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Honor — Fraternity — Justice

Ministry of Economy and Finance

Directorate of Studies and Programming

RAMS PROJECT

Rural Assessment and Manpower Surveys

Rural Health: Outline of the Mauritanian Health Sector

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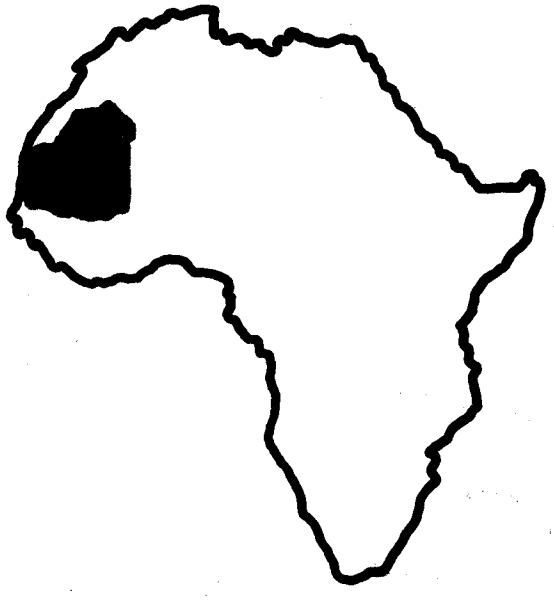

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I. Introduction

The objectives of this preliminary report on the rural health service in Mauritania are:

To review the present organization of the Ministry of Health
To make a summary analysis of the health situation, and
To analyze the main constraints which affect the Government's health and sanitary services.

This analytic and descriptive exercise (based on available information) will result in a conclusion on the overall situation of the health sector in 1980 and, on the basis of objective data, will set forth options which will be within the realm of possibility of the Ministry of Health to extend health services to the largest number of the population.

As the majority of Mauritanians live in the rural areas, a major portion of data presented in this report will pertain to these areas. In fact, the general thrust of the country's health policy testifies to the government's priority attention to the agro-pastoral communities.

Before dealing with the problem of rural health, however, brief attention will be paid to the organization and the problems of health in the entire country since it is part of a single health system.

It is obvious that the implication of necessary strategies to substantially improve health conditions of the population within the short span of twenty years (which represents the government's long-term planning frame) would require the efficient utilization of human and material resources which will be available to the Ministry of Health. In these circumstances, technical planning and programming schemes are seen as the conerstones of a plan of action for the Ministry. Furthermore, the activities in the health sector must be coordinated with other social and econ economic development sectors. Much empiric data have shown the inter-relationship which exists between, for instance, health. education, nurtition

and the growth of the population. In addition, the interaction between the different development sectors presents opportunities of synergic actions for integrated strategies for health improvement in Mauritania.

It is within this dynamic framework that a Mauritanian health plan should be designed for the period 1981-1985, as a prelude to the year 2000. In what follows below an attempt will be made to establish the basis on which such a plan can be developed. Before undertaking this task, it should be stressed that during the history of mankind man has been able to evolve as a result of decisions and actions and not as a result of plans. In the case of Health, both the government of Mauritania and its Ministry of Health should be ready as of now to take fundamental, sometimes radical decisions, if the social and economic objectives are to be met by the year 2000, that is, if there is a firm determination to offer health care to the great majority of the country's population by the beginning of the 21st century.

This report contains a series of findings and recommendations. Some will be difficult to accept or implement as they involve changing existing structures particularly in their inter-relationship and the manner in which health services are administered and managed in Mauritania. Change is often considered as a threat, but change is essential in the modernization of a country. The government should be ready to undertake the challenge. Otherwise, any effort will remain rhetorical, full of promises and theory. Courage is needed to bring about change. Fortunately, senior staff of the government and especially of the Ministry of Health are sincerely convinced of their responsibility in the fashioning of a better world for the Mauritanians, in spite of the difficulties they will have to face to cope with the challenge.

II. Organization of the Ministry of Health

The Ministry of Health is a component of the Ministry of Labor, Health and Social Welfare. Its staff and budget are separated from the other elements of the Ministry. Decree 54, dated May 12, 1979, established its administrative structure.

A. Administrative Structure

Diagram 1 presents an organization chart of the Ministry of Health. There are three main divisions:

1. The National Health Center
2. Pharmarim, and
3. The Department of Health

1. National Health Center

This unit was designed as a scientific center in charge of the study of problems relating to the prevention of disease and to the formulation of research studies and development of pilot programs prior to their application nation-wide. Given the scope of preventive medicine in the country, however, the Ministry of Health has set up a separate preventive medicine service. The Center has, therefore, been confined to research and evaluation of preventive programs.

The principal activities of the Center are now concentrated around:

- epidemiological studies
- analysis of water, milk and food
- entomology
- the assessment of the levels of protection reached by the expanded mass vaccination program, and
- nutrition surveys

The Center was built and equipped under a grant provided by the People's Republic of China (1977), and there is a team of 10 Chinese professional (bacteriology, parasitology) and 33 Mauritanians. Its operating budget totals 14 million ouguiyas per year. Well equipped laboratories plus a colony of experimental animals (guinea pigs, mice, rats, monkeys and rabbits) offer the possibility of pursuing a variety of biologic studies. As a result of the team's work, a series of studies is periodically published, including water and food control activities.

2. Pharmarim

Following a decision of the Fourth Party Congress, the pharmaceutical sector was nationalized.[1/] Pharmarim was created to enable the population to buy medication at a low price. There are four pharmacies in Nouakchott and branches in other towns as Kaedi, Nouadhibou, Rosso, etc. Each regional capital is to have a Pharmarim branch.

3. Department of Health

This Department guides and coordinates the activities of seven central services of the District of Nouakchott and the twelve regional units.

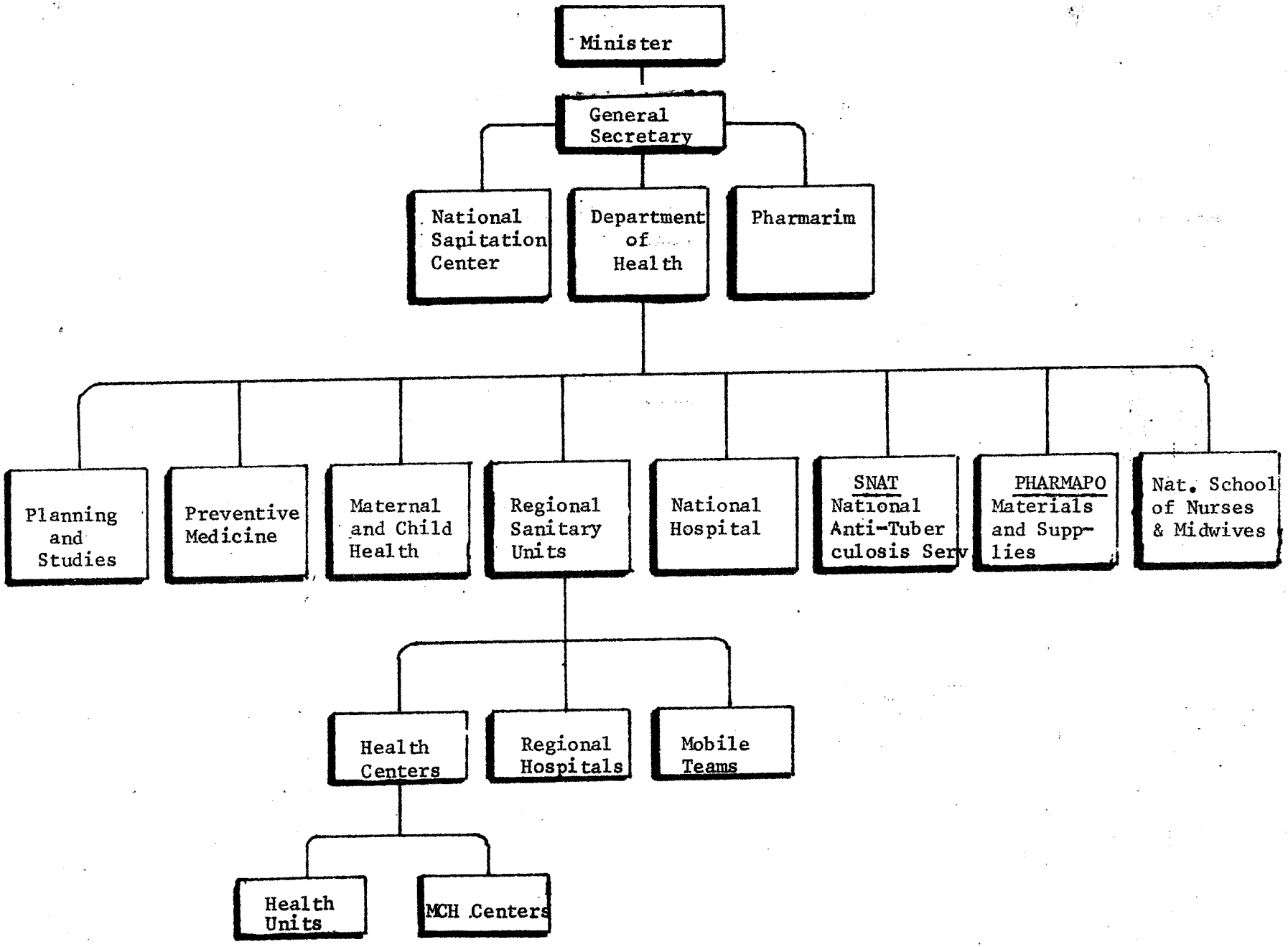
The central services are:

a. Planning and Studies
b. Preventive Medicine
c. Maternal and Child Health (MCH)
d. National Hospital
e. National Anti-tuberculosis service (SNAT)
f. Equipment and supply service (Pharmapro)
g. National School for Nurses and Midwives (ENISF)

1/ Recently, the government has been reviewing the desirability of having private sector participate; ministerial orders are under review.

(1980)

Organization Chart of the Ministry of Health



In addition to the District of Nouakchott, there are 23 regional units located in:

I	Eastern Hodh (Nema)
II	Western Hodh (Aioun)
III	Assaba (Kiffa)
IV	Gorgol (Kaedi)
V	Brakna (Aleg)
VI	Trarza (Rosso)
VII	Adrar (Atar)
VIII	Nouadhibou (Nouadhibou)
IX	Tagant (Tidjikja)
X	Guidimaka (Selibaby)
XI	Tiris Zemmour (F'Derik)
XII	Inchiri (Akjoujt)

The Ministry's services are directed by a chief and the regional units by a Head Doctor. As there is a controlling centralization and an administrative decentralization at the regional level, the technical aspects are managed directly by the Ministry of Health. but administrative matters are placed under the authority of the governor who represents national authority. The Department, as a unit of the region is under the authority of the Prefect. The district is a part of the department and is under a chief. The village is the smallest administrative unit for the sedentary population and the encampment for the nomad population. Decentralization was achieved by increasing the number of administrative units (their number doubled from 1961 to 1977) and also through the increase in authority granted to the regional and departmental authorities. Naturally, this dichotomy between technical and administrative operations makes it difficult to improve health services and creates many management problems. The assignment of health personnel to the regions is the responsibility of the governor (in principle with the advice of the Head Doctor), but health activities, as such, are under the Head Doctor who reports both to the Director of Health at the Ministry and to the governor.

As there is no central structure to coordinate the activities of the regional units, the Director of Health must be in direct contact with the 12 units of the country. Furthermore, he must be in permanent contact with the central services of the Ministry (an eighth service, for transportation and equipment is under review).

Finally, the Director of Health is responsible for maintaining relations with the international bilateral, multilateral and private organizations which are somewhat numerous (World Bank, UNICEF, FAO, UNFPA, UNDP, ADB, USAID, FED, WFP, Arab League, Kuwait, USSR, People's Republic of China, Guinea, Iraq, Holland, Belgium, IVS, Peace Corps, Raoul Follereaux Foundation, Malta Order, Lutheran Federation. Caritas Mauritania, Catholic Relief Service, Cheik Nasser, etc.).

a. Planning and Studies Unit

This unit which became operational in January 1980, is responsible for the planning of health services and for the design of annual and five-year plans. In practice, a heavy amount of the administrative work which spills over from the Department of Health is handled by the unit, in particular the various aspects of foreign assistance. Under the present conditions. the considerable strengthening of this unit (with health planning experts, etc.) is desirable in order for it to be able to combine resources with a basic planning action in ways that will determine the level of health support and socio-economic development. The unit has two sections: Statistics and Studies. It is responsible for the publication of health bulletins (monthly, quarterly and annually).

b. Preventive Medicine Service

Modern medicine is making a great effort in disease prevention. This unit is therefore, one of the most important of the Ministry. Its activities are focused on six basic programs: (i) immunization, (ii) hygiene, (iii) health education, (iv) school health (v) control of endemic diseases (vi) promotion of nutrition.

(i) The Expanded Vaccination Program (EPI) started in October 1979 with the objective of immunizing within a five-year period 85% of children against tuberculosis, diptheria, tetanus, poliomyelitis, measles and whooping cough. In a country as vast as Mauritania, including a portion of the population which is constantly on the move (nomadic) and another portion involved in an accelerated process of urbanization and sedentarization, the task of this program becomes more complex. The logistic aspects of vaccination (transportation. network of cold storage units, periodic regroupings of population, supply of materials. coordination of mobile teams) become greatly complicated during the rainy season in the south of the country (where the major part of the population is concentrated) when the roads are impassable.

MCH (Maternal and Child Health) personnel collaborate with the vaccination campaign of pregnant women and children 0 to 5 years of age. There are 11 vaccination mobile units, made up of 5 persons per team: 1 government nurse, a certified nurse, an auxiliary nurse, an attendant, and a driver. The periodic gathering of information from the regions (dosage of vaccines used, population covered, etc.) leaves much to be desired due to the irregularity of reports received by the service.

(ii) The Sanitation and Health Program is still at an embryonic stage. There are 10 sanitary agents, 2 sanitary technicians and 5 sanitary inspectors. But the lack of explicit sanitary legislation and the fact that the personnel under the program are all Arabic speakers, greatly hinder activities. The local WHO office provides technical assistance but so far with little success. It would be desirable to develop a more coordinated effort between the Ministry of Rural Development and the

Ministry of Health. Campaigns to improve pit latrines, refuse collection, and checking public buildings do not exist. The potable water supply program is barely starting. It is estimated that less than 20% of the population of Mauritania has access to potable water.

(iii) The Sanitary Education Program has not yet started due to a lack of teaching materials and lack of training of trainers. The sanitary agents and traditional midwives have not been adequately trained under this program. School-teachers receive very little information on health education in the course of their training. In the 1981-1985 Health Plan about 1 million ouguiyas is programmed to buy audio-visual materials and to prepare teaching materials adapted to Mauritania's health situation

(iv) The School Health Program. There are now 5 school health posts (Nouakchott, Aioun, Kaedi, Rosso and Atar). Four centers will soon be set up at the secondary school level and 17 existing secondary school clinics, (Nema, Timbedra, Selibaby, Kaedi, Aleg, Boghe, Rosso, Boutilimit, Maderdra, Akjoujt, Tidjikja and Nouakchott which has 6) are to be upgraded. This program is, therefore, focused in urban areas.

(v) Campaign for the Control of Endemic Diseases. (Malaria, Urinary bilharziasis, Dracontiasis, Tuberculosis). This represents campaign against these diseases and consists of setting up of a program of epidemiologic surveillance and early tracking.

(vi) Promotion of Nutritional Activities. This is a priority campaign for pregnant women, mothers and children of 0 to 6 years of age, undertaken in collaboration with MCH activities and primary health care.

c. Maternal and Child Health Service

This unit carries out the following:

1. Preventive, coordinated actions for mothers and children, although integrated as part of curative services.
2. Educational actions in the field of hygiene, nutrition and home economics.
3. Health actions oriented towards prevention and treatment of rural populations and primary health care.
4. Training of personnel for the Maternal and Child Health program.
5. Nutritional Recovery.
6. Family Welfare.

Twenty-five MCH centers are distributed all over the country, as follows:

3 in Nouakchott, 3 in the Eastern Hodh (Nema, Bassikounou and Timbedra), 2 in the Western Hodh (Aioun and Tintane), 2 in Assaba (Kiffa and Kankossa), 3 in Gorgol (Kaedi, M'Bout and Maghama), 2 in Brakna (Aleg and Boghe), 3 in Trarza (Rosso, Mederdra and Boutilimit), 1 in Adrar (Atar), 1 in Nouadhibou (Nouadhibou), 2 in Tagant, (Tidjikja and Moudjeria), 2 in Guidimaka (Selibaby and Ould Yenge), and 1 in Inchiri (Akjoujt).

Twelve MCH centers are under construction (with the help of UNICEF in the departments which are not yet served), as well as 35 rural maternities.

In 1979, the MCH centers provided the following services:

48,341	Pre- and post-natal consultations
12,420	Gynecological consultations
67,320	Child care consultations
97,244	Consultations for sick children
225,325	Consultations

The program contributed to the vaccination campaign, having vaccinated in 1970:

9,840	B.C.G.
6,525	Measles
29,840	Diptheria, Whooping Cough, Tetanus
12,515	Smallpox

In the nutrition training course in the same year 1,280 sessions with an average of 20 participants per session (25,620 persons) were held.

