distribution of the financial resources for health from the public utility institutions and the social security programs in agreement with the budget rules decreed by the Health Ministry. These investments which will be subject to state control will guarantee achievement of the purposes and objectives of the national health plan. (See chart 10)

5. Increase in health services mainly for rural and urban deprived populations, utilizing the unified system and the national health plan, and in the same way, preventing the decay of natural resources and conserving and improving the environment.

6. Regionalization of health services according to the criteria of centralization policy and administrative decentralization, strengthening the concept of the hospital as a basic unit at the regional and local levels.

7. Destination of the foreign resources and those from additional public budgetary funds to the financing of new programs and the broadening of the existing ones, according to the priorities established by the government. The resources will be distributed considering the risks to which the community is exposed. Special priority will be given to the maternal/infant and labour groups.

8. Coordination of all the investments and expenses of the public sector, its agencies and institutions and those of the private sub-sector in order to unify all the country's financial sources, in an effort to utilize with the maximum productivity all the available resources for the benefit of the people.

9. Strengthening of all the infra-structure programs aiming for a complete fulfillment of the health service programs.

10. Incorporation of the public sector workers and the agencies and institutions bound to them by a unique health personnel statue.

11. Organization of the community in order to promote its participation in the process of definition, execution and evaluation of the programs and activities included in the national health plan.

12. Coordination of the national health policy with the policies stated for the other sector in order to obtain the best results for the social and economic development of the country.

GENERAL OBJECTIVE

The policy's objective is the ordered extension of health service coverage for the population in the rural and deprived urban sectors, with particular emphasis on assistance to the large maternal/infant group. Consequently, health programs rest upon two concepts:

a) Integrated health assistance, comprising health promotion (aiming for the optimum physical and mental development of the individual); health protection (controlling environmental dangers); recuperation (restoring health); and rehabilitation (physical, psychological and social therapy).

b) Regionalization (territorial duration) comprises a system of four levels of attention which begins with rural health care posts, continues through health centers and regional hospitals, and ending at the modern university hospital.

Consequently, regionalization of the different levels of attention allows:

- The delegation of professional functions to paramedical personnel (See Charts 11-12), which ensures extension of medical help coverage and rationing the use of human resources and reduction of costs.

- A better referral system among the different service levels which serves to ration the use of physical resources, allowing the support from the urban to the rural sector.

- A better implementation of national health plans to the regional needs, in agreement with the national health system which is based upon policy centralization and administrative descentralization.

- Improvement of services for the individual and the community.

- In order to ensure that the health policy be an integral and coherent part of the national development policy, the necessary intersectorial coordination leading to the well-being of society must be established.

The intersectorial coordination will be established at the national, regional and local levels and will define the different sector's responsibilities. Among all the possible mechanisms, the following are recommended for obtaining intersectorial coordination:

a) Creating planning committees with representatives from different sectors.

b) Creating cooperative funds for specific programs.

c) Making agreements and contracts at different administrative levels.

d) Organizing the community in order to achieve its active participation.

e) Centralizing aid from international agencies (See Chart 13).

HEALTH PROGRAMS

The national health policy will be developed through the different programs listed below:

I. Medical Assistance

This program seeks to speed up health improvement by concentrating on medical care services coverage. The said program will be directed mainly toward the lowest income groups (50% of the population) and its fundamental objectives will be:

1. Mother and Child Medical Assistance

   - To enlarge up to 71% the assistance coverage of children less than one year old; in the same to obtain 37% for children 1 to 4 years old and 15% for children 5 to 14 years old.

   - To reduce infant and childhood morbidity/mortality rates by preventive measures.

   - To reduce maternal morbidity/mortality, especially that coming from several deliveries, abortion, and cervical-uterine cancer.

2. Medical Assistance to the Labor Force

   - To increase working accidents by protecting workers against health dangers.

3. Epidemic Control Programs

   - To establish programs for the adequate epidemical control of diseases such as leprosy, tuberculosis, yellow fever, malaria and yaws.

4. Food and Nutrition Policies

   - To develop a multisectorial nutrition policy with emphasis on the maternal/infant group.

II. Environmental Health Control Measures

One of the aspects of the health policy is the creation and preservation of an environment adequate for human life. To accomlish this, combined efforts are required in three areas: water and sewage programs, environment protection against deteriorating agents such as pollution, erosion, etc., and preservation of non-renewable natural resources.

Environmental conservation, aside from running water provision, sewage disposal, and construction of sewage systems, includes control of insects, rodents and animals in general, and control of housing sanitation and food sanitation.

III. Training of Human Resources and Research

The human resources development will be attained through a unified sectorial system, conducive to an adequate intra-sectorial and inter-sectorial coordination.

Human resources requirements should be based on the knowledge of the country's needs, for which it will be necessary to adequately redesign the curricula, programs and research, and adjustment and permanent improvement to be developed. In addition, human resources information must take into account the sectorial absorptive capacity and the utilization of an appropriate technology.

The professional training of all the personnel in the health services institutions must be oriented towards delegation of functions and team work.

A unified health research system will be created aiming to provide a permanent knowledge of the health situation and working basis for analyzing the existing systems, which facilitate the decisions for new investments in the health service provision.

IV. Infrastructure Planning, Organization and Administration

A unified supply system for the health sector will be developed for producing, transporting, distribution and consuming of the sectorial in-puts, in order to adequately use the drugs, medicines and biological products for the health sector.

Due to the fact that the regionalization process requires an appropriate infrastructure for efficient source provision, the second program will emphasize infrastructure projects. Therefore, it is necessary to study carefully the operative conditions of existing and projected institutions, in order to adequately determine the national demand.

Basic Social Capital in Terms of Installed Capacity

In addition to expansion of infrastructure services as part of the regionalization policy aimed to improve health services, the construction and equiping of hospitals and health care centers deserve special attention.

The construction of medical institutions must be planned acoring to the regional needs and socio-economic and geographic characteristics to maximize their coverage possibilities and to optimize resource allocations.

A NATIONAL HEALTH SYSTEM

Centralized Organization of Health Agencies — Public / *Private*

OBJECTIVE

Larger coverage

Emphasis on:
- Rural and deprived urban areas
- Mother and child care

INTEGRAL ASSISTANCE
- Health Promotion
- Health Protection
- Medical Care
- Rehabilitation

REGIONALIZATION
- Geographical Division
- General levels of assistance

I

MEDICAL ASSISTANCE

1. Mother and child medical assistance
   a) Reduction of maternity morbidity and mortality rates due to multiparturition, abortion and cervical-uterine cancer.
   b) Family planning
   c) Mother and child hygiene
   d) Reduction of infant morbidity and mortality rates through preventive medical assistance
   e) Preventive medical care for suckling infants and pre-school children (children under 5 years of age - 90%).
2. Medical assistance to the labor force (occupational med.)
   a) Prevention of work hazards and medical assistance to occupational accidents
   b) Physical rehabilitation and social readaptation
3. Epidemic control programs
4. Food and nutrition policies
   a) Oriented basically to the mother and child population group
   b) Nutrition multi-sector policies with special emphasis on the agriculture and education sectors
   c) Technological changes in the basic food production industry
   d) Informal education at home and formal school education

II

ENVIRONMENTAL HEALTH CONTROL MEASURES

a. Drinking water supply
b. Sewage and thrash disposal means
c. Provision of water supply lines and sewage system
d. Contamination or pollution control
e. Environment preservation
f. Preservation of renewable and non-renewable natural resources
g. Control of pests, insects, rodents and other animal hazards
h. Supervision of sanitary conditions and food preparation hygienic measures in private homes, public establishments and factories
i. Control and eradication of common diseases
j. Educational campaigns

LOGISTIC PROGRAMS

1. Planning: Consolidation of a unique health Planning Sub-System
2. Information: Improvement of the unique health information sub-system so that it will be able to provide enough criteria for its programs
3. Legislation: Institutionalization of the actions within the sector through legal formalities *that ensure the continuity* of the programs
4. Financing: Creation of a unique investment sub-system

COORDINATION OF THE SECTORS

Mechanisms:
a) Planning, technical and advisory committees
b) Agreements of contracts at regional or national level
c) Cooperative and operational funds
d) Community organizations
e) Coordination of international aid
f) Community education

ADVANTAGES

1. Delegation of functions to paramedical personnel
2. Facilitation of reference mechanisms among assistance levels
3. Balanced and coordinated development of urban and rural services
4. Design of specific regional programs
5. Facilitation of individual and family integral assistance

III

PLANNING OF - Training of Human Resources - Research

1. Human Resources Training
   a) Adaptation of curricula and programs to the country's needs
   b) Delegation of functions to auxiliary personnel
   c) Group work
   d) Characteristics of an appropriate technology and coordination of technical assistance
   e) Employment capacity
2. Research:
   2.1 Creation of a unique health research sub-system
   2.2 Stimulation of research in universities and in institutes of the public sector:
      a) Applied biosocial research
      b) Operational research
      c) Bio-medical research
      d) Socio-economic research
   2.3 Stimulation of research in universities:
      a) Performed by professors, students and health services
      b) Oriented to understand population conditions
      c) To define the appropriate transference of knowledge and technology
      d) Coordination of technical assistance

IV

INFRASTRUCTURE Planning, Organization and Administration

1. Complementary Resources:
   - Medicaments
   - First aid elements
   - Drugs
   - Vaccinations and serums
   - *Instrumental*

   a) Creation of a unique subsystem of supplies
   b) Supply control
      - production
      - *quality*
      - transportation
      - marketing
   c) Demand control
      - market
      - publicity

2. Traditional Resources:
   - Human
   - Financial
   - Physical infrastructure

   Optimal allocation and utilization:
   - expansion
   - administrative plans
   - interdisciplinary studies for determining location (techno-architectonic, bio-sociological, socio-economical, anthropological, geographical, etc.

   2.1 Creation of incentives for obtaining appropriate geographic distribution of personnel:
      a) Programs for scientific and technological up dating
      b) Adequate work conditions

3. Basic social capital in terms of installed capacity:
   a) Hospital development in agreement with needs of regionalization and available resources
   b) In coordination with urban and rural development plans especially intermediate cities.

RESEARCH ACTIVITIES

Knowledge about ongoing research projects, when faced by concrete research proposals, will allow the International Development Centre to:

a) Have the necessary criteria to avoid overlapping.

b) Have the necessary criteria to suggest the appropriate type of coordination between national agencies in order to enhance the usefulness of research proposals.

c) Detect whether the research projects respond to the areas defined by the sector policies in the research field.

d) Know which areas and sub-areas are not being attended.