Personnel training is very important: 120 traditional midwives were trained in 1979, and the training of 150 others was underway in 1980. 17 auxiliary midwives were trained in 1979 and 45 were being trained in 1980. As for supervisory nurses who liaise between the traditional midwives, the auxiliary midwives and the government midwives, 40 have already been assigned and 35 underwent training in 1980.

The nutritional recovery and education component is funded by UNICEF, and the Catholic Relief Service. The centers (CREN) are integrated to the MCH activities and are intended to fight against malnutrition and its effects. 20 of these centers were operational in 1980 and 19 are planned for 1981, The National Social Security Fund in 1979 granted 2,250,000 UM to set up and operate these centers. In 1980 the grant was to be increased to 3,500,000 UM to cover the expenditures of all centers in operation.

The field of family welfare consists of progressively integrating the MCH/CREN Maternities through the setting up of mother-child units in all the regional capitals. This project construction. salaries equipment is funded by UNICEF and UNFPA (training of personnel, scholarships, seminars, study trips and logistic support). The Director of Maternal and Child Health took a course in family welfare in the United States in September-November 1980. The Peace Corps (USA) is also participating in this project by assigning volunteers, (nurses and social assistants) to rural centers.

The MCH annual budget (excluding operational costs of the CREN) is about 5 million UM per year. The reduction of the budget in 1980 (due to austerity measures) will seriously affect services if grant assistance is not provided before the end of the year. (The reduction of the operational budget was about 67%).

In addition to the personnel and budgetary problems (insufficient amounts, retaining needs) the MCH service faces problems of information flow (quality of statistics) in order to provide adequate evaluations. The problems of transportation and of vehicle maintenance have been solved, thanks to the organization of a motor pool.

A maintenance facility for the three programs (MCH, CREN and Vaccination) was approved for 1981 implementation.

The statistical forms used by the program (for health care, pre-natal consultations and child care) are useful for clinical work but they are not practical for obtaining the information required for monitoring purposes and for preparation of monthly reports. A modification of the information system of the Ministry of Health is to be undertaken in July 1980 in order to improve its functional nature.

In summary. the MCH service is very dynamic; in a very short period it was extended to all regions. It operates in an acceptable fashion.

d. National Hospital

The National Hospital was constructed and equipped by the European Development Fund (FED) in 1966. Its annual budget totals 60,000,000 UM. With a total capacity of 500 beds, only 2/3 of them were in use in September 1980.

General Medicine	64
Surgery	76
Visceral (40)	
Orthop/Traum. (36)	
Pedriatries	64
Opthalmology	32
Gynecology/Obstetrics	54
Psychiatry	8
Resuscitation	18
Medicine (8)	
Surgery (10)	
(Tuberculosis)*	16
Total	332

* (Temporary)

The medical team is composed of 22 doctors: 4 Mauritanians, 13 French and 5 Egyptians; i.e., 20% of the doctors in the country.

The auxiliary services are: X-rays, clinical laboratory, blood bank, anaesthesia, stomatology and administration.

The hospital has 10 buildings on its premises where doctors responsible for emergency service reside.

The hospital has a high utilization rate, especially in pediatrics (250%).

In its role of national hospital, patients come from all over the country; however, most of them come from Nouakchott. A high number of mental patients (50) are placed under a tent on the grounds of the hospital, since there are no other facilities to accommodate them. Tubercular patients are temporarily admitted to the hospital, but they will be sent to an anti-tuberculosis hospital as soon as it is ready in 1981.

The problems of the National Hospital are: shortage of personnel, of financial resources and drugs. The maintenance of the equipment (X-rays, diagnostic equipment, vehicles) is inadequate. The hospitalization of patients, the steralization of the equipment and the removal of septic water are problems which are still unresolved.

The Hospital management believes that overall "the services provided by the institution are of an acceptable quality". The most severe constraints are however, in visceral surgery and pediatric care.

e. National Anti-Tuberculosis Service (SNAT)

The SNAT is responsible for the tracking, treatment and control of tuberculosis. As of September 30, 1980, the service has the following tracking units: Nouakchott, 2; Eastern Hodh, 1; Assaba, 1; Brakna, 2; Trarza, 1; Adrar, 1; Nouadhibou, 1; Tagant, 1 and Guidimaka, 1. As of January 31, 1980, there were 6,781 patients under treatment, 700 of whom were considered as completely cured; 2,321 have been discharged and the rest (3,760) continued under supervised treatment. It is estimated that 3,000 cases per year are uncovered, with 300 (10%) not responding to init initial treatment.

Due to the low standard of living of the population. tuberculosis is causing havoc in the country. The slow course of the disease, the long period of treatment. as well as the frequent instances of relapse constitute appreciable problems in the fight against tuberculosis. The

high rate of urbanization (especially in the capital city where the housing shortage causes serious hygienic problems and where there is increasing unemployment) is a factor abetting contamination,

The treatment technique was defined in early 1979, it is based on general guidelines provided by WHO:

(a) TB tracking
(b) Standard treatment for contagious patients
(c) B.C.G. prophylaxis
(d) Sanitary education

At the national level, a Head Doctor is in charge of the service and coordinates all operations in the country. There is a TB wing in the National Hospital (16 beds) where daily consultation is provided for the selective tracking of tuberculosis patients. A pilot center (Sabah Anti-Tuberculosis Hospital) will become operational in Nouakchott in 1981. This Hospital will become a Tuberculosis Research and Control Institute.

At the regional level, the field unit is the basic reference point of the anit-tuberculosis campaign. It consists of a microscope, a laboratory assistant and various items, all of which are placed in a health unit. Because of the monthly rotation of a team of doctors in all the various regions. suspicious cases are sorted and spittle samples are taken following WHO procedures. Recent studies show a prevalence of 0.6% and an incidence of 0.13%.

The spread of tuberculosis geographically is related to rural migration and the drought. Indeed the regions of Assaba, the two Hodhs and the District of Nouakchott seem to have the highest rate of infection.

Staff and budgetary resources are fairly limited for the anti-tuberculosis campaign. Luckily, the program has benefited from private foundation grants and from people interested in controlling this scourge in the country. The activities were maintained as a result of the dynamism of the personnel assigned to the campaign. The situation regarding the anti-tuberculosis campaign is however, still precarious.

f. Equipment and Supplies: Pharmapro

This service is responsible for the supply and distribution of drugs to Health Units (with the exception of the National Hospital) for the maintenance of the motor pool, as well as the control of equipment (inventory, supply accounting). Nevertheless, due to the limitation of resources, only the procurement and distribution of drugs constitute the activities of this service. An inventory list of equipment is being set up; the system is, however, still rudimentary.

The procurement suffers from a series of complicated administrative problems: the budget for drugs is 30 million UM per year, but its effectiveness is reduced by the slowness of the budgetary process and the archaic administrative system. The filling out of a proforma bill and the expenditure authorization by the budget service and its control system (6 on average) takes several months. This discourages the suppliers and creates a major hiatus in the timely supply of drugs. When drugs finally arrive (say in July or August), the rainy season has already started and parts of the country are inaccessible. The problems of drug supply in remote regions can be readily imagined. The first quarter of the year is a period when there are no supplies of drugs outside Nouakchott. In addition, the drawing up of standard procurement lists is done on the basis of old requests which do not take into account the real needs of the health units, or orders already filled, of the increase in the population, or of the epidemiological situation of regions. The result is an insufficient and late supply ill-adapted to needs. For instance, anti-malaria drugs are sent to non-malarial areas. In short this office as it is organized is anachronistic and must be completely overhauled.

The health budget does not respond to needs and apparently is not drawn up in accordance with cost/benefit criteria but rather according to the availability of resources at the time of budget preparation. A budget drawn up in this arbitrary manner cannot be a positive asset for the health campaigns.

There is no existing control of medical supplies and their utilization. Nor is there any accounting at the local level.

It is a wonder that the health system can operate with such rudimentary support elements.

g. National School of Nursing and Midwives

This school was set up 15 years ago to train auxiliary medical personnel. This school now supplies nearly 80% of such auxiliary personnel. Its operating costs total nearly 1 million ouguiyas per year. It is because of external aid (UNICEF, FED, WHO, DAF) that the school can operate and that the students can financially survive during their training periods (scholarships).

Since 1966, the school has trained 151 auxiliary nurses (2 years), 146 government registered nurses, and 10 midwives (3 years).

The student body for the academic year 1968-1969 was:

Category	1st Year	2nd Year	Total
Auxiliary Nurses	17	67	84
Government Registered Nurses	67	18	85
Graduate Nurses	68	-	68
Midwives	15	27	42
Total	167	112	279

The auxiliary nurses do not always receive training at the school. They were formerly recruited by the civil service (by professional testing) and could not either read or write.

The graduate nurses have a degree in nursing from the school which corresponds to the French nurse's assistant.

An extension of the school is planned to increase the number and the categories of paramedical personnel of the country's hospitals in the 1981-1985 period. The new orientation of the school will be to train paramedical specialists as:

Laboratory technicians (biology, chemistry)
X-ray technicians
Sanitary technicians
Child care assistants

In addition, there will be a major need during the 1981-1985 period for MCH personnel:

Auxiliary Midwives	175
Assistant Nurses	200
Matrons	100
Traditional Midwives	450
Auxiliary Agents in Nutrition	125
	1,050

The teaching staff of the school is very small; 2 midwive instructors and 3 monitors. The professional staff are free-lance people from Nouakchott who generally serve in the health units of the capital city and earn (according to the speciality) an average stipend of 400 ouguiyas per hour. The needs of the school, insofar as the permanent staff is concerned, are estimated at 10 extra monitors.

The school has, in fact, trained all of the midwives (3 years) government nurses (2 years), and graduate nurses (2 years) who are working in the country.

The curriculum is being revised to satisfy the needs for multi-disciplinary personnel.

One of the problems of the Ministry of Health is that of the assignment of female personnel, given the fact that a large number of the students are married and prefer to work in town.

The school's boarding facilities consist of 24 rooms. There is no cafeteria and the students are compelled to make arrangements with the hospital of the wards for their meals, creating various management problems.

The library, the practical training at Nouakchott, the educational equipment, and recreation constitute serious problems that the administration is studying.

The most serious problem of the school is that its approach is nearly exclusively towards curative medicine whereas the major problems of health in Mauritania are of a preventive nature. The school's administration functions without taking into account the situation in which the students will work later.

4. Regional Sanitary Districts

A. Health Unit (Infrastructure)

The total number of Health Units in Nouakchott and in the 12 regions of the country is 201 according to information obtained from the Planning and Studies Office of the Ministry of Health (October 1980). Table 1 reveals the list prepared by the Ministry. Map 1 shows the administrative division of the country by region and by department.

Map 2 indicates the concentration of the Health Units by region and department. Regarding the personnel of the Ministry of Health, Table 2 shows the number hired. The governors are responsible for assigning personnel in each region. As a rule, there should be a relationship between the population density and the number of health personnel and health units, but in Mauritania this is not practiced. Table 3 and Map 3 show the regional imbalance which exists between the population and the number of assigned personnel. Table 4 and Figure 1 show the relationship between personnel and the health units by region.

B. Coverage of Service (Population Covered)

With all of the facilities and personnel described above, the Ministry of Health estimates that 30% of the population of Mauritania (or 430,000 persons) is covered by its services. This figure represents an average and highlights the fact that the population of Nouakchott and of the other cities is favored both in quantity and quality of service as compared with the rural areas. Among the latter, those nearer the capital are better served than those that are remote to the north or the east. As the urban areas (containing 20% of the country's population) are partially covered by health care and the rural areas are deprived, the maximum coverage "is likely" only 25%.

C. Budget

The budget of the Ministry is determined in an arbitrary fashion, depending upon the level of total available resources. The following tables provide a bird's eye view of the situation during the last three years (in 000 ouguiyas).

Table 1 Health Units in Nouakchott and in the Regions

Location	Hospital	Polyclinic	Endemic Diseases	Health Centers A	Health Centers B	Health Centers C	MCH	Health Educ. and Nutri.	Mobile Team	School Health Center	TB Units	Total
DISTRICT NKTT	HN											1
1er Arr.	–	–	1		2	–	–	–	–	–	–	3
2e Arr.	–	–	–		1	–	1	1	–	–	1	4
3e Arr.	–	–	–	1	–	–	1	1	–	1	–	4
4e Arr.	–	1	–	–	–	–	–	–	–	–	1	2
5e Arr.	–	1	–	–	1	–	1	1	–	–	–	4
6e Arr.	–	–	–	1	–	–	–	–	–	–	–	1
Sub-total	1	2	1	2	4	–	3	3	–	1	2	19
HODH CHARGUI												
Dept. NEMA	–	–	–	1	–	2	1	1	2	–	1	8
" Oual.	–	–	–	–	1	–	–	–	–	–	–	1
" Amourj	–	–	–	–	1	3	–	–	–	–	–	4
" Bassik	–	–	–	–	1	2	1	–	–	–	–	4
" Timbid.	–	–	–	1	–	1	1	1	–	–	–	4
" Djigue.	–	–	–	–	1	2	–	–	–	–	–	3
Sub-total	–	–	–	2	4	10	3	2	2	–	1	24
HODH GHARBI												
Dept. Aïoun	1	–	–	–	1	1	1	1	1	1	1	8
" Tamchak.	–	–	–	–	1	–	–	–	–	–	–	1
" Titane	–	–	–	–	1	1	1	–	–	–	–	3
" Kobonni	–	–	–	–	1	–	–	–	–	–	–	1
Sub-total	1	–	–	–	4	2	2	1	1	1	1	13

Table 1 Health Units in Nouakchott and in the Regions (con't)

Location	Hospital	Poly clinic	Endemic Diseases	Health Centers A	Health Centers B	Health Centers C	MCH	Health Educ. and Nutri.	Mobile Team	School Health Center	TB Units	Total
ASSABA												
Dept. Kiffa	1	-	-	1	-	1	1	1	1	1	1	8
" Kankossa	-	-	-	1	-	-	1	-	-	-	-	2
" Guerou	-	-	-	-	1	1	-	-	-	-	-	2
" Boumedeid	-	-	-	-	1	-	-	-	-	-	-	1
" Brkeol	-	-	-	-	1	1	-	-	-	-	-	2
Sub-total	1	-	-	2	3	3	2	1	1	1	1	15
GORGOL												
Dept. Kaedi	1	-	-	1	-	4	1	1	1	1	1	11
" M'Bout	-	-	-	-	1	1	1	1	-	-	-	4
" Monguel	-	-	-	-	1	1	-	-	-	-	-	2
" Maghama	-	-	-	-	1	5	1	1	-	-	-	8
Sub-total	1	-	-	1	3	11	3	3	1	1	1	25
BRAKNA												
Dept.Aleg	1	-	-	-	1	2	1	1	-	-	1	7
" Boghe	-	-	-	1	-	4	1	1	1	-	1	9
" Bababe	-	-	-	1	-	1	-	-	-	-	-	2
" M'Bague	-	-	-	-	1	1	-	-	-	-	-	2
3 Magta L.	-	-	-	1	-	-	-	-	-	-	-	1
Sub-total	1	-	-	3	2	8	2	2	1	-	2	21

Table 1 Health Units in Nouakchott and in the Regions (con't)