The research activities analyzed were identified by means of:

a) An inventory prepared by COLCIENCIAS from information received from medical schools at the end of 1974, which includes research projects carried out in 1973 and those which are still in progress. The inventory identified 462 projects of which 164 (35.5%) have been recently completed and 298 (64.5%) are still in progress.

b) Research projects undertaken by the Asociación Colombiana de Facultades de Medicina (ASCOFAME) up until 1974, and

c) Research projects carried out by the Instituto Nacional para Programas Especiales en Salud (INPES) - organism adscribed to the Ministry of Public Health - up until 1973.

Investigations from the total list were selected and ordered according to those areas and sub-areas that were determined by the analysis from the official documents of health policy in Colombia. Out of this selection 207 projects were left, which classified by areas represented: 48.8% in the research area related to medical assistance; 29.4% in Area II, Environmental health control measures; 9.7% in Area III, Human resources training and research; and 12.2% in Area IV, Planning the infrastructure. Projects were not classified by strict criteria. They indicated that 54% of the analyzed research bear no relation with policy priorities.

During the second classification, only those projects that were more significant for the policy areas and sub-areas, were selected (Chart d). This second selection indicates that approximately 10% of the research bears a direct relation with policy areas. To this list, other research projects (10) performed by Ascofame and Inpes were added. Some of these are prior to 1973 but are mentioned because of their importance and influence in the planning process of health policies. 1/

Institutions doing research in the health sector:

a) Universities:

Antioquia
Caldas
Cartagena
Cauca
Javeriana
Nacional de Colombia
Colegio Mayor de Nuestra Señora del Rosario
Industrial de Santander
Valle
Atlántico
Pedagógica y Tecnológica de Colombia (Tunja)
Córdoba
Andes

b) Other institutions*

National Cancer Research Institute (INC)
National Health Special Programs Institute (INPES)
Colombian Association of Medical School Faculties (ASCOFAME)
Colombian Oil Company (ECOPETROL)

1/ In the Spanish version of this document, a list of the investigations and research projects classified under institutions and areas and sub-areas is included. However, we do not consider useful such a detailed account of this information for the English document. Moreover, all the information regarding capacity, resources and research activities from Ascofame and Inpes, considered the two most important institutions in research, after the universities, also appear in that document.

* Source: Document from Colciencias: "Study of the Scientific and Technological System of Colombia", Book I-II.

Toxicological Clinic (Clínica de Toxicología)
Military Academy (Academia Militar)
Nuclear Affairs Institute (Instituto de Asuntos Nucleares)
Institute of Agricultural Marketing (Inst. de Mercadeo Agropecuario)
Institute for the Development of Renewable Natural Resources (INDERE
National Planning Department (Depart. Nacional de Planeación)
Colombian Institute for Family Welfare (ICBF)
Interamerican Tropical Agricultural Centre (CIAT)
Agricultural Colombian Institute (ICA)
Public Administration School (Escuela de Administración Pública)
Colombian Culture Institute (Colcultura)

Chart a

RESEARCH PROJECTS IN PROGRESS AND ACCOMPLISHED DURING 1973-74

University	In Progress	Accomplished	Total
Antioquia	111	100	211
Caldas	8	-	8
Cartagena	5	2	7
Cauca	7	1	8
Javeriana	21	9	30
Ind. de Santander	1	-	1
Nacional	39	7	46
Colegio Mayor del Rosario	25	17	42
Valle	81	31	112
Total	298	164	462

Source: Colciencias - Inventory up to date (original questionnaires, 1974).

Chart b

RESEARCH IN PROGRESS AND ACCOMPLISHED (1973-74), BY DEPARTMENTS, DIVISIONS OR UNITS FROM THE MEDICAL SCHOOL FACULTIES

	Department	In Progress	Accomplished in 1973	Total
Universidad de Antioquia	General Medicine	65	31	96
	Biochemistry	3	5	8
	Pharmacology-toxicology	2	-	2
	Microbiology-parasitology	3	19	22
	Physiology	3	7	10
	Pediatrics and infant care	3	13	26
	Surgery	14	10	24
	Gynecology and obstetrics	8	5	13
	Morphology	--	10	10
	Total	111	100	211
Universidad de Caldas	Physiological sciences	4	-	4
	Gynecology and Obstetrics	4	-	4
	Total	8	-	8
Universidad de Cartagena	Preventive	3	-	3
	Biochemistry	2	-	2
	Physiological sciences	-	2	2
	Total	5	2	7
Universidad de Cauca	Morphology	1	-	1
	Physiological sciences	2	-	2
	Public Health	1	-	1
	Surgery	2	-	2
	Pediatrics	1	-	1
	Microbiology	-	1	1
	Total	7	1	8

Chart b.2

	Department	In Process	Accomplished in 1973	Total
Universidad Javeriana	Morphology	1	-	1
	Pharmacology	1	-	1
	Pathology	3	-	3
	Pediatrics	4	-	4
	General medicine	4	-	4
	Surgery	2	4	6
	Gynecology and obstetrics	3	2	5
	Preventive medicine	1	2	3
	Anesthesia	2	1	3
	Total	21	9	30
Universidad Industrial de Santander	Morphology-Pathology	1	-	1
	Total	1	-	1
Universidad Nacional de Colombia	Morphology	6	4	10
	Physiological Sciences	3	-	3
	Preventive medicine	1	-	1
	Ginecology and obstetrics	22	2	24
	Nutrition & dietetics	1	-	1
	General medicine	6	1	7
	Total	39	7	46
Colegio Mayor de Nuestra Sra. del Rosario	Preventive medicine	2	3	5
	Psychiatry	3	-	3
	Biochemistry	2	1	3
	X-Ray	7	4	11
	Pathology	1	1	2
	Endocrionology	3	1	4
	Physiology	3	2	5
	Urology-Surgery	3	4	7
	Endoscopy	1	-	1
	Surgery	-	1	1
	Total	25	17	42
Universidad del Valle	Microbiology	12	7	19
	Metabolic unit	13	2	15
	Morphology	5	4	9
	Gynecology & obstetrics	3	-	3
	Reproduction physiology	3	2	5

Chart b.3.

Department	In Process	Accomplished in 1973	Total
Endocrinology	1	-	1
Psychiatry	6	3	9
Nursing	3	1	4
General medicine	2	5	7
Pathology	3	-	3
Surgery	13	-	13
Physiological sciences	7	1	8
Pediatrics	7	-	7
Population research center - Anesthesiology	-	3	3
Total	81	28	109
TOTALS	298	164	462

Source: Colciencias - Inventory up to date (original questionnaires, 1974).

Chart c

RESEARCH IN THE UNIVERSITIES ACCORDING TO SCIENTIFIC DISCIPLINES

Universities / Scientific Disciplines	Antio	Caldas	C/gena	Cauca	Javer.	Nacion.	Rosar.	Ind. San.	Valle	Total of Projects accomplished or in progress
Anatomy	-	-	-	1	-	-	-	-	-	1
Anesthesiology	-	-	-	-	3	-	-	-	3	3
Cellular Biology	-	-	-	-	-	3	-	-	-	3
Biochemistry	4	1	2	-	-	-	1	-	4	12
Cardiology	16	-	-	-	-	1	-	-	-	17
Surgery	-	-	-	-	6	-	-	-	12	18
Arbobiliary surgery	1	-	-	-	-	-	-	-	-	1
Gastroenterological surgery	-	-	-	1	-	-	-	-	-	1
General surgery	2	-	-	-	-	-	-	-	-	2
Plastic surgery	13	-	-	-	-	-	-	-	-	13
Infant surgery	3	-	-	-	-	-	-	-	-	3
Human sytogenetics	-	-	-	-	-	-	-	-	3	3
Demography	-	-	-	-	-	1	-	-	2	3
Dermatology	1	-	-	-	-	-	-	-	-	1
Labor efficiency	-	-	-	-	-	-	-	-	1	1
Health education	-	-	-	-	-	1	-	-	3	4
Nursing	-	-	-	-	-	-	-	-	2	2
Entomology	-	-	-	-	-	-	-	-	2	2
Epidemiology	13	-	1	-	-	-	-	-	2	16
Endocrinology	3	-	-	1	-	3	4	-	2	13
Pharmacology	1	2	-	1	-	2	1	-	-	7
Physiology	3	1	-	-	-	-	1	-	3	8
Reproduction physiology	-		-	-	-	-	-	-	2	2
Homeostatic physiology	-	-	-	-	-	2	-	-	-	2
Human physiology	-	-	-	-	-	1	-	-	-	1
Physical pathology	-	-	-	-	-	-	1	-	-	1
Gastroenterology	10	-	-	-	-	1	1	-	1	13
Genetics	1	-	-	-	-	7	-	-	-	8
Gynecology & Obstetrics	8	-	-	1	5	22	-	-	-	36
Hemathology	20	-	-	-	-	-	-	-	2	22
Histology	-	-	-	-	-	-	-	-	1	1
Inmunology	7	-	-	1	-	-	-	-	2	10
Community medicine	-	-	-	-	-	-	1	-	-	1
General medicine	-	-	-	-	3	-	-	-	-	3
Internal medicine	11	-	-	-	3	-	1	-	3	18
Nuclear medicine	15	-	-	-	-	-	-	-	-	15
Preventive medicine	-	-	1	-	-	-	-	-	-	1

Chart c.2

Universities / Scientific Disciplines	A.	Cal das	C/ gena	Cauca	Javer.	Nacio.	Rosari	Ind. San.	Valle	Total of Projects accomplished or in progress
Microbiology	3	-	-	-	-	1	-	-	1	5
Mycology	-	-	-	-	-	-	-	-	7	7
Morphology	-	-	-	-	1	-	-	-	5	6
Morpho-physiology	-	-	-	-	-	-	-	-	3	3
Nephrology	1	-	-	-	-	-	-	-	-	1
Neonatal science	4	-	-	-	-	-	-	-	1	5
Preumology	-	-	-	1	1	-	-	-	-	2
Neurosurgery	2	-	-	-	-	-	-	-	-	2
Neurology	-	-	-	-	-	-	1	-	3	4
Neurophysiology	-	-	-	-	-	-	1	-	-	1
Nutrition	-	-	-	-	-	-	-	-	4	4
Obstetrics	-	2	-	-	-	-	-	-	-	2
Ophthalmology	2	-	-	-	-	-	-	-	-	2
Osteopathology	4	-	-	-	-	-	-	-	-	4
Parasitology	9	-	1	-	-	-	-	-	4	14
Pathology	-	-	-	-	3	1	3	-	3	10
Pediatrics	4	-	-	1	4	-	-	-	8	17
Perinatal science	-	2	-	-	-	-	-	-	3	5
Psychiatry	-	-	-	-	1	-	4	-	11	16
Chemical Physiology	3	-	-	-	-	-	-	-	-	3
X-Ray	-	-	-	-	-	-	10	-	1	11
Rheumatology	12	-	-	-	-	-	-	-	-	12
Public health	1	-	-	-	-	-	4	-	-	5
Toxicology	-	-	1	-	-	-	-	1	-	2
Urology	-	-	-	-	-	-	7	-	-	7
Peripherical vascular	1	-	-	-	-	-	-	-	-	1
Virology	1	-	-	-	-	-	-	-	1	2
No information	32	-	-	-	-	-	1	-	-	33

Source: Inventory up to date (original questionnaires, 1974)

Chart d

SUMMARY OF RESEARCH ACTIVITIES RELATED TO THE HEALTH POLICIES

1

MEDICAL ASSISTANCE

a) Morbidity
- National morbidity survey
- Certain regional research projects

b) Mother and Child Care
- Studies on hospital abortions and out-patients abortions
- Maternal-fetal risks
- Gynecological cancer
- The effects of malnutrition

c) Occupational Health Programs

d) Mental Health

e) Nutrition
- Diagnosis
- Control of malnutrition
- Physical capacity

f) Health Services
- Experimental studies
- Community participation
- Comprehensive rural development
- Utilization of services
- Simplified surgery

g) Relationship between Certain Demographic Variables and Health
- Migration and health

2

ENVIRONMENTAL HEALTH CONTROL

a) Studies on Specific Diseases
- Chagas' disease
- Leishmaniasis
- Uncinariasis
- Coccidioidomycosis
- Trypanosomiasis

b) Environmental Health Measures
- Sanitation studies in certain rural communities
- Atmospheric pollution

3

TRAINING OF HUMAN RESOURCES AND RESEARCH

a) Human Resources Studies in Health Sciences, including Odontology

b) Studies on the Quality of Medical Attention

c) Assessment of Medical Education

d) Projections and Demand Forecast for Medical and Odontological Services and Human Resources in the Country

4

INFRASTRUCTURE PLANNING

a) Physical Resources
- National hospital survey

b) Planning
- General studies on health planning

c) Policies
- Research on health policies

d) Administration
- Administrative analysis on certain hospital centres
- Financing of the health sector

e) Models
- Studies on models for the delivery of health services

HEALTH RESEARCH NEEDS

RESEARCH NEEDS

Introduction

As we explained in the Foreword, Colombia is at the moment concerned with producing a diagnosis of the present research situation in health which includes an inventory of activities, as well as the identification of the needs of research. This is one of the first actions to be undertaken by the national research sub-system which was created recently with the intention of centralizing all those efforts concerning research on health. The following is a synthesis of this action.

The national sub-system of research on health is composed of: the Public Health Ministry as its central nucleus, which is being represented through the General Board of Research. It has an advisory board 1/ where the National Planning Department, Colciencias (Fund for Science and Technology), the OPS (Pan American Health Organization), the IIT (Institute for Technological Research), the Ministry for Education, and INPES (National Institute for Special Health Programs) have seats. The first two agencies have had until now the role of screening research projects.

The executory units of the research sub-system are: The institutions which undertake research porjects related to health and belong to the sectors of health, education, mixed or others. Within these institutions we re-included those belonging to the private sector, mainly doing research on population; however at the Health meeting that took place from the 21st to the 25th of April, 1975, the population area was suppressed from the health sector. For this reason these private institutions are no longer included as research institutions in the health sector.

Below we include a list of the agencies belonging to each sector.

1. Health: We have in this sector two groups of institutions:

   a) Those abscribed to the Health Ministry:

      - Instituto Nacional para Programas Especiales de Salud, INPES (National Institute for Specialized Health Programs).

1/ Created by law since April of last year, to serve as advisory consultant to the Ministry, in everything related to research in health sciences. It was proposed at the last National Health Meeting to include some representation from the health sciences, i.e., Ascofame; this is being considered. It will start working in June 1975.

- Instituto Colombiano de Bienestar Familiar, ICBF (Colombian Institute of Family Welfare).

- Instituto Nacional de Cancerología, INC. (National Institute of Cancer Research).

- Fondo Nacional Hospitalario, FNH (National Hospital Fund).

- Instituto Nacional de Fomento Municipal, INSFOPAL (National Institute of Municipal Development).

- Instituto Colombiano de los Seguros Sociales, ICSS (Colombian Social Security Institute).

b) Those that are part of the national health system, such as sectional health services in each department of the country.

2. Education:

- Universities (Odontology, Nursing, Medicine Faculties)

- Instituto Colombiano para el Fomento de la Educación Superior, ICFES (Colombian Institute for the Development of University Education).

Other:

- Instituto Colombiano de Pedagogía, ICOLPE (Colombian Pedagogical Institute).

- Servicio Nacional de Aprendizaje, SENA (National Training Service).

3. Mixed Sector: That sector composed of health, education and other private sectors:

- Centro de Educación en Administración de Salud, CEAS (Education Center for Health Administration).

- Escuela Nacional de Salud Pública, ENSAP (National School of Public Health).

- Asociación Colombiana de Facultades de Medicina, ASCOFAME (Colombian Association of Faculties of Medicine).

4. Other: Includes all those institutions different from health in any of the other sectors of the nation which carry out research in the field of health.

The General Board of Research, according to its assigned basic functions, is in charge of setting the norms, coordinating, supervising, evaluating, advising and registering the investigations, as well as keeping the records of the respective information up to date.

All the institutions mentioned are submitted to the coordination and norms of the Board; they have a direct relationship with the Ministry of Health regarding the norms, and with both, the Ministry and the National Planning Department with regard to coordination.

The functions of supervision, evaluation and advice will be offered as a service to the registered institutions, to those receiving grants, donations and aid or support, coming from the national budget, and also to those that acquire an international obligation through the National Planning Department or the Ministry of Health. Advice can be given to any institution that request it.

The institutions carrying out investigations or wanting to do research in health must have one or several units which will be called internal executory units. These must have an administrative structure, human resources and materials or the possibility of acquiring them. Each institution must also have a research committee with varying functions that agree with the sector they belong to, whether it is the health sector or any other.

In order to fulfill what is being planned, a policy and research objectives have been defined. CIID may select some of these as prioritary criteria for the analysis of those research projects submitted to it. Specifically, the first two items of the research policy, which are:

1. To encourage and favor those basic and applied investigations in health which deal with the scientific necessities and demands due to the health conditions and socio-economic development of the country.

2. To strengthen some of the fields being investigated recently and to begin studies in others that, up to now, have not been sufficiently explored, with the purpose of having them serve as the support of the formulation, continuity or modification of the government policies on health. 1/

In addition, the Health Ministry has prepared some criteria on the determination of priorities for the analysis of projects, which CIID may use for the analysis of a specific research project if it falls into the policy areas already studied. We present a synthesis of these criteria. 2/

1. Usefulness

An investigation is considered useful as long as its results contribute to:

- Fix, support and modify health policies.
- Make decisions related to the enforcement of the policy.
- Provide basic elements that allow for the support of the planning of the health services.
- Incorporate methods, procedures and the results in medical teaching or other related subjects into other health science matters.
- Obtain new knowledge or increment considerably existing knowlege.

2. Application

This criterion has to do with the possibility of the application of the investigation to the solution of problems at a short, intermediate or long range term, and with the degree of difficulty in the application of the results.

1/ Documents from the Health Ministry, "A Critical Area of Research", presented at the First National Meeting for the Organizational Plan of the Health Sector, April 25, 1975.

2/ Op. cit.

3. Benefit

It is determined by several factors:

a) Their contribution to the solution of problems that exert pressure in communities as a whole and not in an isolated or individual form. It is also beneficial for the community to promote studies that tend to orient and use at its maximum capacity its resources and efforts.

b) Their consideration of that part of the population exposed to hazards. The research project must contribute to solve health problems in small or large population centers which are vulnerable to specific types of disease.

c) Their dealing with health problems whose social impact is of a considerable range, as for example, health problems originated by venereal disease.

d) Their contribution to the advancement of science and technology. In this sense, the investigations that lead to new knowledge, such as the design of new techniques and procedures in health are of primary importance.

4. Costs

The cost of the research project must be considered so as to determine its priority. They are classified as:

a) Low costs - inferior to 500,000

b) Intermediate costs - between 500,000 and 2,000,000

c) High costs - more than 2,000,000

5. Dependency

It exists whenever a study requires of other investigations. Three situations must be considered:

a) Complementary: Other investigations being done or in process.

b) Independent: Those that have no relationship with other investigations being done or in process.

c) Dependent of other projects not undertaken yet. Those whose foundations must be supplied by the results obtained from a previous project.

Once these criteria are applied, proceeds the study of the technical and financial feasibility of the project by the committee assigned to this task within the research sub-system.

The above description shows that Colombia has advanced considerably in its efforts to define research needs within the health sector.

The next step will be the design of a research program on a short term basis, after a consultation with all personnel holding decision power at the different levels of the national health system.

Based on this specific action, CIID had decided to postpone its evaluation meeting with "key persons" in charge of research within the health sector until having new information with which we can compare our results regarding found research needs.

Detected Research Needs

In this chapter the research requirements drawn from official documents and interviews carried out with various health officials in the country are set down.

These have been classified under the different areas found in the government document on health policies in Colombia. (See annexed chart)

I Medical Assistance

Research on regional morbidity to rationally plan regional health care.

Research on simplified medical assistance based on delegation of functions on para-medical personnel.

Research on mental health as part of comprehensive care furnished to the individual, the family and the community.

Research on medical assistance to mother and child population group.

Research on child mortality and morbidity.

Occupational medicine - medical assistance to the labor force:

a) Research on professional risks.

b) Research on the effects resulting from diseases brought on by certain occupations for the health and other sectors.

Epidemiology

Research on control of diseases which can be eradicated or controlled including: endemic diseases, tropical diseases, gastrointestinal infectious diseases, respiratory and cardiovascular diseases.

Nutritional policy

a) Research projects on diagnosis of different degrees of malnutrition, especially among the mother and child groups, as well as possible consequences.

b) Research of a general nature in sectors other than health, food on production, productivity, conservation, transportation, marketing and technology, as well as enrichment of existing nutrients.

II Environmental Health Control Measures

Research on environmental health measures:

a) Research on water supply, purification and distribution.

b) Research on waste disposal, transportation and recycling.

c) Research on excreta disposal.

Ecologic research:

a) Research on atmospheric, soil and water pollution and means to control it.

b) Operational research on preservation of natural resources.

Research on pest control:

a) Biological control

b) Effects of pesticides

III Training of Human Resources and Research

Evaluation on current medical education, extending into other health services.

Evaluation on curricula models adjusted to professional training for basic health care.

Evaluation of training comprising social sciences for all health personnel.

Research to identify the needs and absorption capacity of trained personnel in the health sector.

Evaluation on the national internship plan.

Research on technology transfer and external dependency in the scientific techniques which need to be applied to the health field.