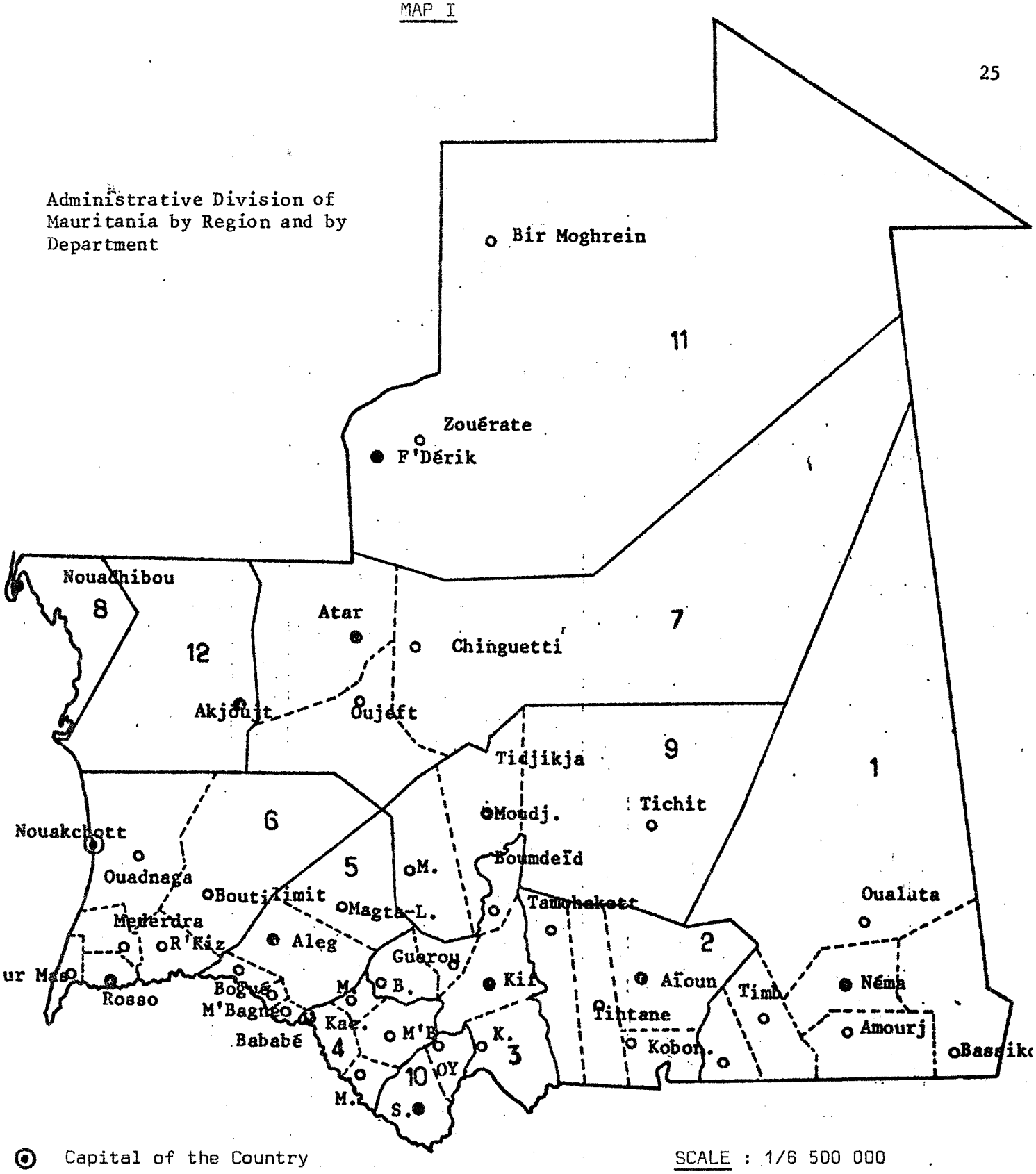
Population	Hospitals	Polyclinic	Endemic Diseases	Health Centers A	Health Centers B	Health Centers C	MCH	Health Educ. and Nutri.	Mobile Team	School Health Center	TB Units	Total
TRARZA												
Dept. Rosso	1	-	-	1	-	3	1	1	1	1	1	11
" R'Kiz	-	-	-	-	1	2	-	-	-	-	-	3
" Keur Macene	-	-	-	1	-	1	-	-	-	-	-	2
" Mederdra	-	-	-	-	1	2	1	1	-	-	-	5
" Boutilim.	-	-	-	1	-	2	1	1	-	-	-	5
" Cuai Naga	-	-	-	-	1	-	-	-	-	-	-	1
Sub-total	1	-	-	3	3	10	3	3	1	1	1	26
ADRAR												
Dept. Atar	1	-	-	1	-	1	1	1	1	1	1	8
" Chinguitti	-	-	-	-	1	-	-	-	-	-	-	1
" Ouadane	-	-	-	-	1	-	-	-	-	-	-	1
" Oujeft	-	-	-	-	1	-	-	-	-	-	-	1
Sub-total	1	-	-	1	3	1	1	1	1	1	1	11
NOUADHIBOU	1	-	-	1	-	1	1	1	1	-	1	7
Sub-total	1	-	-	1	-	1	1	1	1	-	1	7
TAGANT												
Dept. Tidjikja	1	-	-	1	-	2	1	1	1	-	1	8
" Moudjeria	-	-	-	1	-	1	1	-	-	-	-	3
" Tichitt	-	-	-	-	1	-	-	-	-	-	-	1
	1	-	-	2		3	2	1	1	-	1	12

Table 1 Health Units in Nouakchott and in Regions (con't)

Location	Hospitals	Poly-clinic	Endemic Diseases	Health Centers A	Health Centers B	Health Centers C	MCH	Health Educ. and Nutri.	Mobile Team	School Health Center	TB Units	Total
GUIDIMAKHA												
Dept. Selibab	1	-	-	1	-	5	1	1	1	-	1	11
" O/ Yenge	-	-	-	1	-	6	1	-	-	-	-	8
Sub-total	1	-	-	2	-	11	2	1	1	-	1	19
TIRIS ZEMM.												
Dept. F'Derik	-	-	-	-	1	-	-	-	-	-	-	1
" Zoueratt	-	-	-	1	-	-	-	-	-	-	-	1
" Bir Mogr.	-	-	-	-	1	1	-	-	-	-	-	2
Sub-total	-	-	-	1	2	1	-	-	-	-	-	4
INCHIRI												
Dept. Akjoujt	1	-	-	1	-	1	1	1	-	-	-	5
Sub-total	1	-	-	1	-	1	1	1	-	-	-	5
Grand Total →	11	2		21	29	62	25	20	11	6	13	201

MAP I

Administrative Division of Mauritania by Region and by Department



Capital of the Country

Chief town of the Region

Chief town of the Department

Regional borders

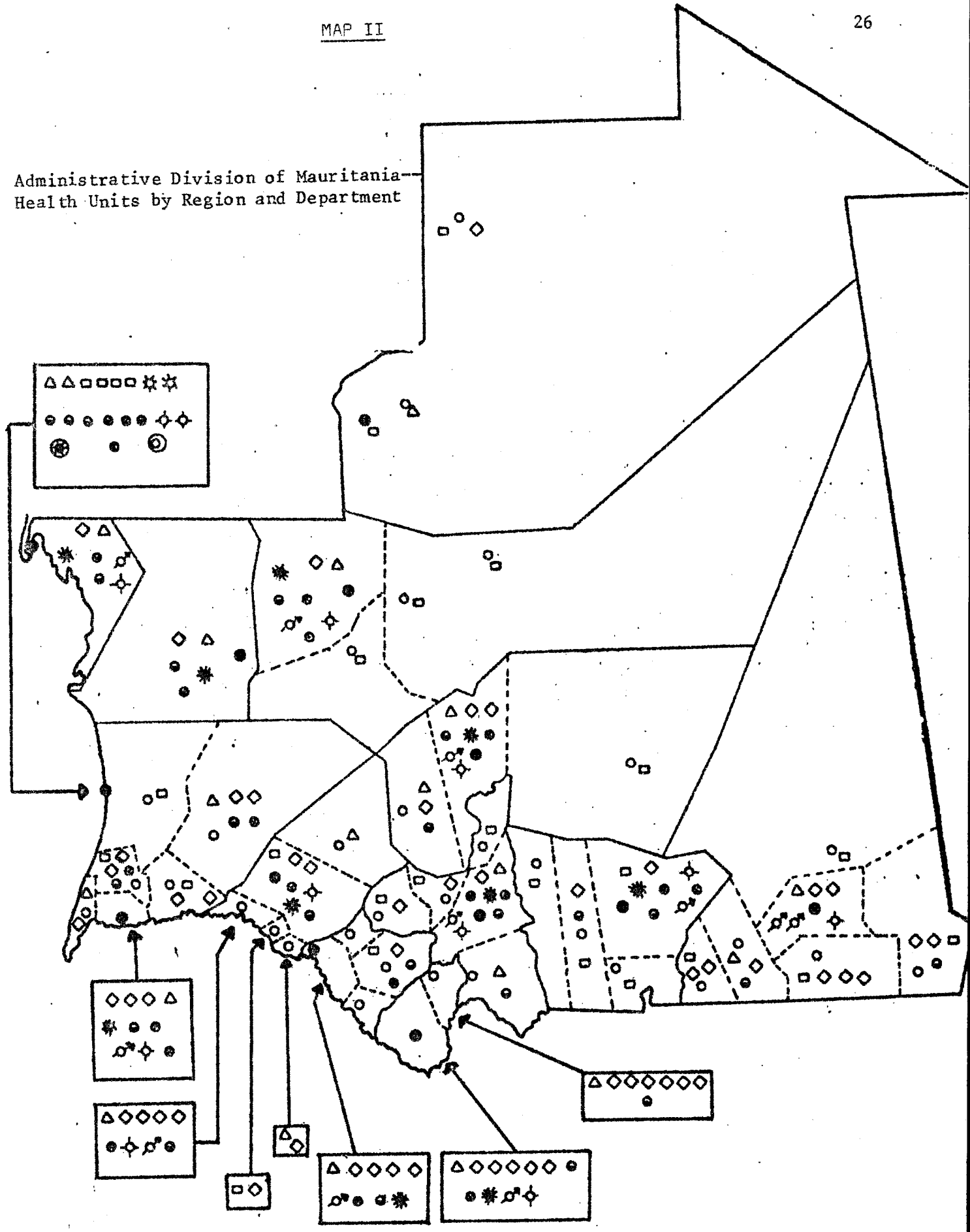
Departmental borders

1 = 1 Region

SCALE : 1/6 500 000

MAP II

Administrative Division of Mauritania—
Health Units by Region and Department



Scale = 1/6 500 000

Symbols - Map 2

- Regional Capitals
- Regional Capital of the Department
- Mother-Child Unit
- Regional Hospital
- Polyclinic
- Health Center A
- Health Center B
- Health Center C
- MCH
- Health Education and Nutrition
- Mobile Team
- School Health Center
- TB Unit
- National Hospital

Table 2. Personnel Assigned to the Ministry of Health in the District of Nouakhcott and in the Regions

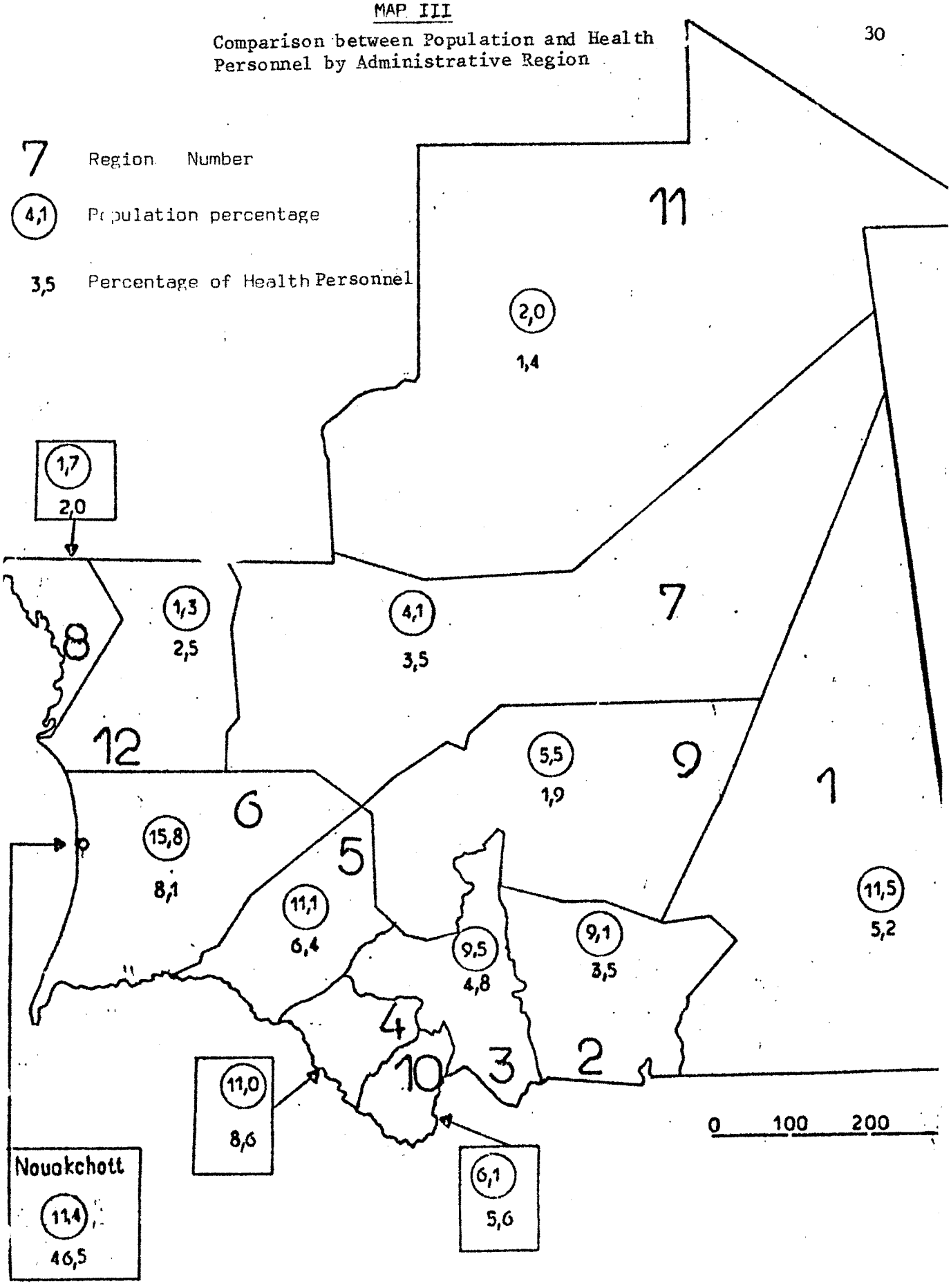
	Doctors	Dentists	Gov't Midwives	Gov't Nurses	Technicians	Total Professionals	Graduate Nurses	Auxiliary Nurses	Nurses aides Auxiliary	Midwives	Ward Attendant (M)	Attendant (F)	Cooks	Drivers	Others	Total Aux. Staff	% Aux. Staff	Grand Total	Percentage	% Personnel
Nat. Hospital	23	1	10	69	25	128	75	22	35	9	123	29	7	5	12	317	23.9	445	26.1	34.0
District	17	3	19	90	5	63	55	17	66	19	49	21	0	21	36	284	21.4	347	20.4	16.7
Sub-total	40	3	29	89	30	191	130	39	101	28	122	50	7	26	48	601	45.3	742	44.5	50.7
I Hodh Or.	1	-	1	14	2	18	23	3	5	7	15	4	2	7	-	70	5.3	88	5.2	4.8
II Hodh Oc.	1	-	1	13	-	15	12	3	5	5	11	2	-	6	-	44	3.3	59	3.5	4.0
III Assaba	1	-	1	12	2	16	17	2	17	3	15	3	1	5	2	65	4.9	81	4.8	4.2
IV Gorgol	2	1	4	11	3	21	19	19	17	6	32	16	2	7	8	126	9.4	147	8.8	5.6
V Brakna	1	-	2	13	2	18	19	3	23	4	19	10	1	5	7	91	6.8	109	6.4	4.8
VI Trarza	2	-	4	19	1	26	19	8	30	12	12	19	-	7	-	113	8.5	139	6.1	6.9
VII Adrar	2	1	2	11	2	18	12	4	14	3	4	1	1	2	1	42	3.2	60	3.5	4.8
VIII Nouadh.	2	-	2	7	3	14	6	1	6	1	-	5	-	2	-	21	1.6	35	2.0	3.6
IX Tagant	-	-	1	5	-	6	8	1	6	3	5	1	-	3	-	27	2.0	33	1.9	1.6
X Guicimaka	1	-	2	12	3	18	21	5	21	5	13	9	-	4	-	78	5.9	96	5.6	4.8
XI Trirs Z.	1	-	1	6	-	8	9	1	4	-	2	-	-	-	-	16	1.2	24	1.4	2.1
XII Inchiri	1	-	2	4	1	8	4	5	13	-	8	2	-	2	-	34	2.6	42	2.5	2.1
Sub-total	15	1	23	127	19	186	169	55	171	49	136	72	7	50	18	727		913		100.0
Grand Total	55	5	52	216	49	377	299	94	272	77	308	122	14	76	66	1323	100.0	1705	100.0	
Percentage	3.2	0.3	3.0	12.7	2.9	22.1	17.5	5.5	16.0	4.5	18.1	7.2	0.8	4.5	3.9	779		100.0		

Table 3: 1980: Comparison between Population and Health Personnel by Administrative Region

N°	Region	% Population	% Professional Health Staff	% Auxiliary Staff	% Total Health Staff
	Nouakchott	11.4	50.7	45.3	46.5
1	Hodh Oriental	11.5	4.8	5.3	5.2
2	Hodh Occidental	9.1	4.0	3.3	3.5
3	Assaba	9.5	4.2	4.9	4.8
4	Gorgol	11.0	5.6	9.4	8.6
5	Brakna	11.1	4.8	6.8	6.4
6	Trarza	15.8	6.9	8.5	8.1
7	Adrar	4.1	4.8	3.2	3.5
8	Nouadhibou	1.7	3.6	1.6	2.0
9	Tagant	5.5	1.6	2.0	1.9
10	Guidimaka	6.1	4.8	5.9	5.6
11	Tiris Zemmour	2.0	2.1	1.2	1.4
12	Inchiri	1.3	2.1	2.6	2.5
	%	100.0	100.0	100.0	100.0

MAP III

Comparison between Population and Health Personnel by Administrative Region



Source : Ministry of Health

Table 4. Distribution of Population, Health Personnel and Health Units in Nouakchott and in regions 1980

Location	Population		Personnel		Health Units		Personnel + Health Unit
	000's	%	N°	%	N°	%	Ratio
NOUAKCHOTT	173	12,1	792	46,5	19	9.5	41.7
HODH ORIENTAL	166	11,6	88	5,2	24	11.9	3.7
HODH OCCIDEN.	130	2,0	59	3,5	13	6.5	4.5
ASSABA	136	9,4	81	4,8	15	7.5	5.4
GORGOL	158	11,0	147	8,6	25	12.3	5.9
BRAKNA	159	11,0	109	6,4	21	10.5	5.2
TRARZA	224	15,6	139	8,1	26	12.8	5.3
ADRAR	50	3,6	60	3,5	11	5.5	5.5
NOUADHIBOU	30	2,1	35	2,0	7	3.5	5.0
TAGANT	78	5,4	33	1,9	12	6.0	2.8
GUIDIMAKA	90	6,3	96	5,6	19	9.5	5.1
TIRIS-ZEMMOUR	26	1,8	24	1,4	4	2.0	6.0
INCHIRI	17	1,2	42	2,5	5	2.5	8.4
TOTAL	1.443	100,0	1.705	100.0	201	100.0	8.5

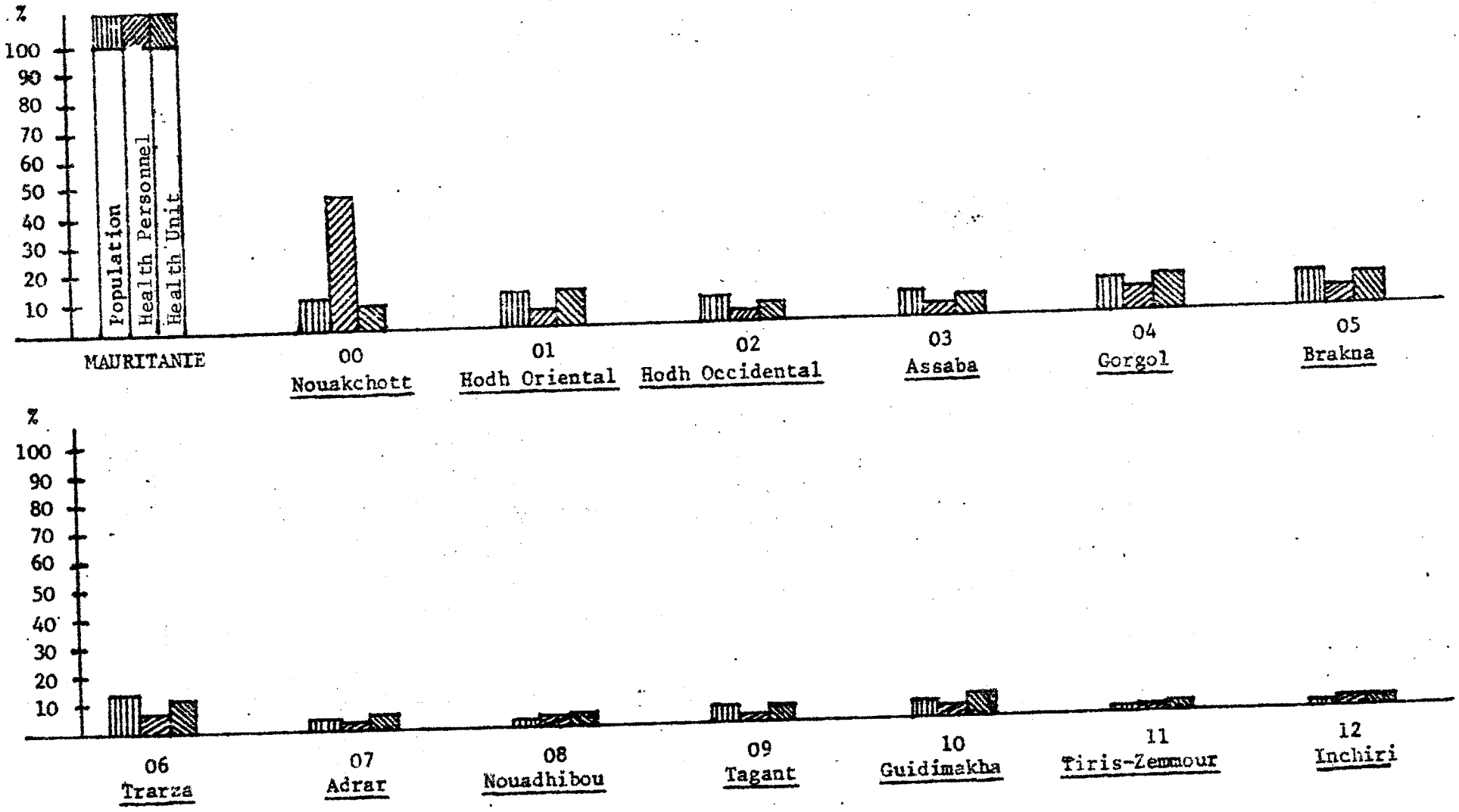
Average

Sources: Population, RAMS Projections (1980)

Personnel: Personnel Office, Ministry of Health

Health Units : Planning Service, Ministry of Health

Figure 1. Percentage Distribution of Population, Health Personnel and Health Units in Nouakchott and in the Regions



Year	National Budget	Health Budget	%
1978	10,395,278	294,779	2.8
1979	10,726,069	385,387	3.6
1980	9,947,317	387,162	3.9

Source: Health Plan, September 1980. Ministry of Health.

Year	Budget	Personnel		Operations		Drugs	
		Amount	%	Amount	%	Amount	%
1978	294,779	166,534	56.5	74,582	25.3	53,663	18.2
1979	385,387	194,043	50.4	126,344	32.8	65,000	16.8
1980	387,162	213,089	55.0	119,073	30.8	55,000	14.2

Source: Health Unit, September 1980. Ministry of Health.

D. Financing Recurrent Costs

In 1979, a study was made of overall recurrent costs of the Government of Mauritania. This was done on the basis of budgetary expenditures of 1978 ending on March 27, 1979. This report covers 1978 expenditures, plus first quarter expenditures in 1979 as they related to the 1978 program.

The budget of Mauritania is presented in the following fashion: an operating budget and in investment budget (Table 5). The budget also includes a section on provisional operations which have no impact either on the recurrent costs or on the financial situation of the public sector.

Table 6 reflects items which can be considered as recurrent costs which relate directly to development projects financed under the budget. This table analyzes specific project costs: schools, hospitals, road expenses, etc., with the exclusion of indirect costs entailed by these projects in the form of general administrative expenditures of ministries involved in development projects (Health, Education. etc.).

On the basis of types of projects, education by far takes the lead with costs of 952.9 million UM out of a grand total of 1,240.7, i.e., 77% of the total.2/

Health expenses were in second position with 164.1 million UM, i.e., 13% of the total.

Generally, equipment costs amounted to 87.5 million UM (7%) and fisheries 36.3 (3%), i.e., a total of 123.7 million UM.

On the basis of type of costs, personnel expenditures (53%) and scholarships predominated. This included teachers' salaries and, to a lesser extent, those of health personnel. Scholarships are granted to students and teachers to improve their training.

2/ The total includes all of the educational institutions, including teaching centers relating to health but excluding centers under the Ministries of National Defence and Interior (under which is the Police School).

Table 5. National Budget (1978)

Item	in Millions (UM)	%
1. Operating Budget	(7,711)	(91.0)
1.1 Interest on the National Debt	352	44.2
1.2 Ministerial Operating Costs	5,092	60.1
1.3 Other Expenditures (including subsidies and transfers)	2,267	26.7
2. Investment Budget	(766)	(9.0)
2.1 Payment of the Public Debt	196	2.3
2.2 Investment Expenditures	570	6.7
Total (1) + (2)	8,477	100.0

Source: CILSS, Club du Sahel, Recurrent Costs

Table 6. Recurrent Costs by Project and Type of Costs (1978)
(in millions UM)

	Salaries	Supplies	Admin. Costs	Maintenance	Scholarships	Other	Total	Percentage
I. Training	576,4	50,2	50,8	51,2	218,4	5,8	952,9	76,8 %
II. Other Activities	23,5	-	-	0,2	-	100,1	123,7	10,2 %
III. Health	52,9	100,6	0,3	9,7	-	0,6	164,1	13,0 %
National Hospital	(33.2)	(59.7)	(-)	(5.2)	(-)	(-)	91.1	7,2 %
Polyclinic	(6.5)	(0.8)	(-)	(0.7)	(-)	(-)	8.0	0.6 %
CNH	(0.8)	(5.6)	(0.1)	(2.2)	(-)	(-)	8.7	0.7 %
MCH	(10.1)	(1.6)	(-)	(0.3)	(-)	(-)	12.0	1.0 %
Pharmacy	(2.0)	(38.2)	(0.2)	(0.8)	(-)	(-)	41.2	3.3 %
Health Projection	(0.3)	(1.7)	(-)	(0.5)	(-)	(0.6)	9.1	0.2 %
Grand Total	652.8	150.8	51.1	61.1	218.4	106.5	1.240.7	100.0 %
Percentage	52.6%	12.2%	4.1%	4.9%	17.6%	8.6%	100.0%	

: Source: CILSS, Club of Sahel : Recurrent Costs.

School supplies (4%) and drugs (8%) represented 150.8 million ouguiyas. Administrative costs corresponded as a rule to the students' transportation costs during the vacation period. Conversely, small amounts were allocated to building maintenance of the premises and supplies (5%).

The "other" item represents allotments to institutions or autonomous funds, such as the Islamic Institute, road fund, water programs and fisheries promotion.

As for Ministry of Health expenditures, the high percentage devoted to drugs for the national hospital, the MCH program, the polyclinic of Nouakchott, and the salaries of the Ministry of Health (141.2 million, or 12% of the overall recurrent costs) should be underscored.

The foregoing discussion is intended to highlight the level of recurrent costs because they represented 16% of the 1978 operational budget. Out of this total figure, 12.2% of the operational budget is for school buildings and 12.1% to health.

The basic question for the health sector is whether Mauritania can produce additional resources to meet the recurrent costs of different projects. The analysis of available data will help to answer that question. The data from the expenditures analysis are presented indicatively with regard to the situation of costs. Nevertheless, the levels of costs should be subjected to a more detailed study: the figures or the 1978 budget report are sufficiently different from those presented in other official publications.

III. Analysis of Health Situation

A. Morbidity

If the 1980 urban population of Mauritania has been estimated at 354,000[3/] (173,000 in Nouakchott and 181,000 in the towns of the 12 regions), the rural areas contain 1,089,000 inhabitants, or 75% of the total population (1,443,000). This estimate is based on a 2.5% population growth per year, an annual growth of 7% for Nouakchott, 5% for the other cities, and 2% for the rural areas. The majority of the Mauritanian population, therefore, still lives in the countryside. In this situation one should expect social services (health, education) to be concentrated in the rural areas. This should be all the more credible inasmuch as the government has clearly expressed its decision to have agricultural production as the basis for the economic and social development of the country. However, the health programs now being carried out and those planned for the next five years do not reflect this focus. Tables 1 and 2 have already demonstrated this disparity. Table 6A presents another aspect of the situation: Nouakchott, with 12% of the population of the country (1980), has 58% of the hospital beds in Mauritania. Hospital construction plans for 1981-1985 will lower this percentage to 53%; by then, Nouakchott will have 16% of the population. In other words, in 1980 there was one bed for 320 inhabitants in Nouakchott and one bed for 455 residents in the other towns. In 1985, at the end of the five-year plan the ratio will be 1:340 in Nouakchott and 1:306 in the other urban areas.

On the whole, there is a tendency to improve the ratio of the number of beds outside of the capital city. In Nouakchott, population growth (mainly due to migration) reduces the ratio between the number of beds and the number of inhabitants. In 1980, for the country at large, there was one bed for 1,540 inhabitants, but in 1985 there will be 1 for 1,150.

3/ RAMS: Population Projections, 1980.

Table 6A

Number of Hospital Beds in Mauritania (1980) and Planned for 1985

Health Units	1980 (a)		1985 (b)		(a) + (b)	
	No.	%	No.	%	No.	%
Nouakchott						
Central Hospital	500	54%	-	-	500	36%
General Hospital	-	-	50	10%	50	3%
Anti-tubercular Hospital	-	-	70	15%	70	5%
Psychiatric Hospital	-	-	50	10%	50	3%
Health Center A	-	-	40	8%	40	3%
Mother & Child Centers	40	4%	-	-	40	3%
Sub Total	540	58%	210	43%	750	53%
Region						
Regional Hospital	398	42%	174	36%	572	40%
Health Center A	-	-	81	17%	81	6%
Mother & Child Centers	-	-	20	4%	20	1%
Sub Total	398	42%	275	57%	673	47%
Grand Total	938	100%	485	100%	1423	100%

Source: Preliminary Health Plan (1981-1985).
Ministry of Health.

The recommended ratio is 1:500 for the entire country which would translate into a number of 3,200 beds. There will, however, be 1,400 beds by 1985; the deficit would then amount to 1,800 beds or 56%.

On the basis of these figures, it can be seen that rural areas are seriously deprived of hospital facilities. The great distance and the poor condition of the road system (especially in the rainy season) constitute an additional barrier, which works against improving the accessibility of health services to rural populations. The primary health services, the health centers B and C, the MCH services and maternities will answer the most urgent needs of rural communities.

The analysis of morbidity was begun with a description of population distribution and the number of hospital beds in order to underline the alarming state of health protection in the rural areas, where 75% of the Mauritanian population lives exposed to a difficult and unhealthy environment. Health data show a high morbidity especially among children under five: of endemic transmittable and infectious diseases, nutritional and deficiency problems worsened by the years of drought and low rainfall, all in a vast country with a scattered population and limited means of communication which render many villages inaccessible during the rainy season.

The poor quality of statistics in Mauritania prevents detailed analysis of morbidity or death rates by age and sex. Tropical infectious and parasitic diseases combined with malnutrition constitute by far the vast majority of cases diagnosed in hospital and health centers, and are the cause of the largest number of deaths. While they can be prevented to a great extent, their incidence seems to remain generally stable: malaria, diarrhea, bilharziasis, measles and pulmonary TB affect a high proportion of Mauritanians every year. Estimates of the Ministry of Health provide the following statistics for 1980.[4/]

4/ Ministry of Health (1980): Analysis of Case Studies reported by health units.

Table 7

Prevalence of Five Diseases in Mauritania

Disease	Number of Reported Cases	Population Exposed	Prevalence
Diarrhea/Enteritis	80,000	468,150 1/	171/1000
Measles	11,200	468,150	25/1000
Malaria	57,600	1,437,560 2/	40/1000
Pulmonary TB	7,400	1,437,560	5/1000
Urinary bilharziasis	6,500	1,437,560	0.5/1000

1/ Children of 0 to 9 years of age.

2/ Total population of Mauritania

Among the diseases relating to pregnancy, delivery and post-partum infections. hemorrhages, toxemia of pregnancy and difficult labor are particularly noteworthy.

As to mothers, their nutritional condition deteriorates during the rainy season, affecting pregnant women and nursing mothers.

Intestinal parasites are fairly common among youth and adults. The problem of the endemic diseases will be treated below in the discussion on environmental factors.

It should be pointed out that a large number of children between 6 months and five years of age suffer from severe and sometimes miltiple infections: malaria, diarrhea or pneumonia. On the other hand a mild disease such as measles becomes very serious when it is combined with malnutrition. Malaria, a widely spread disease among young children, is probably the principal cause of death for those under three along the banks of the Senegal River during the rainy season. At about the age of three, a child begins to build up a natural immunity against serious attacks. Although a high percentage of the adult population is infected with plasmodium before reaching twenty, adults build up a certain immunity against malaria to such a point that they are incapacitated for only two or three days before being able to go back to work. However, it can be estimated that workers in Mauritania lose 10 days of work every year because of this disease.

Diarrhea and vomiting are prevalent among children between 6 months and 2 years of age, especially during the dry season. After that age, the incidence of diarrhea and vomiting diminishes.

Children's contagious diseases are (fairly) frequent, especially measles; when it is combined with malnutrition, its lethality is very high. Measles can be caught any time in the year and spreads very rapidly. Anti-measles vaccinations have not as yet reached a sufficient number of children in Mauritania to reduce the incidence of the disease.

Morbidity and mortality among children 2 to 3 years of age seem to increase during the planting season and the rainy season. This situation is due to some extent to the agricultural work of women during this period, and to the lack of adequate care for nursing mothers and infants. Also, at that time of the year children are more susceptible to the effects of heat and humidity. In addition to the negative effects on the development of the child's mental processes, disorders due to malnutrition can be considered as responsible for a high mortality. directly or as a superimposed cause which increases the lethality of other diseases.

B. Mortality

Figure 2 presents mortality estimates of the Mauritanian population as provided by the United Nations (from 1950 to 2000) as part of a general study conducted in 1979, on tendancies of world population growth[5/] estimates show a progressive reduction in the death rate from 27.8 per thousand in 1950 to 22.8 in 1980; projections show a death rate of 16.3 per thousand by the year 2000.

RAMS estimates for 1980 are 22 per thousand[3/] whereas the Mauritanian Census Bureau comes up with 21.[6/]

The UN Department of Economic and Social Affairs in its last report[7/] estimates general mortality for Mauritania at 31.8 per thousand for 1950-1955; 21.3 for 1980-1985 and 14.8 for 1995-2000.