IV. Infrastructure Planning

Research projects on community organization, communication and participation throughout the various planning and implementation stages in the field of health.

Cost-benefit analysis on investments in infrastructure, measured in terms of different attainable health levels, in order to formulate and plan investment policies.

Cost-benefit analysis on health actions to bring about ootimum improvement.

Cost-benefit analysis in terms of health of investments made in other sectors which would allow integrating health policies to overall development policies.

Broad investigations on financing for the health sector, including an analysis of the population's capacity to bear the financial brunt of the health services they require.

Diagnostic research on the geographical distribution of human and material resources in order to formulate distribution policies.

Research projects to define criteria whereby to decide on the geographical location of health services (diagnostic research).

Diagnostic research projects, with sampling techniques, to assess the present regional distribution of services.

Research on demand (real, felt and unsatisfied) to evaluate the present utilization of existing resources and to plan regional complementation.

Research on the organic structure, and operation, of the large hospital centres.

Initial Ranking of Priorities

At this stage of the Colombian case-study, a meeting with the national control group is being planned for the end of April, in order to evaluate the detected research needs.

In the meantime, the health and population division representative at LARO, based on his experience and knowledge of the country, has elaborated a tentative summary of those needs which, in his view, represent a first priority for the country.

I. Medical Assistance Area

Research about morbidity and about simplified medicine, based on delegation functions, particularly in relation with mother and child care.

II. Environmental Health Control Measures Area

Research about drinking water supplies.

III. Training of Human Resources and Research Area

Evaluative research on curricula and development of experimental teaching models.

IV. Infrastructure Planning Area

Research projects on community participation in the planning and implementation of health projects, and

Evaluative research on demand of services and about regionalization.

RESEARCH NEEDS IN RELATION TO NATIONAL HEALTH POLICIES

I-MEDICAL ASSISTANCE	ENVIRONMENTAL HEALTH II-CONTROL MEASURES	TRAINING OF HUMAN RE- III-SOURCES AND RESEARCH	INFRASTRUCTURE IV-PLANNING
-Research on regional morbidity to rationally plan regional health care (1) -on simplified medical assistance based on delegation of functions on para medical personnel (1) -on mental health -on medical assistance to mother and child population group -on child mortality and morbidity -on professional risks -on the effects resulting from diseases brought on by certain occupations for the health -on control of diseases -on different degrees of malnutrition -on food production, conservation, marketing and technology (1)	-Research on water supply, purification and distribution -on water disposal, transportation and recycling -on excreta disposal -on atmospheric, soil and water pollution and means to control it -operational research on preservation of natural resources -on Biological pest control -on effects of pesticides	-Evaluation on current medical education -evaluation on curricular models -evaluation on training comprising social sciences for all health personnel -to identify the needs and absorption capacity of trained personnel in the health sector (1) -evaluation on the national internship plan -on technology transfer and external dependency in the scientific techniques which need to be applied to the health field (1)	-Projects on community organization, communication and participation throughout -cost-benefit analysis on investments in infrastructure, in terms of different attainable health levels -cost-benefit analysis on health actions to bring optimum about improvement -cost-benefit analysis in terms of health of investments made in other sector which would allow integrating health policies to overall development policies -on financing for the health sector and analysis of the population's paying capacity of services (1) -on the geographical distribution of human and material resources (1) -to define criteria whereby to decide on the geographical location of health services (1) -evaluation of the regionalization process taking place -on demand (real, felt and unsatisfied) (1) -on the organic structure and operation of the large hospital centres
-About morbidity (2) -about simplified medicine, based on delegating functions particularly in relation with mother and child care (2)	- Research about drinking water supplies (2)	- Evaluative research on curricula, and development of experimental teaching models (2)	-Research projects on community participation in the planning and implementation of health projects (2) -Evaluative research on demand of services (2) -Research of Regionalization (2)

(1) Research needs stated as most important throughout interviews and documents.

(2) Laro's initial judgement on research priorities for the country (previous to national control group meeting).

ANNEX

DEMOGRAPHIC FEATURES OF COLOMBIA

Among all the possible forms for establishing the relationship between demography and health, the most useful - if not the only possible - analyzes demography as an independent variable which affects health due to the fact that demography gives specific characteristics to the population.

a. The first characteristic of the Colombian population is its rapid growth (See Table 1). According to census data and estimations it is considered that between 1916 (5.6 millions) and 1991 the population will double three times: the first doubling in a period of 33 years and the second and third in 21 periods up to 44.4 million inhabitants. Of course, this increase differs in the various regions since particular socio-economic factors determine birth rate and migratory movements. This accelerated growth rate is directly related with the health conditions and the effected policies for the sector.

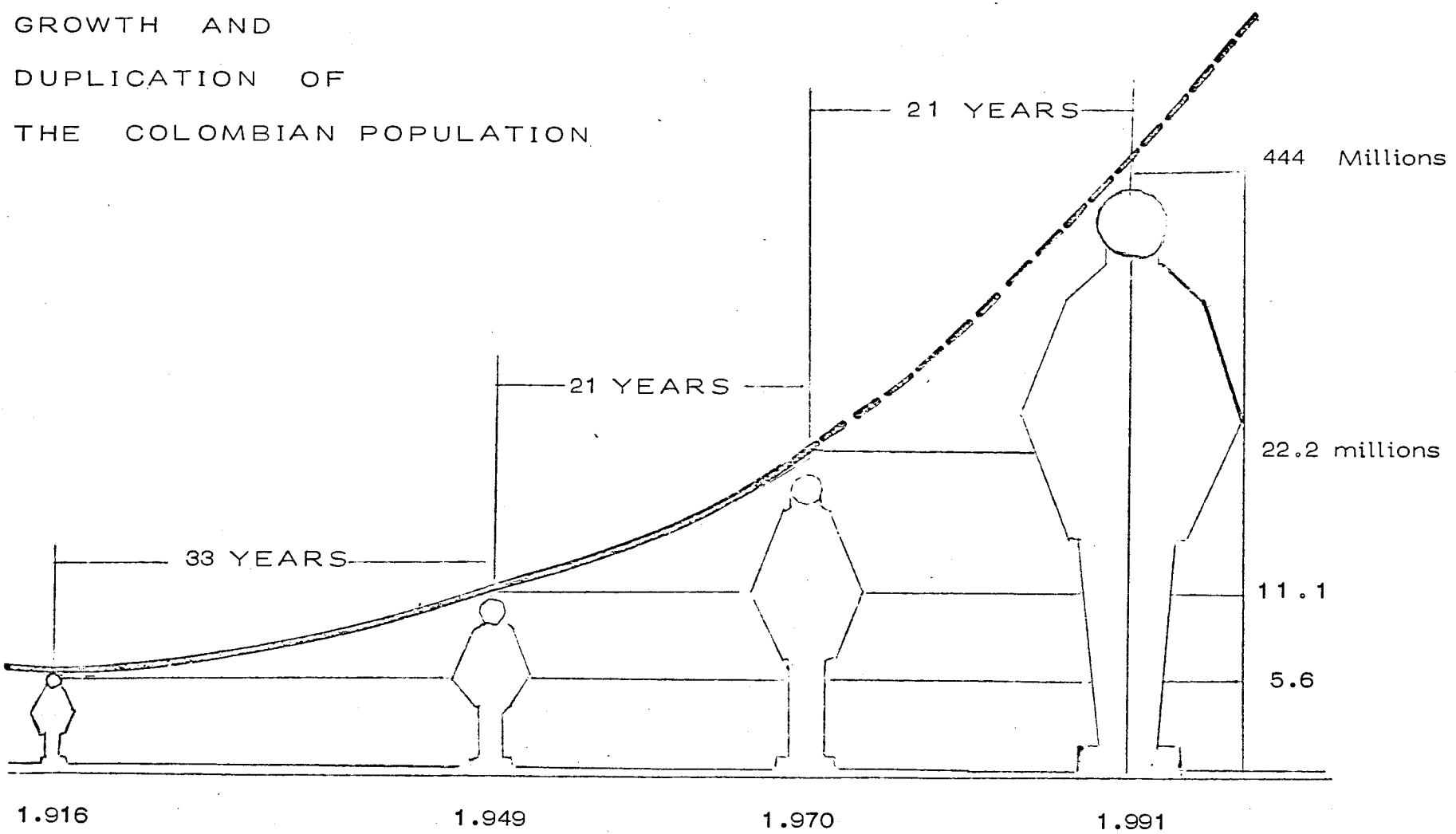
b. The country's vital statistics are underestimated due to serious recording defects (See Table 2). For instance, the birth rate is calculated as 31.4 births for every 1,000 inhabitants (See annexed table). However, other institutions (Ascofame, Cepal, OEA, etc.) estimate values which oscilate between 40.0 and 47.3 births for every thousand inhabitants. The general fertility rate shows this fact more clearly; 213.2 births annually for every 1,000 women of child-bearing age (15-49 years) for 1964.

c. The non-registration of mortality is even higher than that of birth. However, it is possible to notice a rapid decline in the mortality rate (see Tables 2, 3, 4A, 4B) from 10.4% in 1963 to 8.3% in 1971, due in part to the lowering of infant mortality (See Tables 2, 4, 4A, 4B) and an improvement in general health conditions.

d. The age structure shows a dominate increase in the less than 15 years old/age group (Tables 5 and 6) which comprises 47.6% of the total population in 1971. This fact increases the rates of demographic dependence.

e. The migratorial movements indicate, on the one hand, the tendency toward an urban increase proportionally greater than the rural, and on the other hand, the tendency for this increase to be concentrated in the major urban areas.

Table No. 1



Source: CELADE," BOLETIN DEMOGRAFICO" AÑO 2 # 4 , SANTIAGO DE CHILE, July 1.969

Table No. 2

VITAL STATISTICS

COLOMBIA
(1963-1971)

	1963	1964	1965	1966	1967	1968	1969	1970	1971
Total population	16,941,130	17,484,508	18,043,342	18,620,034	19,215,158	19,829,304	20,463,078	21,117,109	21,791,818
Births	865,287	674,525	663,816	663,632	669,978	668,051	671,843	676,687	683,192
Birth rate per 0/00 inhabitants	393	386	368	356	349	33.7	32.8	32.0	31.4
Rate of population growth	2.23	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
Deaths	176,698	175,349	178,372	174,712	179,676	178,474	179,581	180,017	181,845
Death rate per 0/00 inhabitants	10.4	10.0	9.9	9.4	9.4	9.0	8.8	8.5	8.3
Maternal deaths	1,636	1,712	1,442	1,595	1,615	1,558	1,487	1,656	1,498
Rate of maternal death	2.5	2.5	2.2	2.4	2.4	2.3	2.2	2.3	2.2
Death of children less than 1 year old	58,695	56,169	55,502	53,088	52,470	50,546	49,361	47,627	46,363
Infant mortality rate*	88.2	83.2	83.8	80.0	78.3	76.0	73.3	70.3	67.9
Percentage of deaths of children less than 1 year old	33.2	32.0	30.7	29.7	29.2	28.3	27.4	26.4	25.5

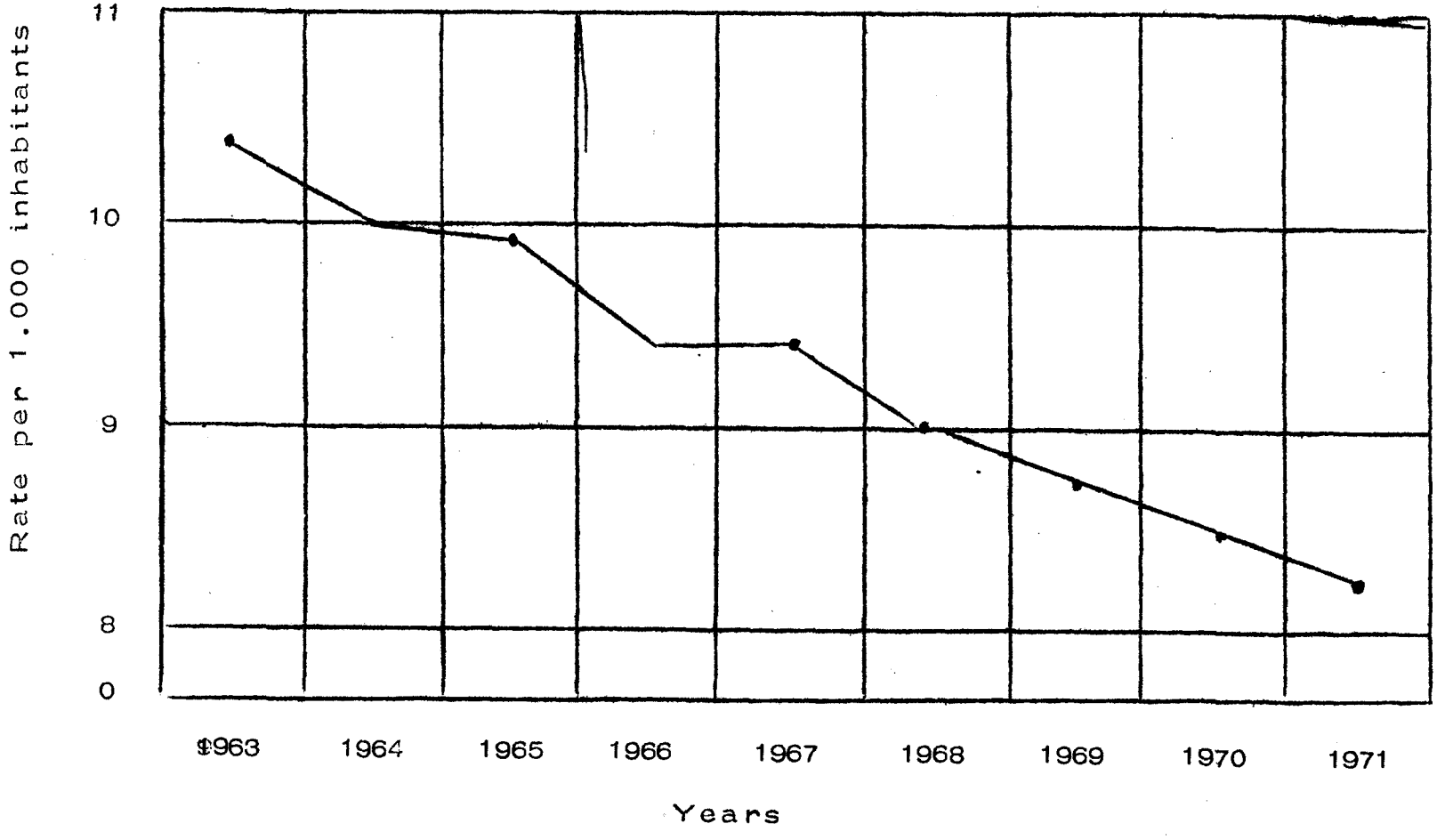
Source: Diagnostic Unit - Planning Office - Health Ministry

* Deaths of children less than one year old per 1,000 live births

Table No.3

TREND OF GENERAL MORTALITY

COLOMBIA - 1963 - 1971

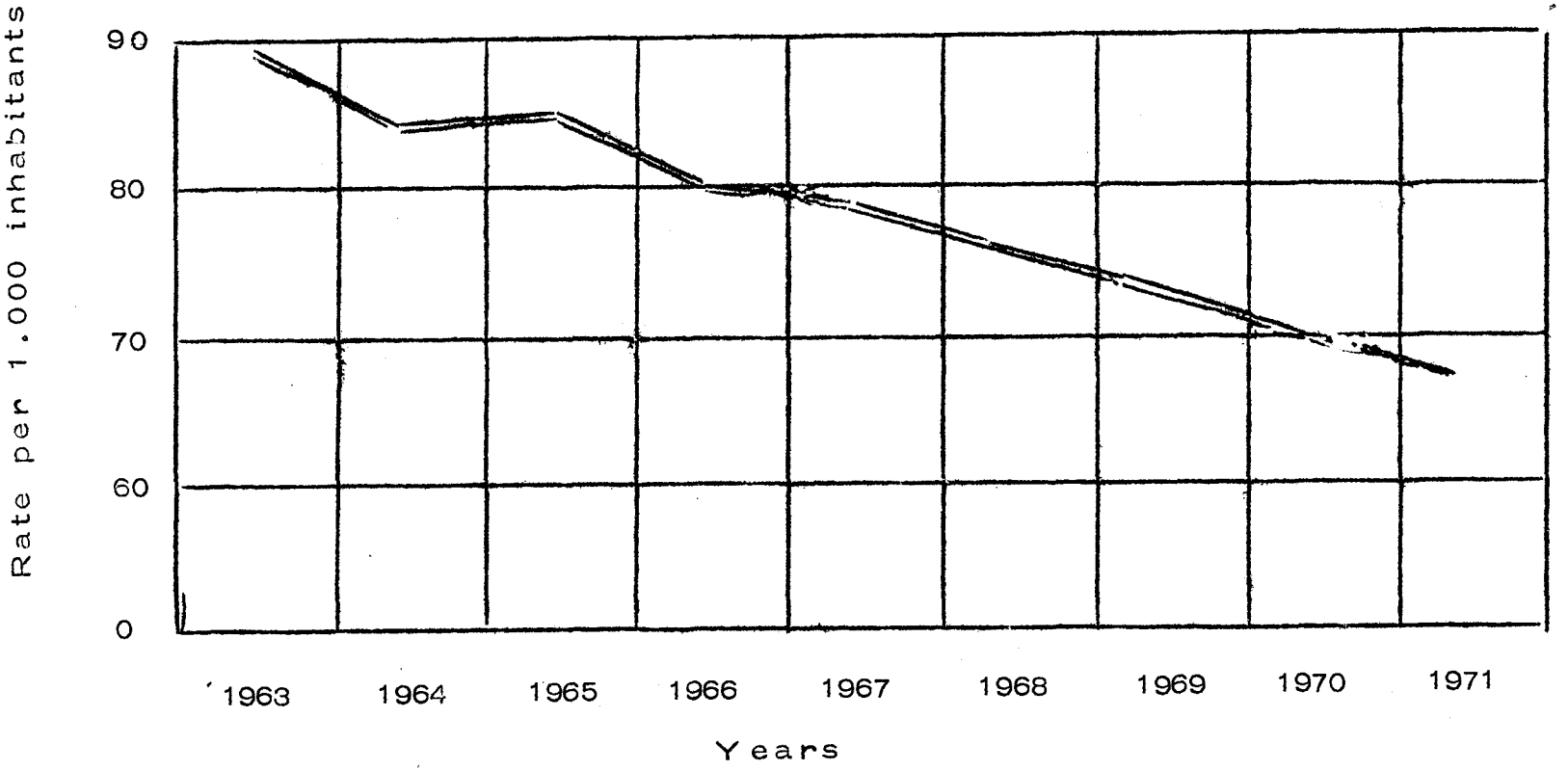


Source: Planning Office - Health Ministry

Table No. 4

TREND OF INFANT MORTALITY

COLOMBIA - 1963-1971



Source: Planning Office - Health Ministry

TABLE No. 4-A

PERCENTAGE DISTRIBUTION OF THE POPULATION BY AGE GROUPS

COLOMBIA 1971

Children 1 year old	1-4 years	5 years and over	Total
849.881	3.072.646	17.869.291	21.791.818
3.9%	14.1%	82.0%	100%