In summary, estimates on general mortality given by various organizations range from 21 to 22.8 in 1980. It is a high mortality rate. One of the reasons for this is due to the level of infant mortality which is estimated at between 170 and 180 per thousand (1980). Life expectancy is estimated at 40 years (1980), as shown in Figure 3.

The main causes of infant mortality are primarily obstetrical complications. closely followed by premature births, respiratory infections, gastroenteritis, communicable diseases and tetanus.

Below five years of age the order of mortality cases are: respiratory diseases, malaria, malnutrition. gastroenteritis, communicable diseases (with measles leading), tuberculosis, tetanus and accidents.

5/ World Population Trends and Policies, United Nationa, N.Y., 1979.

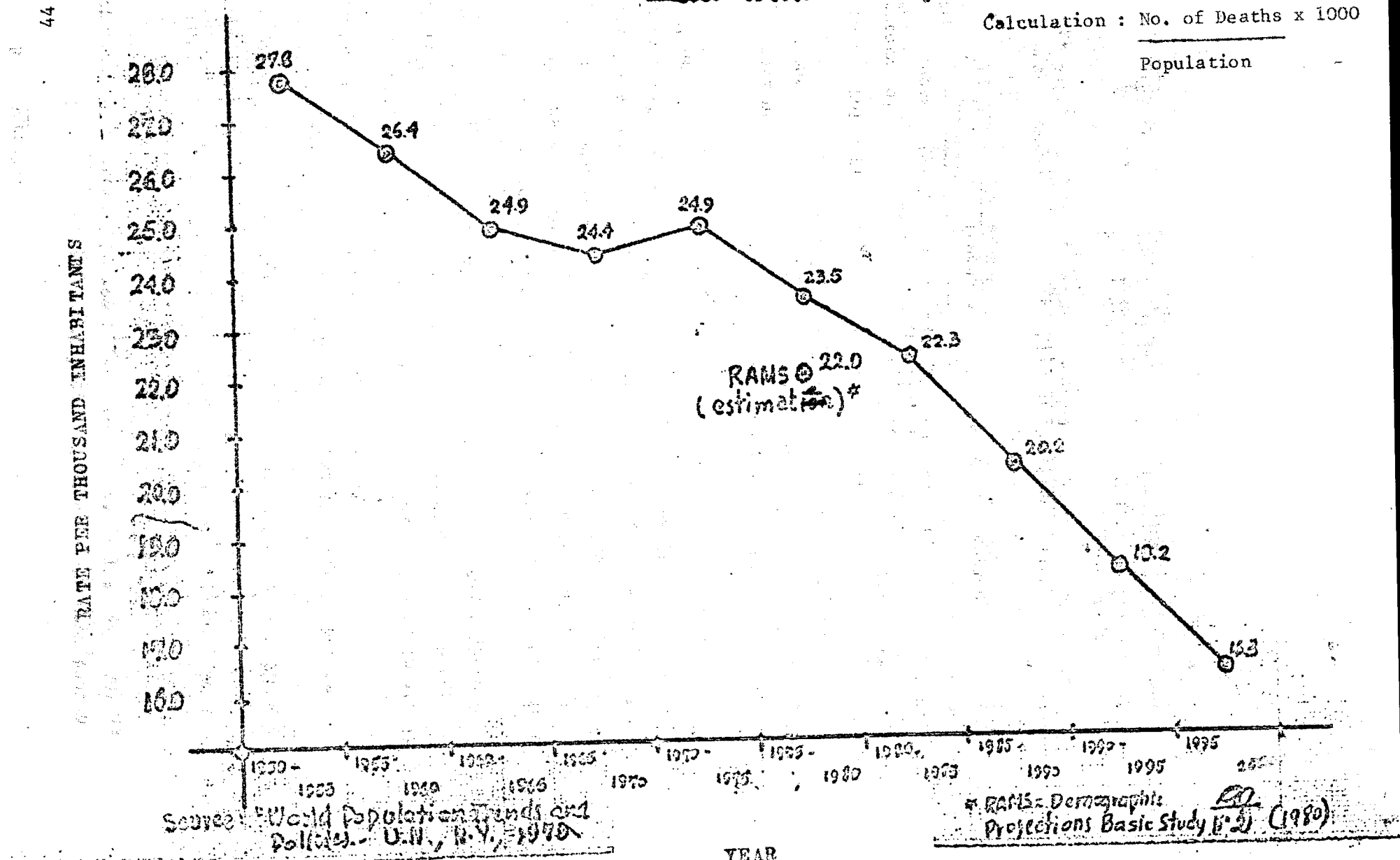
3/ See page 38.

6/ Census Bureau, Islamic Republic of Mauritania (1981) Communication Provisoire sur les Indices Demographiques.

7/ World Population Trends and Prospects by Country. (1950-2000): Summary Report of the 1978 Assessment. United Nations Department of International Economic and Social Affairs, New York. 1979.

Figure 2. Mortality Rate

Calculation : No. of Deaths x 1000 / Population



Source: World Population Trends and Policies - U.N., N.Y., 1979

* RAMS = Demographic Projections Basic Study E.J (1980)

C. Fertility

If fertility is measured according to the gross birth rate, estimates vary from 44.7 (United Nations)[5/] and 45.0 (GIRM Census Bureau) to 47.0 (RAMS) and 50.2 United Nations Department of Economic and Social Affairs.[7/] Differences are, therefore, more pronounced in fertility rather then mortality.

The gross reproduction rate[8/] is estimated at 3.40 for 1980-85[7/]. For Africa it is estimated at 3.06 for the same period.

Figure 4 presents the United Nation birth rate estimate (1950-2000). These estimates range from 44.3 per thousand inhabitant in 1950 to 40.1 in the year 2000, still a very high birth rate.

Table 8 below provides calculation concerning the specific fertility rate by age group for Mauritania in 1957 and 1964-65. This rate represents the annual birth rate among women belonging to a specific age group to 1,000 women of the same age group (calculated at mid-year).

5/ See page 43.

7/ See page 43.

8/ Gross rate of reproduction is the average number of girls a group of women would have had if its fertility had been similar to a group of women at a reproductive age (12-47 years) with a specific rate of fertility. The rate assumes that all women will live to the end of their reproductive time. When the rate is multiplied by 2, the result is approximately the size of a household.

Table 8

Specific Rate of Fertility by Age Group in Mauritania

Year	Total Fertility Rate)per woman)	Specific Rate of Fertility (per 1,000 women)						
		15-19	20-24	25-29	30-34	35-39	40-41	45-49
1957	5.855	149.0	254.0	272.0	218.0	163.0	81.0	34.0
64-65	5.71	129.1	233.9	238.0	218.3	174.2	95.2	53.6

Source: 1957 The rates correspond to the sedentary and nomad rural populations which have been included in the 1977 sample survey (Mauritania and Senegal on the banks of the river Senegal).2/

1965 The rates correspond to the total population and were calculated on the basis of the female population between 15 and 45 years of age, and on information on births over a 12-month period before the 1964-1965 survey.9/

2/ See page 34.

9/ INSEE. "Enquete Demographique en Mauritania. Resultats Definitifs", Paris, 1972. An analysis of fertility rates in rural areas is presented by W. Brass et. al. in Demography of Tropical Africa, 1978, p. 426.

No explicit statement on the high level of the general birth rate is contained in the economic and social development plans of Mauritania; no plans mention a family planning program in answer to this rate.

There is no doubt that planners do not see family planning within the context of a demographic policy but rather in a social setting of health and family protection. Emphasis is, therefore, placed on mothers taking preventive measures to guard against repeated and frequent pregnancies. Such actions are taken for their health and for that of their children and against the risks of increasing infant and maternal mortality. It is through maternal and child health programs (MCH) that a strategy of family welfare is beginning to develop in Mauritania.

D. Population Growth

The improvement of the health system (due to vaccination measures, the extension of water points, and to maternal, and child programs) has contributed to a reduction of the death rate. At the same time this improvement has increased the rate of the natural population growth because of the absence of change in the high fertility rate.

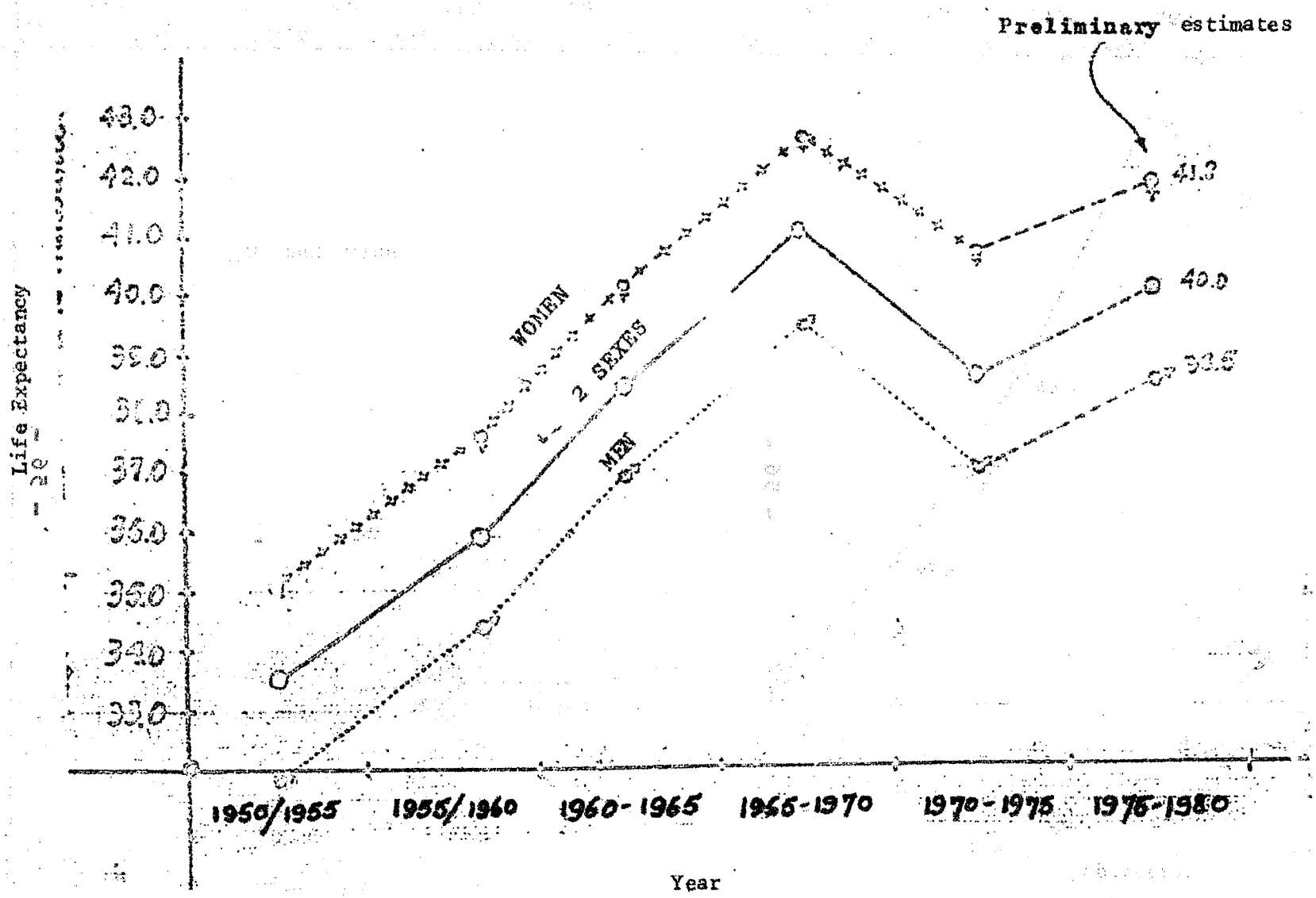
This results in a pressure on other factors, i.e., agricultural production, supply of labor, the increase in number of beneficiaries of social services, etc. In this manner the government is obliged to spend larger sums of money to finance projects that are not necessarily productive. Investments in the modern sector of the

economy, therefore, are very limited and unable to produce a rate of return. On the other hand, food self-sufficiency becomes very difficult to achieve. H nce, one wonders what threshold must be reached before economic and social development can solve the problems linked to the high rate of population growth (2.5%).

Figures 5, 6 and 7 show, respectively, the rate of natural population growth, the rate of population growth, and population projections between 1950 and the year 2000. The source of information are the United Nations estimates of 1979.[5/]

Figure 8 is a graphic presentation in pyramid forms of Mauritania's 1977 population, Nouakchott's and the 12 administrative regions. Note should be taken of the imbalance between males and females by region. This is probably due to the migration of young men to the capital city and to neighboring countries. In certain cases this movement coincides with the timing of the census (end of 1976 and early 1977). Table 9 shows the population distribution by sex and by region.

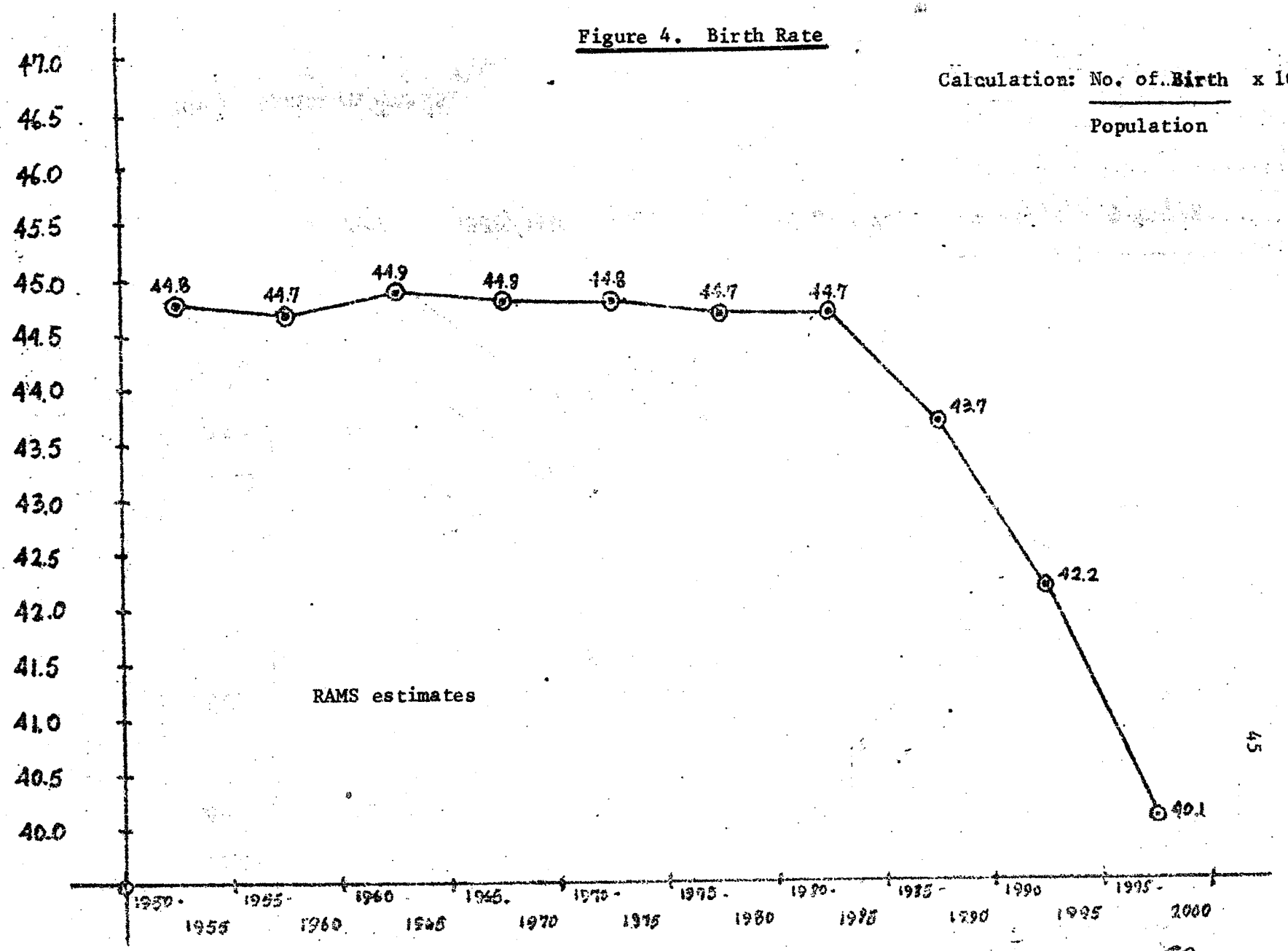
Figure 3. Life Expectancy (1980-1975)



Source: "World Population Trends and Policies" U.N., N.Y. 1979.