Source: Planning Office - Health Ministry

TABLE No. 4-B

PERCENTAGE DISTRIBUTION OF GENERAL MORTALITY BY AGE GROUPS

COLOMBIA 1971

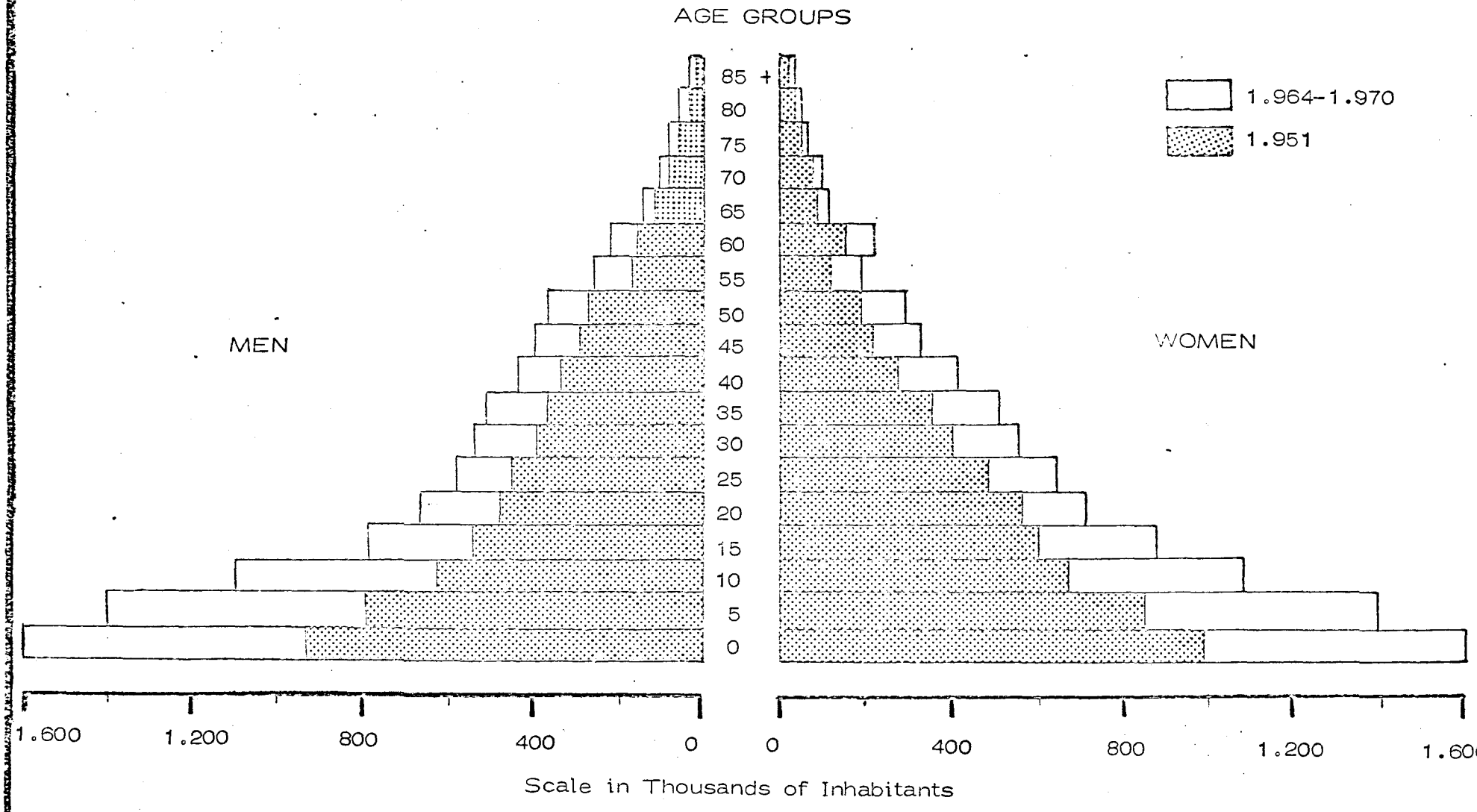
Children 1 year old	1-4 years	5 years and over	Total
49.161	28.307	102.107	179.581
27.4%	15.8%	56.8%	100%

Source: Planning Office - Health Ministry

Table No. 5

AGE PYRAMID OF COLOMBIAN POPULATION

(CENSUS OF 1951 AND 1964 (EQUIVALENT*TO 1970))



* It refers to composition by age and sex

TABLE No. 6

POPULATION BY AGE AND SEX GROUPS

COLOMBIA

1971

Age Groups	Group Percentage*	Men	%*	Women	%*	Total
Less than 1 year	3.9	430,040	50.6	419,841	49.4	849,882
1 to 4 years	14.1	1,554,759	50.6	1,517,887	49.4	3,072,646
5 to 14 years	29.6	3,263,891	50.6	3,186,487	49.4	6,450,370
15 to 49 years	42.8	4,380,157	47.1	4,924,950	52.9	9,305,107
50 and over	9.6	891,921	42.2	1,221,885	57.8	2,113,806
TOTAL	100.0	10,520,768	48.3	11,271,050	51.7	21,791,816

Source: Planning Office - Health Ministry

* Percentages according to Health Ministry Statistics

TABLE No. 7

TEN PRINCIPAL CAUSES OF DEATH

COLOMBIA
1969

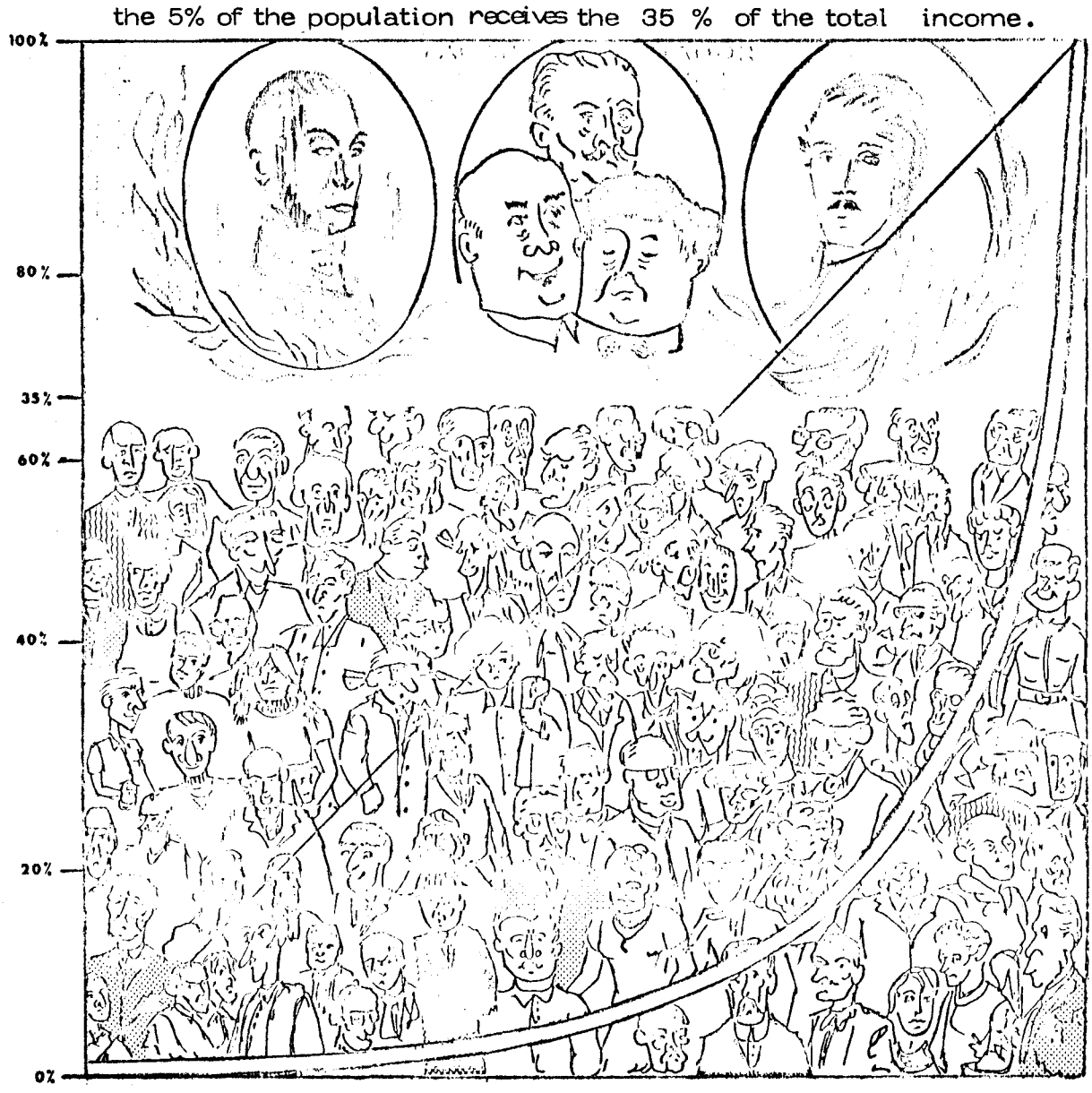
ORDER	CAUSE OF DEATH	Number of Deaths*	%
1	Enteritis and other diarrheic illnesses	19,807	11.0
2	Pneumonia (excepting virus pneumonia)	12,992	7.2
3	Heart illnesses, other forms	10,221	5.8
4	Bronchitis, emphysema, asthma	9,317	5.3
5	Ischemic illnesses of the heart	7,637	4.2
6	Cerebrovascular illnesses	6,957	3.9
7	Avitaminosis and other nutritional deficiencies	5,960	3.3
8	Anoxic and hypoxic diseases not classified in another part	4,040	2.2
9	Malignant tumors of other areas and of non-specified areas	3,745	2.1
10	Tuberculosis of the respiratory system	3,277	1.8
11	Remainder of illnesses	95,625	53.2
	TOTAL DEATHS	179,531	100.0

Source: Planning Office - Health Ministry

* Calculation base; mortality tabulation 1969 National Statistics Department.

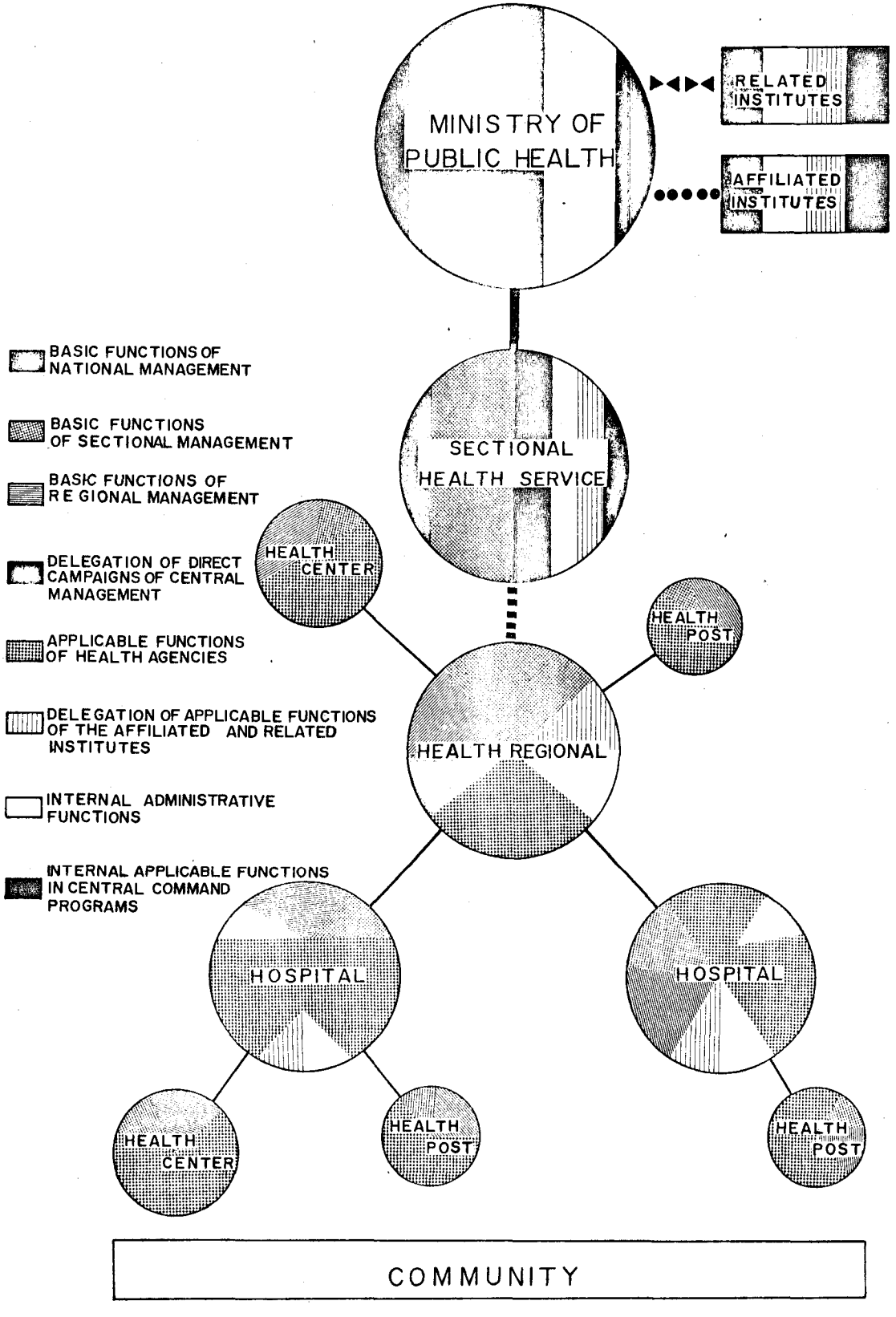
TABLE No. 8

INCOME DISTRIBUTION IN COLOMBIA.



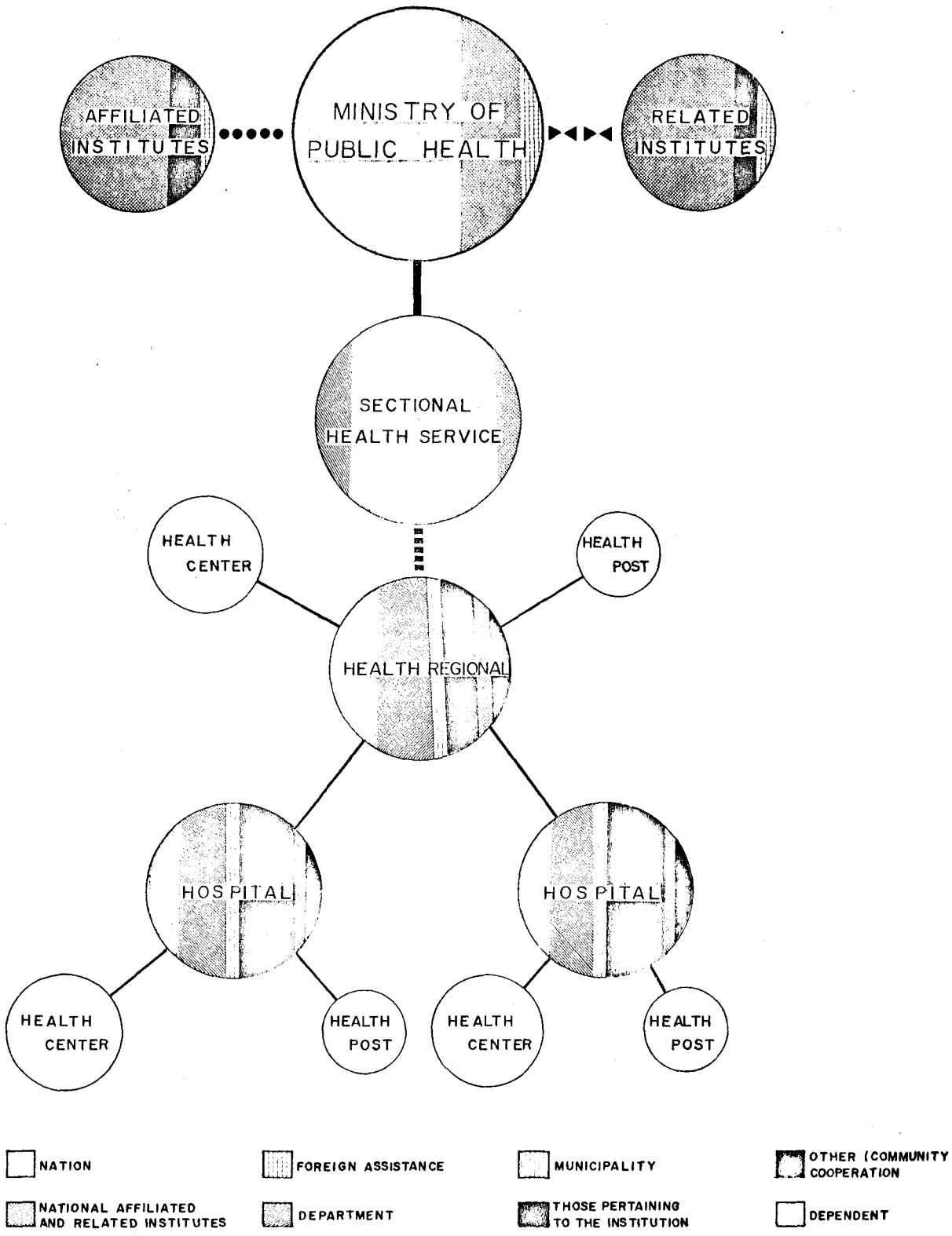
No. 9

NATIONAL HEALTH SYSTEM
LOCATION AND SCOPE OF FUNCTIONS



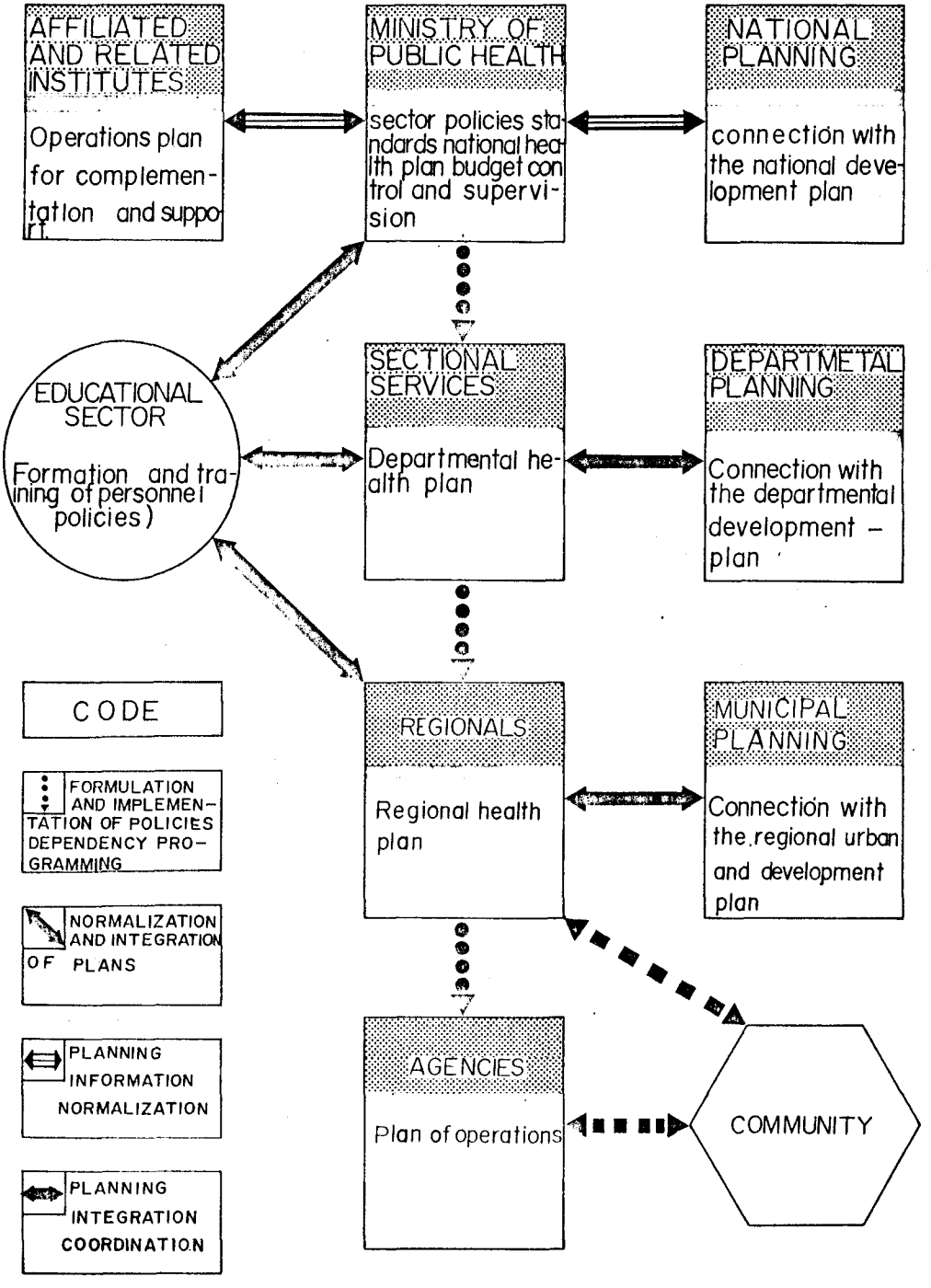
No. 10

NATIONAL HEALTH SYSTEM
SOURCES OF FINANCING



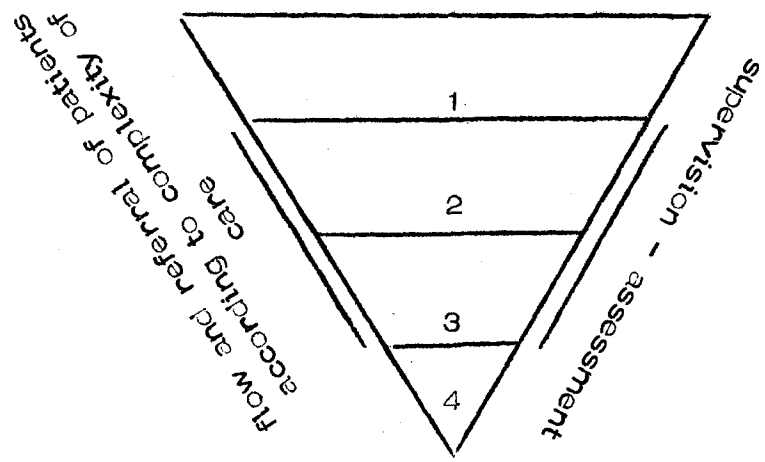
No. 11

NATIONAL HEALTH SYSTEM
INTERSECTORIAL RELATIONS



No. 12

LEVELS OF REGIONALIZATION



1. Rural level 4,067 localities
   8,568,122 inhabitants*
   Hamlets, police stations, villages, towns of less than 1,500 inhabitants