Figure 4. Birth Rate

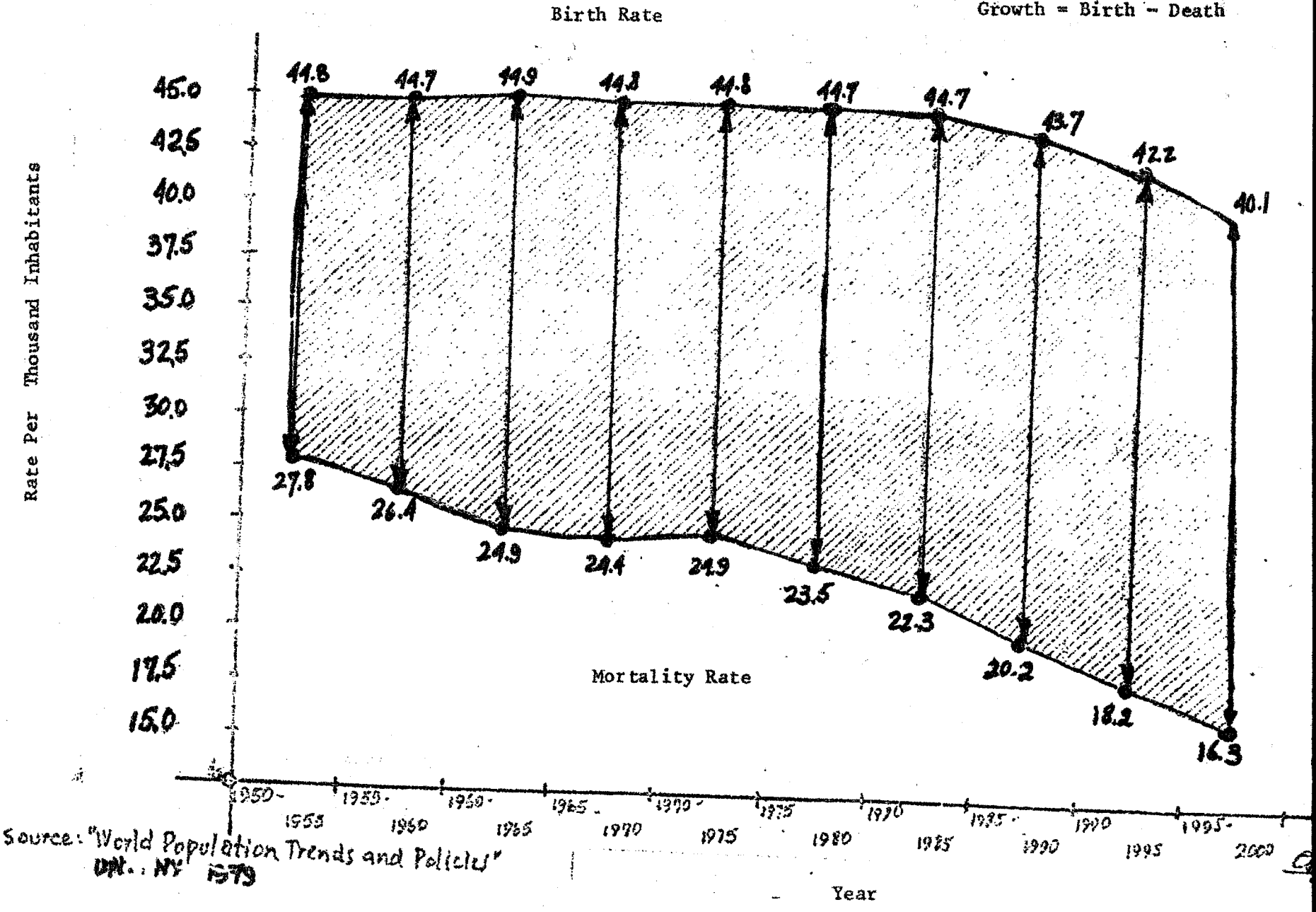
Calculation: $\frac{\text{No. of Birth}}{\text{Population}} \times 100$



Source: "World Population Trends and Policies" - UN, N.Y, 1979.

* RAMS = Demographic projections. Basic Study N°2 (1980)

Figure 5. National Growth Rates % (1950-2000)



Source: "World Population Trends and Policies" UN., NY 1979

Figure 6. Population Growth Rates (%)

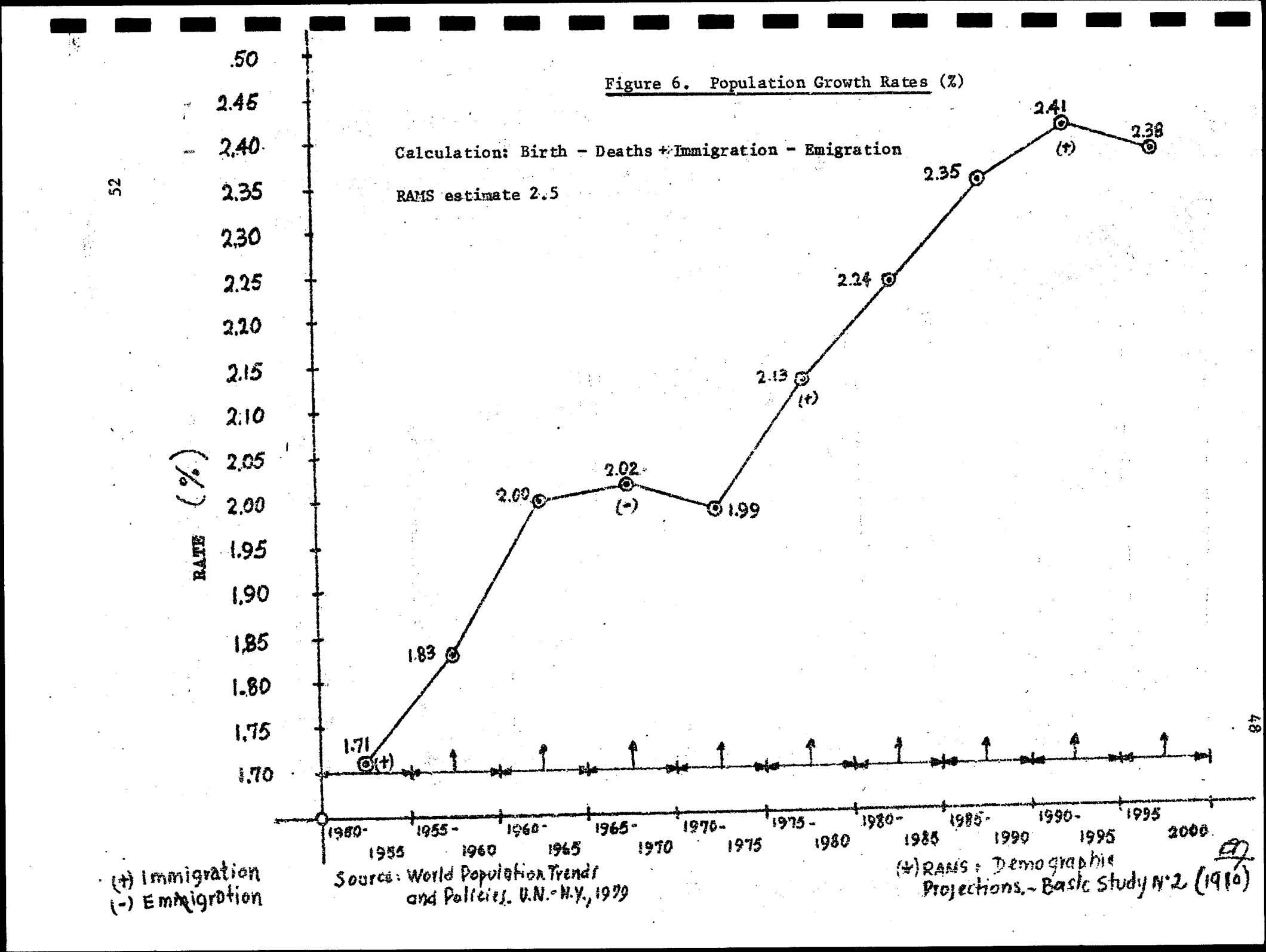
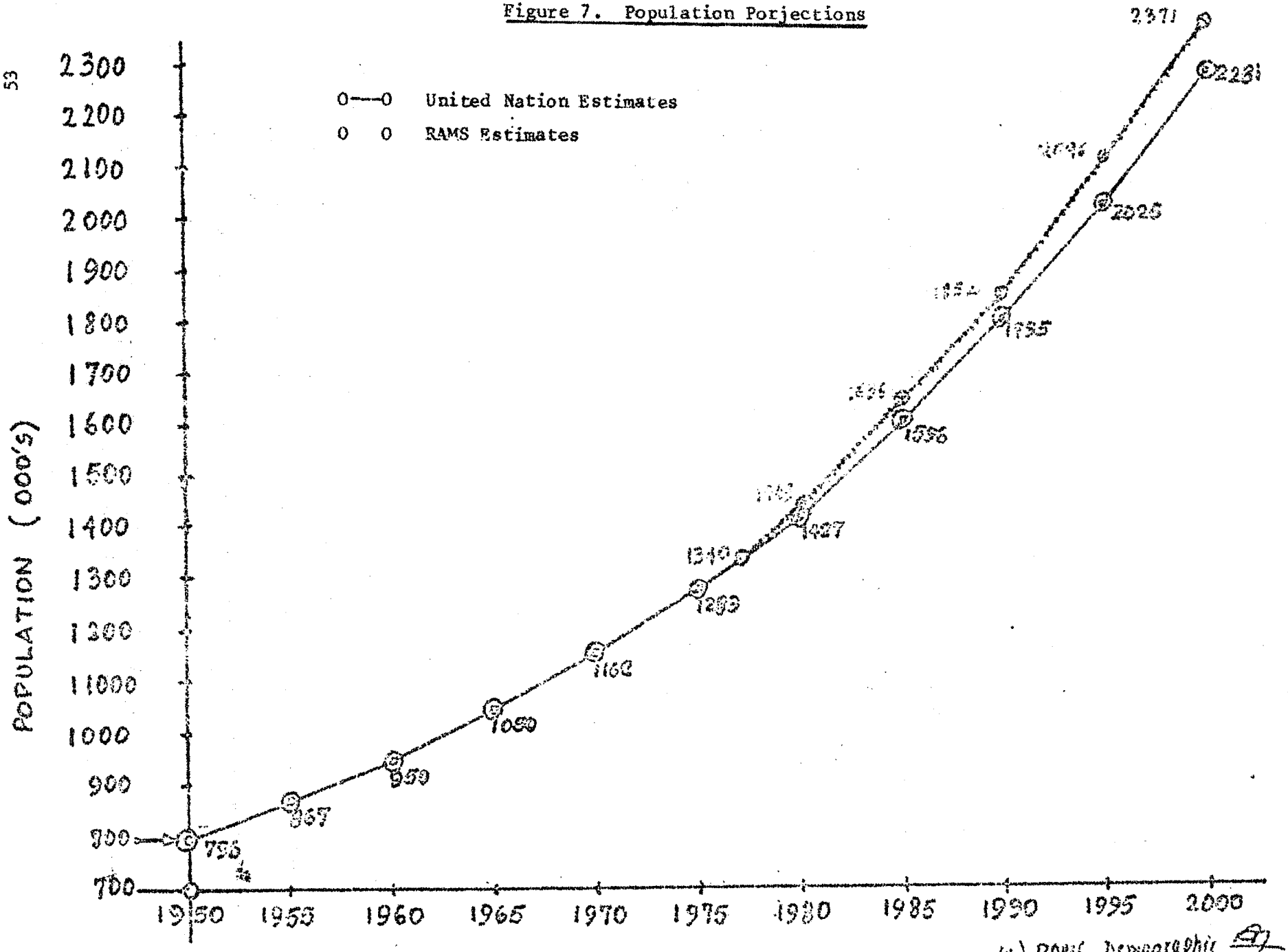


Figure 7. Population Porjections



Source: "World Population Trends and Policies". U.N. New York, 1979. P. 170.

(a) RAMS. Demographic Projections. Basic Study IV-2

Table 9

Percentage Distribution of the Population of Mauritania by Sex and Region - (1977)

Region	Men	Women
Nouakchott	56.8	43.2
Eastern Hodh	48.9	51.1
Western Hodh	47.3	52.7
Assaba	46.4	53.6
Gorgol	48.2	51.8
Brakna	47.0	53.0
Trarza	47.4	52.6
Adrar	52.2	47.8
Nouadhibou	48.2	51.8
Tagant	46.8	53.2
Guidimaka	48.4	51.6
Tiris Zemmour	57.3	42.7
Inchiri	53.6	46.4

Source: National census 1977, Islamic Republic of Mauritania.

Figure 8. Population Pyramids (National and by REgion) 1977

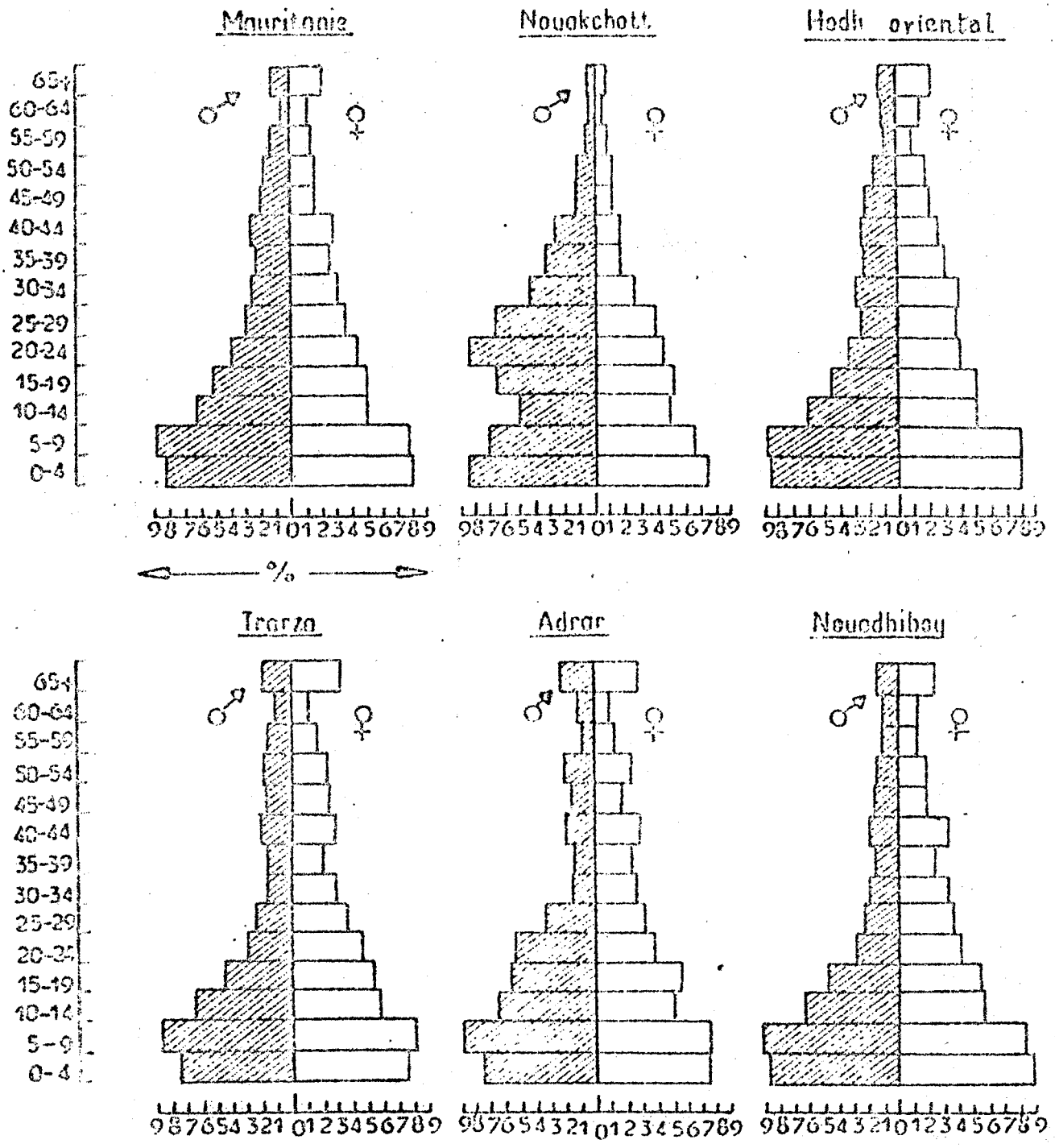
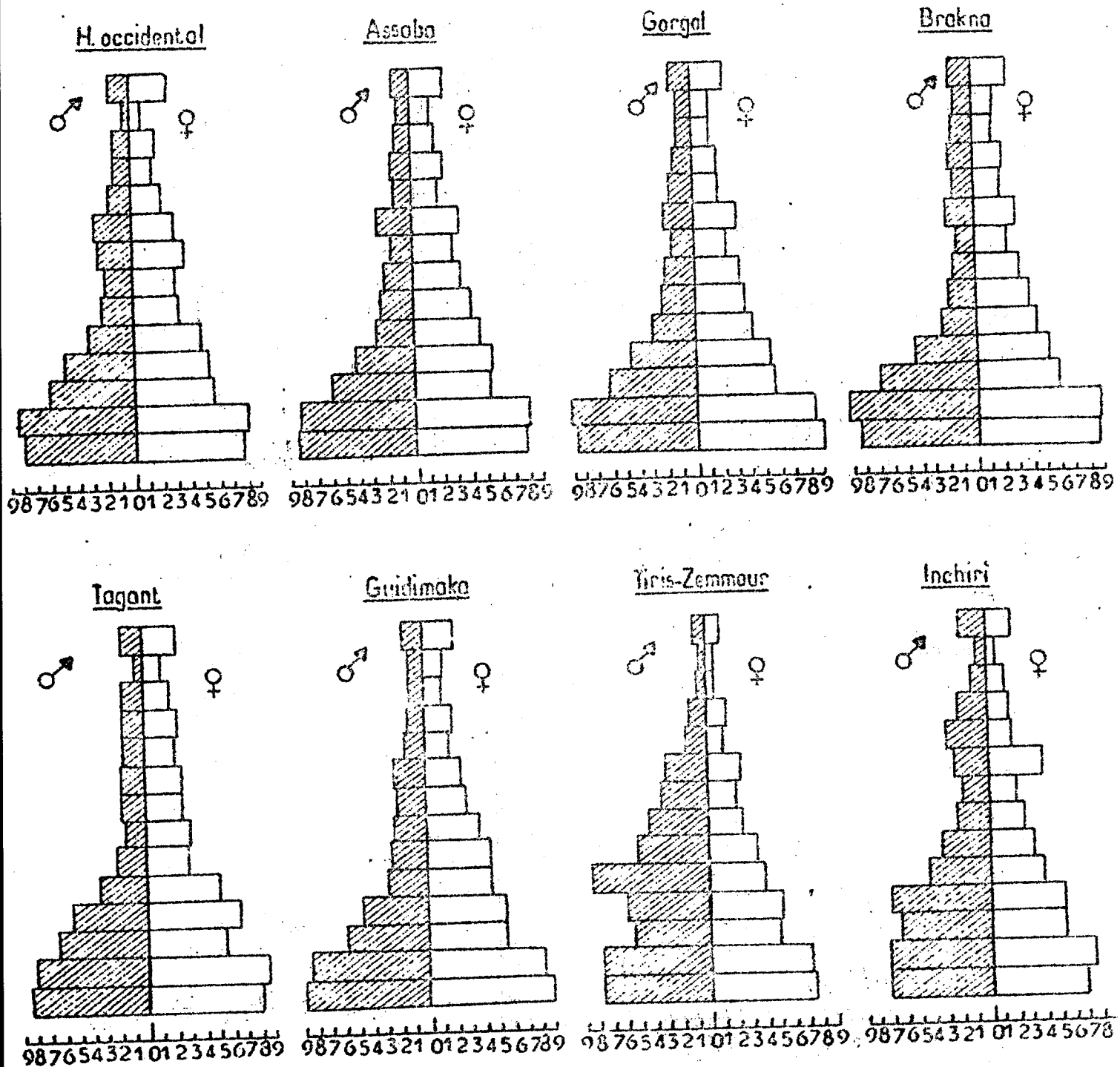


Figure 8. Population Pyramids (National and by Region) 1977



The distribution by age and by sex for the country is presented in Table 10 and by type of residence in Table 11.

In summary, the population of Mauritania has increased since 1950. The rate of natural population growth estimated by RAMS amounts to 2.5% per year. This growth is the result of a high gross birth rate (47 per thousand) and of a decreasing death rate (22 per thousand). If this remains constant, provided there is no major population movement across the borders, the population of the country would double in 28 years. A stationary birth rate and a decreasing death rate suggest that the rate of population growth, instead of decreasing, is going to increase rapidly for a certain time. The results are a rapid increase in the country's young population and an accelerated migration. Population growth will increase the pressure on social services, such as health and education, and increase the consumption of food. Another effect will be to increase dependence since the percentage of the population under 15 is going to increase. As to the rate of migration, it will encourage the youths of rural regions to move to towns, with ensuing unemployment and related problems linked to galloping urbanization. The aging of the rural population as a result of the migration of youths, is a resultant problem. The migration of Mauritanians to neighboring countries has a negative impact on the availability of agricultural labor which is necessary to meet goals of food self-sufficiency.

These rapid changes in the size, distribution, composition and density of the population will have an unfavorable effect on the health condition of those living in urban and rural areas. The already insufficient urban health services will not be able to cope with the human stampede. According to the projections made by RAMS, it is estimated that Nouakchott will increase 2.3 times in size between 1980 and 2000, rising from 173,000 to 574,000 residents. Table 12 provides population figures and projections of growth rates for five-year periods.

Table 10 . Distribution of the Population by Age and Sex

AGE Bracket	MEN		WOMEN		T O T A L	
	N°	%	N°	%	N°	%
0 - 4	110,261	8.2	106,526	8.0	216,787	16.2
5 - 9	113,809	8.5	105,397	7.9	219,206	16.4
10 - 14	81,141	6.1	71,524	5.3	152,665	11.4
15 - 19	67,504	5.0	70,770	5.3	138,274	10.3
20 - 24	52,776	3.9	58,542	4.4	111,318	8.3
25 - 29	40,969	3.0	48,060	3.6	89,029	6.6
30 - 34	33,043	2.5	40,681	3.0	73,724	5.5
35 - 39	28,905	2.2	32,804	2.4	61,709	4.6
40 - 44	32,665	2.4	36,021	2.7	68,686	5.1
45 - 49	23,807	1.8	24,036	1.8	47,843	3.6
50 - 54	22,688	1.7	24,432	1.8	47,120	3.5
55 - 59	16,911	1.3	17,487	1.3	34,398	2.6
60 - 64	12,754	1.0	14,508	1.1	27,262	2.1
65 +	21,128	1.6	29,681	2.2	50,809	3.8
T O T A L	658.361	49.2	680.469	50.8	1338.830	100.0

Source: National population census - GIRM 1977

Table 11. Population by Type of Residence (Sedentary and Nomadic) by Regions

REGION	SEDENTARY	NOMAD	TOTAL
Nouakchott	134.704	-	134.704
Hodh Charqui	71.013	85.708	156.721
Hodh Gharbi	60.184	64.010	124.194
Assaba	85.724	43.438	129.162
Gorgol	133.067	16.365	149.432
Brakna	100.750	50.603	151.353
Trarza	109.900	106.108	216.008
Adrar	37.700	17.654	55.354
Nouadhibou	23.526	-	23.526
Tagant	32.445	42.535	74.980
Guidimaka	74.164	9.067	83.231
Tiris Zemmour	21.817	737	22.554
Inchiri	9.816	7.795	17.611
T O T A L	894.810	444.020	1.338.830

Source: National population census, Census Bureau.

Table 12. Population Projection (1980 - 2000)

Population	1980	1985	1990	1995	2000
Nouakchott	173.000	254.000	345.000	451.000	574.000
		(47 %)	(36 %)	(31 %)	(27 %)
Urban population Without Nouakchott	181.000	206.000	233.000	257.000	280.000
		(14 %)	(13 %)	(10 %)	(9 %)
Rural population (sedentary)	680.000	813.000	344.000	1084.000	1.235.000
		(20 %)	(16 %)	(15 %)	(14 %)
Rural population nomadic	409.000	363.000	330.000	304.000	282.000
		(-10 %)	(-9 %)	(- 8 %)	(- 7 %)
Total population (Mauritania)	1443.000	1636.000	1852.000	2096.000	2.371.000
		(13%)	(13%)	(13%)	(13%)

* Growth rate in a five-year period.

A reduction of overall mortality and infant mortality, in the balance of a drop in fertility, threatens to further increase population growth. This explains why MCH program must be accompanied by actions aimed at family well-being based on a spacing of births as a means of safeguarding the health of the mother and the child.

is ensured by scholarships being offered by international organizations and by friendly countries. Official documents on this point are contradictory and should be reviewed more carefully.

Table 17 shows the numbers of health personnel that would be necessary by year 2000, if WHO recommendations are followed.

According to Ministry of Health plans, the following personnel will complete training courses under the Fourth Development Plan:

Table 16

Training Plan for Health Personnel at the Ministry of Health (1981-1990)

Profession	81	82	83	84	85	86	87	88	89	90	Total
Doctors	20	20	20	20	20	20	20	20	20	20	200
Medical Specialists	4	4	4	10	10	10	10	10	10	10	82
Dental Surgeons	1	-	-	-	-	-	-	-	-	-	1
Pharmacists	-	4	4	3	2	2	2	2	-	-	19
Para-medical staff	167	60	60	60	60	60	-	-	-	-	467
Statisticians	1	1	-	-	-	-	-	-	-	-	2
Health Planners	1	1	-	-	-	-	-	-	-	-	2
Technical Assistants	200	200	200	200	200	-	-	-	-	-	1000
Total	394	290	288	293	292	92	32	32	30	30	1773

In addition, the training of trainers should be taken into consideration, as well as the recycling of personnel and the training of multi-disciplinary personnel. Currently, the orientation which consists in "readapting" graduate nurses does not meet the personnel needs for primary health care training. The organization of professional nurses, midwives of government and auxiliary nurses, and health assistants, etc., should be reconsidered and readapted to the needs of community medicine.

Until now, efforts to train health personnel have consisted of recruiting and training personnel of all levels according to the health needs of the population (curative needs in particular). They included the short-term training of intermediate and basic personnel: government nurses and public health auxiliary staff. This training was initiated under a training plan for public health auxiliary personnel (traditional midwives, assistant midwives and supervisory government nurses). Under the same plan the training of village druggists and community health assistants was envisaged in a second stage.

This project, which in its initial stage was under the MCH service, will be extended and called a family welfare project. (UNFPA will finance the project.)

The skilled personnel trained at the National School of Nursing and Midwives of Nouakchott includes midwives, graduate nurses and government nurses. A certain number of midwives and government nurses are also being trained in other African countries (Libya, Morocco and Algeria).

Insofar as doctors are concerned, 140 should be trained by 1985; 97 are already being trained (it seems) and the orientation of future baccalaureat students will be established with year 2000 objectives in mind! Particular emphasis is being placed on the training of specialists who will work in the hospital system; training of a large number of them

By the year 2000, the needs in health personnel training should be twice those of 1980 if one takes into account retirements, loss due to deaths, etc. (See Tables 14 and 15).

The first conclusion that can be drawn from these two tables is that the only place where it is possible to speak of health care is in Nouakchott. In the rest of the country, without taking into account French specialists (there are 100 professionals under the technical assistance program: doctors, druggists, midwives, engineers, technicians, etc.) the medical service is under the responsibility of government nurses. The cost and the difficulties in training Mauritanian medical personnel abroad are inordinate as compared with current possibilities. If it is possible to quantify needs, it would be difficult to find capable and motivated students who, after their training (7 to 10 years) would return under the conditions the country would offer.

As to health care in rural areas, the only solution is to entrust primary health services (sanitary experts, traditional midwives etc.) to local communities. The personnel would be provided by communities in accordance with the plans of the Ministry of Health. An overall policy of community participation in health, education and nutrition must be carried out immediately by the government. But the training of trainers in the regions, the supply of medical kits, the coordination of mobile units which are to ensure preventive measures and finally, to train local personnel over an adequate period (2 months minimum) would represent an important investment in time and money. The experience which is gained in the Trarza and Adrar can serve as a basis for other similar experiences in the rest of the country.

The National School of Nursing and Midwives of Nouakchott (ENISF) was created in 1966 with the assistance of WHO and UNICEF. A fundamental reorientation of its curriculum would be necessary in order to include preventive medicine approaches, primary health care, and local community organizations, etc.

In the district of Nouakchott and the twelve regions the distribution and need for doctors are as follows (1980):

Table 15

Levels and Shortages of Doctors by Region

Region	Population	Recommended No. by WHO	Actual No. in Ministry of Health	Shortage	
				No.	%
Nouakchott	173,000	17	40	+ 23	+135
Hodh Charqui	166,000	16	1	15	92.8
Hodh Gharbi	130,000	13	1	12	92.3
Assaba	135,000	13	1	12	92.3
Gorgol	158,000	16	2	14	87.5
Brakna	159,000	16	1	15	93.8
Trarza	224,000	22	2	20	91.0
Adrar	56,000	6	2	4	66.7
Nouadhibou	30,000	3	2	1	33.3
Tagant	78,000	8	-	8	100.0
Guidimaka	90,000	9	1	8	88.9
Tiris Zemmour	26,000	3	1	2	66.6
Inchiri	17,000	2	2	1	50.0
	1,445,000	144	55	89 (average)	61.8

Until now the quality of the services has never been controlled but the crying need for diagnostic materials (laboratories, X-rays, etc.) in the hospitals and in the health centers are proof of the need to establish a quality control system of the services given provided by all health units.

3. Capacity to Train Health Personnel

The following table indicates the need of health personnel as of 1980.

Table 14

Levels of Shortage of Health Personnel (1980)

	Proportion* Recommended by WHO (Afr.)	No. Needed	Actual No. of Ministry of Health Personnel	Personnel Shortages** No.	%
Doctors	1/10,000	14	55	89	61.8
Dentists	1/30,000	48	5	43	89.6
Government Nurses	1/ 5 000	286	216	70	24.5
Government Midwives	1/ 5,000	286	52	234	81.8
Pharmacists	1/50,000	29	10	19	65.5
Sanitary Engineers	1/250,000	6	1	5	83.3
Licensed Nurses	1/ 2 000	722	299	423	58.6
Dental Technicians	1/ 2 000	1,400	5	1,435	99.7
Traditional Midwives	1/ 3 000	480	105	375	78.1
Total		3 441	748	2 693	78.3 (average)

* Per 1980 population 1,443 000 inhabitants

** Personnel paid by the Ministry of Health according to Ministry's Personnel Office.

In theory, there is decentralized administration (under the responsibility of the governor in each region) and also a technical decentralization (under the responsibility of the Head Doctor of the region), but the actual operation of the system is much more complicated.

As to health planning, it has been entrusted to a unit of the Health Department, but does not have any specialized personnel. This explains the absence of any detailed programming of a specific plan of action, or of a long-term strategy.

2. Capacity of Medical Care

The absence of a specific program of action in the Ministry of Health seriously reduces the capacity of offering curative and preventive services capable of reducing the morbidity and mortality rates. The number of activities in urban areas and the high expenditures that individual health services represent for the health budget are too high for the meager resources of the ministry. Recurrent costs stemming from investments in curative medicine infrastructure (regional and national hospitals) will compromise all the increases that the health budget foresees in the future Most of these investments are grants from friendly countries or from international organizations which do not take into account the country's limited absorptive capacity as it relates to operating costs and the shortage of trained health personnel.

The result of this state of affairs is a virtual absence of health services in rural areas where 75% of the population live. The conception of mass medicine as a basic element of a unified and integrated national health service is still a theory in Mauritania.

Existing services suffer from the high cost of medication and their sporadic distribution. There seems to be no systematic method of procurement of generic drugs or of their distribution to the different regions of the country facing special health problems.

If there is no discussion within a reasonable period of time, it should be provoked in order to reach a concensus between the "beneficiaries" and the "public power". In health/nutrition programs the most important constraint in this category is the lack of community participation in the decision making process and even in the operation of programs.

B. Endogenous Constraints

1. Management and Planning Capacity

The management of health has been entrusted to the Ministry of Health. The structure of this ministry (page) is too compartmentalized to facilitate the coordination of the various sections and the integration between preventive and curative medicine, or the creation of operational links with other ministeries, such as the Ministry of Rural Development or Education. A reorganization is indispensable to improve the efficiency of the ministry. The actual structure of the ministry is the result of gradually grafting sections as new vertical services were created. The creation of national health services in Mauritania can be traced back to the country's independence in 1960. Government responsibility was established and a Ministry of Health and Population was created. There was no re-structuring or reorganization and the new national services succeeded the colonial health services, monitoring the same infrastructure. The development process of 20 years remained unchanged from that of the services of the colonial period.

The operations of the Ministry of Health are of a curative and preventive nature linked to health and nutritional education: they reach 15 to 20% of the country's population and extend to about 75% of the urban population at a terribly high cost.

(v) Social Situation: a great diversity in ethnic groups and local languages health and nutritional attitudes and practices which can be dangerous: a lack of participation in decision-making at the village level (predominance of patriarchal and hierarchial power) a lack of community participation in planning, operation and evaluation of health programs.

Influence of Environment: the low rainfall, difficult access to water sources (in quantity and quality for human use and for agriculture and for livestock) advance of the desert and desertification. difficulties in road transport during the rainy season.

c. Other Factors: The constraints of a political order result from the inter-action of endogenous and exogenous factors. They are at times very subtle and difficult to analyze but are always present in the inter-action between the government and the community. between the decision-making centers and the production and consumption centers The bureaucratic process does not necessarily follow a logical line in making decisions. The formulation of policy and the preparation of a plan or a program is usually the result of the work of a small group of technocrats of a ministry, following the dictates of a minister, and this without prior consulting of the interested parties (labor unions, farmers' association, cooperatives, chambers of commerce community organizations, political parties, etc.).

Mauritania is not foreign to this style of operation rapidly conceived policies, formulation of plans or programs whose only aim is the satisfaction of the political needs of the moment or satisfaction of the interests of international donors. This manner of operating. "to save time", has sometimes unexpected results. In today's world it is impossible to avoid political debates as an exercise of power.

(v) Evaluation/Supervision of Programs and of Health Personnel: the lack of a data collection system and of health information system; programs: the absence of specific standards procedure and precise techniques for follow-up the limited, ineffective regional and local decentralization of logistic support.

b. Exogenous Factors: The main constraints of a socio-cultural and environmental nature (factors exogenous to the system) are:

(i) Population Growth: a 2.5% growth per annum in the face of limited national resources changing demographic factors characterized by high rates of fertility mortality migration (internal and international) and marriages a low life expectancy (0 years).