2. Local level (A and B) 329 localities
   1,932,216 inhabitants*
   Towns, of more than 3,000 inhabitants.

3. Regional level (A and B) 85 localities
   2,924,831 inhabitants*
   State capitals, main centers of programmed areas.

4. University level - 7 localities
   3,681,282 inhabitants*
   Cities with medical facilities

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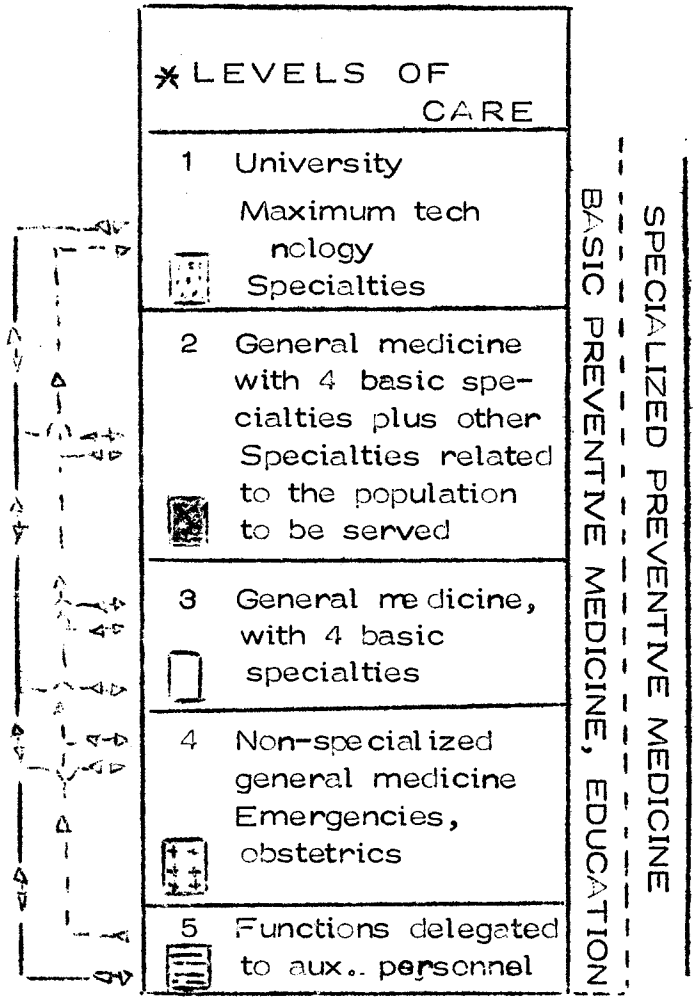
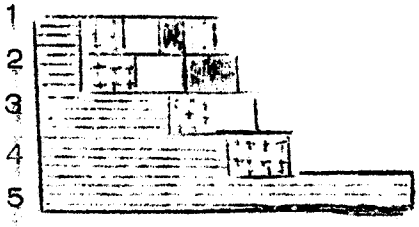
* According to 1964 census data.

Table No. 13



CARE COMPLEXITY



= Delegated functions that must be present at all other levels

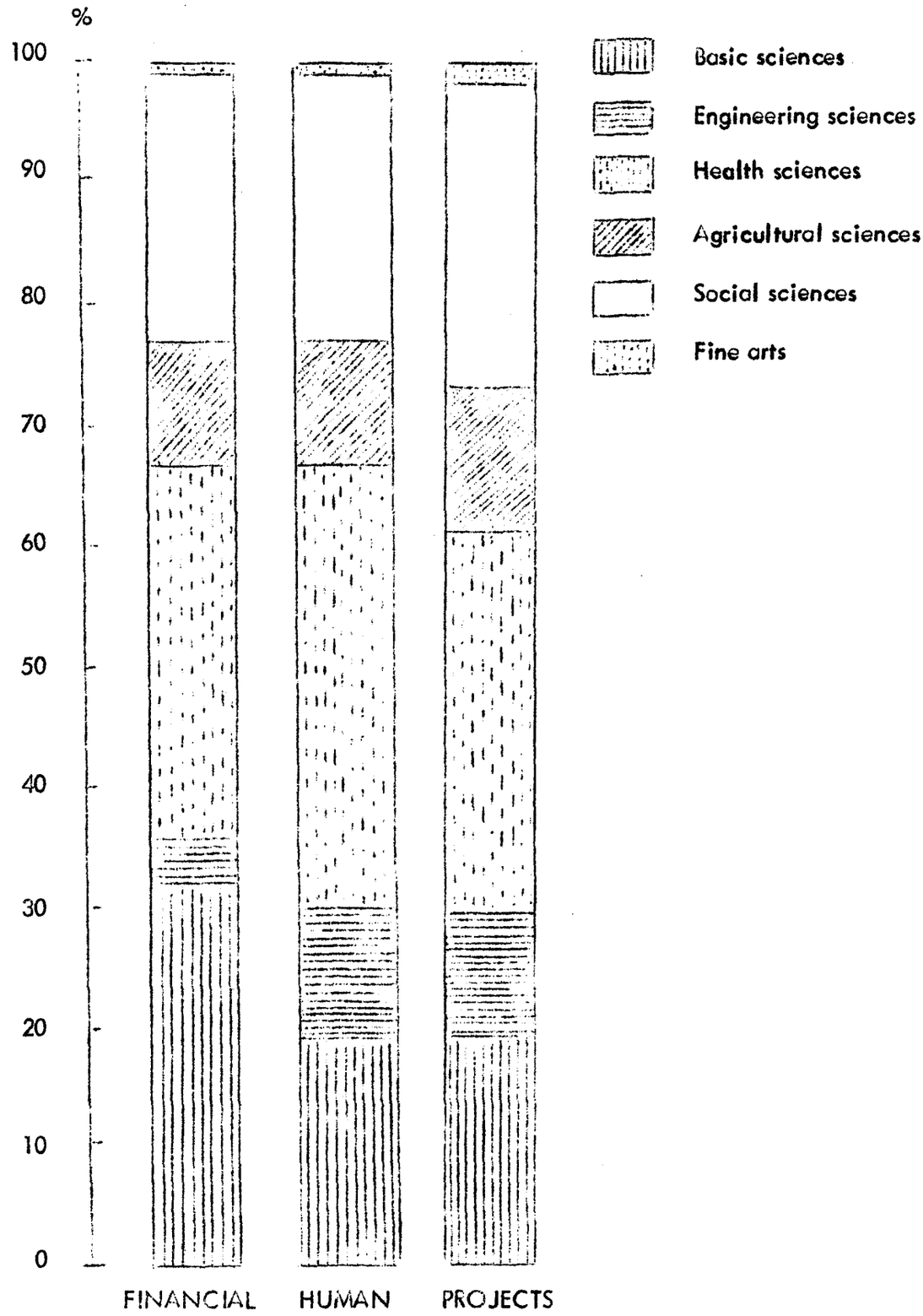
--- = Flow and reference of patients

—— = Movement and salary scale of personnel

* The level is defined in technological terms

Table No. 14

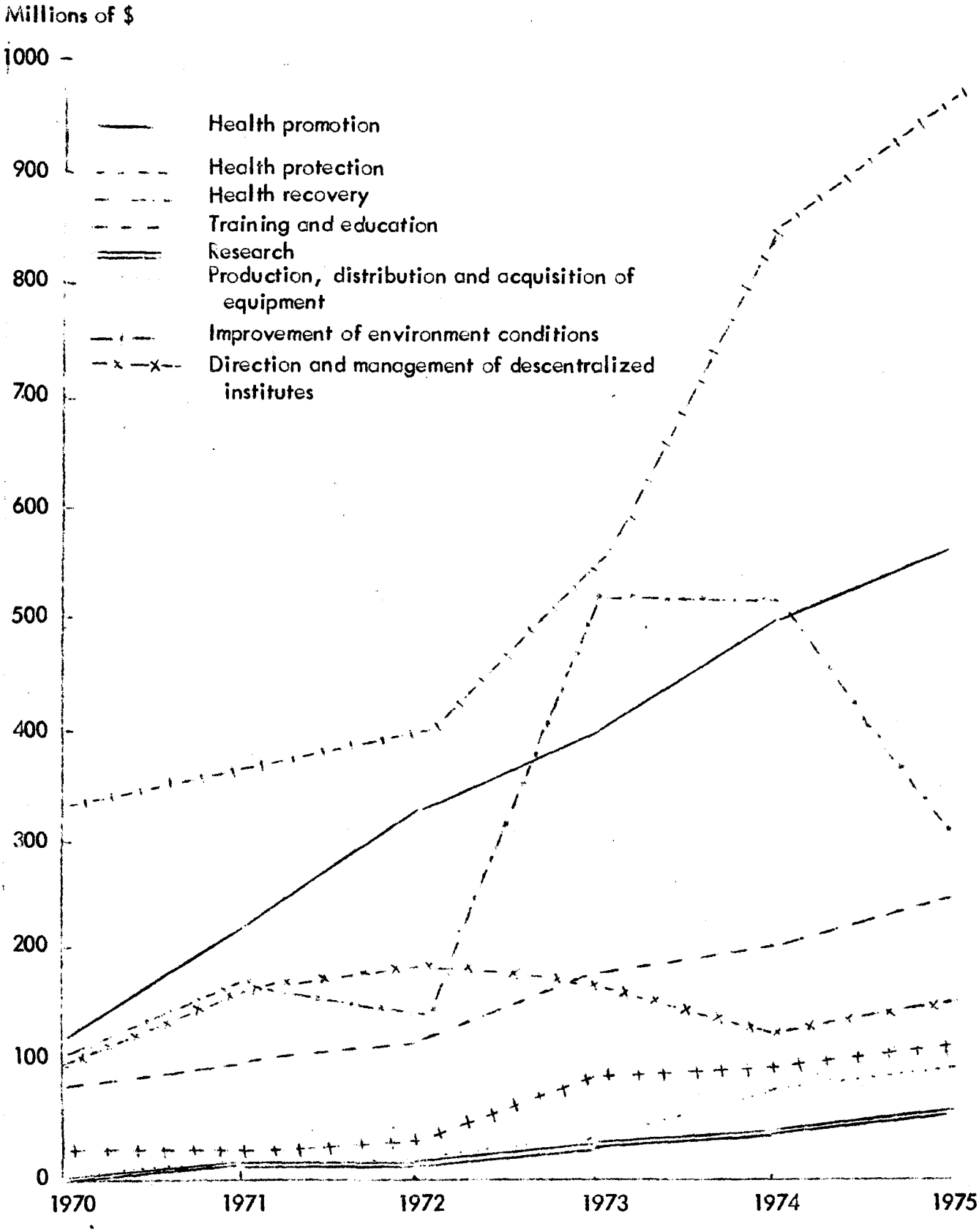
FINANCIAL AND HUMAN RESOURCES, AND RESEARCH PROJECTS ACCORDING TO SCIENTIFIC AREA - 1973



Source: Colciencias Inventory 1974

Table No. 15

INVESTMENT BUDGET BY PROGRAMS HEALTH SECTOR (in thousands of $)
1970-1975



Source: Public Health Ministry. Planning Office. Budget Unit, September 1972.

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