(ii) Health Status: a high prevalence of certain tropical diseases (malaria, bilharziasis Guinea worm intestinal parasites) contagious diseases (measles tuberculosis venereal diseases) and infectious diseases (diarrhea and enteritis, pneumonia, dermatitis conjunctivitis otitis).

(iii) Status of Nutrition: food deficiencies due to ignorance traditional taboos abrupt weaning. The existence of malnutrition as a result of insufficient food.

(iv) Economic Situation: a heavy dependance on foreign aid and a slow growth of the GDP low percentage of the health budget compared to the national budget a low per capita income: unemployment inflation: increase in the costs of transportation drugs and equipment.

IV. Constraints Affecting the National Health System in Mauritania

A. Introduction

Three categories of constraints affect the national health system:

a. constraints relating to the system itself
b. socio-cultural and environmental constraints, and
c. political constraints

a. Endogenous Factors: Among the constraints inherent in the health system (endogenous factors to the system):

(i) Management/planning: absence of a diagnosis of the health situation of the country, of a long-range strategy and of a specific plan for the achievement of specific objectives.

(ii) Operations: a low priority is given to primary health care and to preventive medicine; the favorable aspects of traditional medicine are often neglected.

(iii) Training in quality and quantity of the Necessary Health Personnel: The Mauritanian professional and para-medical personnel do not have, in genegal, multi-disciplinary training or sufficient motivation to work in rural areas.

(iv) Administration of Services: The high per capita cost per annum, recurrent charges that extend beyond the anticipated resources in the sector; the absence of logistic support of all kinds.

Table 13

Budget Estimates of the Ministry of Health

Fourth Development Plan (1981-1985)

Items	1981	1982	1983	1984	1985	Total	%
Recurrent Cost							
Personnel	237	260	286	315	347	1445	24.3
Operations	124	129	130	131	134	648	10.9
Pharm. Products	219	246	258	271	286	1280	21.4
Sub-Total	580	635	674	717	767	3373	56.6
Investment Costs							
Construction	64	143	109	150	16	482	8.1
Renovation	53	87	93	65	37	335	5.6
Equipment	252	301	190	185	114	1042	17.5
Vehicles	42	33	21	14	18	128	2.2
Sub Total	411	564	413	414	185	1987	33.4
Special Activities							
PEV (Vaccination)	-	12	13	15	16	56	0.9
Spec. Units	34	38	41	45	50	208	3.5
Bilharziasis/Malaria	28	14	14	16	21	93	1.6
Anti-Tuberculosis	56	56	55	34	34	235	4.0
Sub Total	118	120	123	110	121	592	10.0
Grand Total	1109	1319	1210	1241	1073	5952	100.0

v. An extended vaccination program (PEV) to vaccinate children against six contagious diseases: diptheria/whooping cough/tetanus, measles, polio and tuberculosis. The plan proposes to vaccinate 85% of the children in the country by about 1985.

The specific aims indicate which programs are still to be developed. These programs will have to be coordinated so that multidisciplinary personnel can carry them out. In addition, each program will have its own specific objectives of a quality and quantity nature.

The specific objectives presented in the plan are well adapted to the needs of the country and, in general, they could be applied in any tropical country. However, this part of the plan must be considered as the foundation stone of all the strategies and actions of the plan.

The budget of the Fourth Development Plan (Table 13), as contrasted with that of the Third Plan, includes significant amounts for the extension of health coverage (infrastructure, personnel, drugs), for the improvement of the control and diagnosis of diseases (equipment, logistical support), and for the initiation of community health (vaccination, campaigns against tropical and infectious diseases).

These reflect the pre-occupation of the Ministry of Health to resolve the most urgent health problems of the country.

The possibility of achieving the general objectives of "health for all" in Mauritania will depend essentially on the political will of the government to place a priority on the improvement of the quality of life. The entire community and the private sector must also contribute to the efforts to provide impetus and viability to the plan.

ii. Optimal yield of health centers as a result of the extension and improvement of health care units: creation of new health units; reorganization of those in poor condition; renewal of equipment of all health centers; provision of an adequate and well-maintained motor pool; procurement and distribution of drugs in sufficient quantity and quality; training of professional and para-medical personnel in accordance with the objectives of the plan; creation of specified professional, social and administrative incentives in order to retain health personnel in the country and in the civil service.

b. Objectives of Effectiveness: (Preventive medicine, public health and their impact on morbidity, mortality and fertility).

i. Priority attention to vulnerable groups: pregnant women and nursing mothers, children under five years of age, rural populations far from distribution centers, and water points, shanty towns residents, etc.

ii. A nutrition and health education campaign using all means of communications; health officials, civil servants and the official and unofficial leaders of the community.

iii. A campaign against recurrent tropical diseases in Mauritania (malaria, bilharziasis, dracontiasis) and against tuberculosis and leprosy.

iv. Campaign of environmental control: sanitation; hygiene; supply and improvement of the quality of water; promulgation of a legislation and organization of a health inspection program.

d. The Size of Household: Taking into account the extent to which the family meal must stretch and be distributed, the nutrition problems increase: the average size of the household is between 6 and 8 persons depending on the region and department. In addition, one must consider the constant flow of guests, members of polygamous households, etc. Thus, the distribution of a food basket, therefore, includes consideration of the average number of people who eat in a household. In this sharing children and women are often disfavored.

e. Diseases: Diarrhea (32,000 cases reported by MCH centers in 1977), measles (or epidemic proportions from January to September in 1979); bronchitis (30,000 cases), malaria (50,000 cases), aggravated nutritional conditions.

f. Lack of sanitary and nutritional education personnel: This inadequacy is even greater in rural areas: villages and encampments. Superimposed problems include: the obvious lack of educational equipment, of infrastructure, of resources in general, lack of knowledge in nutritional matters of health personnel in particular.

F. Health Plan (1981-85)

The specific objectives presented in the draft Fourth Development Plan aim at the rationalization of health resources which can be classified in two categories:

a. Cost Efficiency Objectives (coverage/cost)

i. Extension of the coverage of services by the creation of primary health units in 571 villages now without a health delivery system.

crop destroyers (locusts, seed-eating birds), the primitive farming techniques -- these are the main factors. The structural problems of livestock raising and fishing also play an important part in the food shortage.

b. Shortage of Local Food Production: This situation relates to the above, but it has complementary elements: lack of road facilities, few means of transport, lack of storage systems. It is estimated that the losses resulting from such factors can attain 30% of population.

c. Family Food Basket: Local production cannot satisfy the country's nutritional needs either in quality or in quantity. Because of the relatively low income (an almost inexistent income for farmers, and wages amounting to about 4,000 UM per month (in 1978) for low-level employees). A family of 5 consumes only a small quantity of tea and sugar in the morning, of rice and oil for lunch. of a little melted butter in the evening, it would spend 3,660 UM on food alone.

A family of 8 consuming only tea and sugar in the morning, rice with a little oil, a small quantity of dried fish and a little tomato paste for lunch. and nothing for supper, would spend 3,800 UM for food. Culinary tastes also play an important part because, for instance, many families are not used to or simply do not appreciate fish or fresh vegetables or fruits.

An important problem to resolve is the availability of weaning food from local products.

E. Nutrition

Malnutrition is a condition which especially affects children, pregnant women and old people. The drought years which resulted in a drop in agricultural production and the loss of a major number of livestock are the sources of the deficient nutritional state in calories and proteins of the population.

Malnutrition is one of the most serious health problems in Mauritania. Yet, health services have just begun to consider nutrition as a major problem. Because of the dynamic approach of the MCH services and the integration of the "recovery" system and nutritional education into their operations. the situation is improving especially in urban areas. The coverage of rural population is still very limited.

In 1977, anthropometric (body measurement) surveys were carried out in the MCH centers in collaboration with WHO. The results were as follows:

68% of the children had a weight lower than the 80% of WHO standards.
36% of the children had a weight lower than 60%
57% of these children had an arm circumference hardly reaching the yellow strip on the Bailey rule

Amebia is very prominent among pregnant women. It is estimated that almost 40% of the families living in the suburbs of Nouakchott have only one meal a day.

The basic causes of food and nutrition problems are the following:

a. Shortage of National Food Production: the country must import between 150,000 and 170,000 tons of cereals every year. The low rainfall, the water situation in the country,

Table 17

Levels in 1980 and Shortage of Health Personnel by Year 2000 (Annual Training Needs)

	Proportion Recommended by WHO	Recomm. No. by WHO	Actual No. in Ministry of Health	Shortage Forecast by 2000	Average Annual Training Needs
				No.	
Doctors	1/10,000	240	55	185	9
Densists	1/30,000	80	5	75	4
Government Nurses	1/ 5,000	475	216	259	13
Government Midwives	1/ 5,000	475	52	423	21
Pharmacists	1/50,000	50	10	40	2
Sanitary Engineers	1/250,000	10	1	9	5
Graduate Nurses	1/ 2,000	1,190	299	891	45
Dental Technicians	1/ 2,000	1,190	5	1,185	60
Trad. Midwives	1/ 3,000	790	105	685	34
Total		4,500	748	3,752	1,885

A review of these tables indicates that there is no valid plan for the training of health personnel. Inasmuch as the Fourth Development Plan has not yet been adopted, it is difficult to corelate the amount of services to be provided with the number of personnel required.

4. Capacity to Create Health Units

The Fourth Health Plan mentions the existence of the following health infrastructure:

a. Nouakchott

1 National Hospital with a capacity of 425 beds
1 National Hygiene Center
1 Pharmacy Supply Center
2 Polyclinics
1 National Training for Para-medical personnel
1 Mother-Child Center
7 Departmental dispensaries
3 Maternal and Child Health Centers (MCH)
1 School Health Center (National Secondary School)

b. The Interior

8 Regional hospitals with 40 to 50 beds each at Aioun - Kiffa - Selibaby - Kaedi - Aleg - Rosso - Akjoujt and Atar
40 Category B Health Centers (Prefectures), many of which no longer meet local needs
60 Category C Health Centers (rural), most of which were built by the local population and are very often in a bad condition
12 Mobile teams installed in regional capitals and with a monthly schedule of trips to the interior
25 Maternal and Child Protection Centers, 14 of which have a Nutritional Recovery Center (CREN) at their disposal.

Under construction are:

At Nouakchott, the Sabah Hospital (Phthisiology, with 90 beds);

At Tidjikja, a hospital with 50 beds whose completion was expected by the end of 1980 and the start-up in the course of 1981.

Tables 3 and 4, as well as Map 3 and Figure 1, complement the information provided here.

Table 18 shows the gap in health units, calculated on the basis of population to number of health units per region. This table is useful to calculate the magnitude of the gaps; it should not, however, be used for planning purposes since the derived numbers of health units are of a particular type which must still be defined.

A programming procedure would be to take the health care module by region. The basis of calculation for these modules would be to establish the number of class "C" Health Centers (multi-disciplinary village units) per thousand inhabitants that would be necessary to cover the rural population with basic health care. A specific number of of class "C" health center with MCH/CREN) and a number of Class "B" Health Centers would be linked to Class "A" Centers (with Mother-Child centers) The class "A" centers would be located in regional capitals and become satellites of the regional hospitals.

The basic idea would be the establishment of coordination and supervision lines between all the health units, whatever their size. If a module is considered for about 25,000 people, for example, there would be a need for at least 1 Class "C" Health Center for each thousand people; 3 Class "B" Health Center to 1 Class "A" Center. The module for 25,000 people should bear the following structure:

Table 18. Shortage of Health Units in Mauritania (1980)

Region	Population 1980 (000)	Hospital 1/100,000		Polyclinic 1/80,000		CME 1/160,000		Health Center Class "A" 1/160,000		Health Center Class "B" 1/40,000		Health Center Class "C" 1/20,000	
		N	A	N	A	N	A	N	A	N	A	N	A
Nouakchott	173.000	2	1	2	2	1	1	3	2	4	4	0	0
Eastemn Hodh	166.000	2	0	2	0	1	0	3	2	4	4	8	10
Western Hodh	130.000	1	1	2	0	1	0	2	0	3	4	7	2
Assaba	136.000	1	1	2	0	1	0	2	2	3	3	7	3
Gorgol	158.000	2	1	2	0	1	0	3	1	4	1	8	11
Brakna	159.000	2	1	2	0	1	0	3	3	4	4	8	8
Trarza	224.000	2	1	3	0	2	0	4	3	6	3	11	10
Adrar	56.000	1	1	1	0	1	0	1	1	2	3	3	1
Nouadhibou	30.000	-	1	-	0	-	0	-	1	1	0	1	1
Tagant	78.000	1	1	1	0	1	0	-	2	2	1	4	3
Guidimaka	90.000	1	1	1	0	1	0	1	2	2	0	4	11
Tiris Zemmour	26.000	-	0	-	0	-	0	-	1	1	2	1	1
Ichiri	17.000	-	1	-	0	-	0	-	1	1	0	1	1
TOTAL	1.443.000	15	11	18	2	11	1	22	21	37	29	63	62
Déficit		(4)		(16)		(10)		(1)		(8)		(1)	
%		26,7		88,9		90,9		4,5		21,6		1,6	

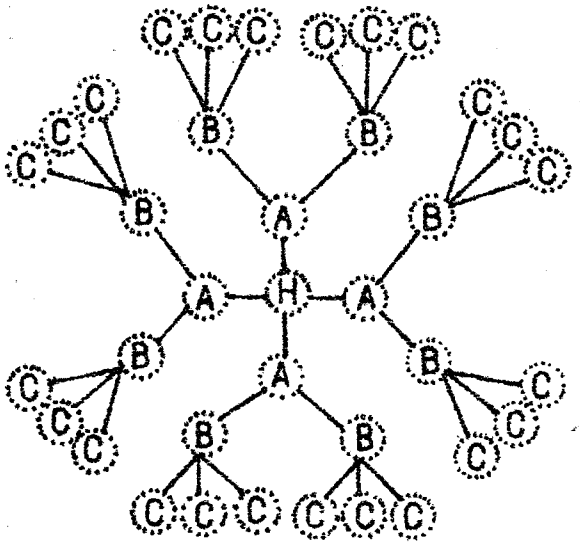
N - Needs

A - Available

(continued)

Region	Pop.	MCH 1/60000		Health Educ. and Nutrition 1/60000		School Health 1/120000		Tuberculosis 1/100000		Mobile Teams 1/100000		Total -		Shortage %	
		N	A	N	A	N	A	N	A	N	A	N	A		
Nouakchott	173,000	3	3	3	3	1	1	2	2	2	0	23	19	4	17,4
Eastern Hodh	166,000	3	3	3	2	1	0	2	1	2	2	31	13	10	22,6
Western Hodh	130,000	2	2	2	1	1	1	1	1	1	1	23	13	10	43,5
Assaba	136,000	2	2	2	1	1	1	1	1	1	1	23	15	8	34,8
Gorgol	158,000	3	3	3	3	1	1	2	1	2	1	31	23	8	25, 8
Brakna	159,000	3	2	3	2	1	0	2	2	2	1	31	23	8	25,8
Trarza	224,000	4	3	4	3	2	1	2	1	2	1	42	26	16	38,1
Adrar	56,000	1	1	1	1	1	1	1	1	11	1	14	11	3	21,4
Nouadhibou	30,000	-	1	-	1	-	1	-	1	-	1	2	8	+6	n0
Tagant	78,000	1	2	1	1	1	0	1	1	1	1	4	12	2	14,3
Guidimala	90,000	2	2	2	1	1	0	1	1	1	1	17	19	+2	n0
Tiris Zemmour	26,000	-	0	-	-	-	0	-	0	-	0	2	4	+2	n0
Inchiri	17,000	-	1	-	1	-	0	-	0	-	0	2	5	+3	n0
T O T A L	1,443,000	24	25	24	20	11	6	15	13	15	11	225	201	53	20,8
SHORTAGE			(1)		(4)		(45)		(2)		(4)		(53)		
%			4,2		16,7		45,5		13,3		26,7		20,8		

N - Needs
A - Available



A second module designed for 25,000 persons would require twice the number of Class "C" Centers, with very little change in the number of Class "B" Centers (which would relate to 5 or 6 Class "C" Centers), and no change in the number of Class "A" Centers (which would be connected to 4 to 5 Class "B" Centers at the same time). The specific arrangement in each region and department would depend on socio-cultural and geographic conditions. The network principle would, however, remain unchanged.

Chart 4 illustrates the number of modules by administrative regions which would be required to cover 25,000 persons. The striped area has a higher population than in the other parts of the country How then should multi-disciplinary village health centers serve a smaller number of inhabitants. The nomad and semi-nomad populations should have a health system different from the ones of the sedentary populations, but coordinated with Health units strategically placed. A unit designed for 25,000 persons could be divided into five units covering 5,000 persons in the less populated northern regions.

Chart 5 shows the density of the Mauritanian population by administrative region. Chart 6 outlines the major agro-ecological zones.

5. Administrative Capacity

The structure of the Ministry of Health is too highly compartmentalized to facilitate the coordination between its services and to integrate preventive and curative medicine.

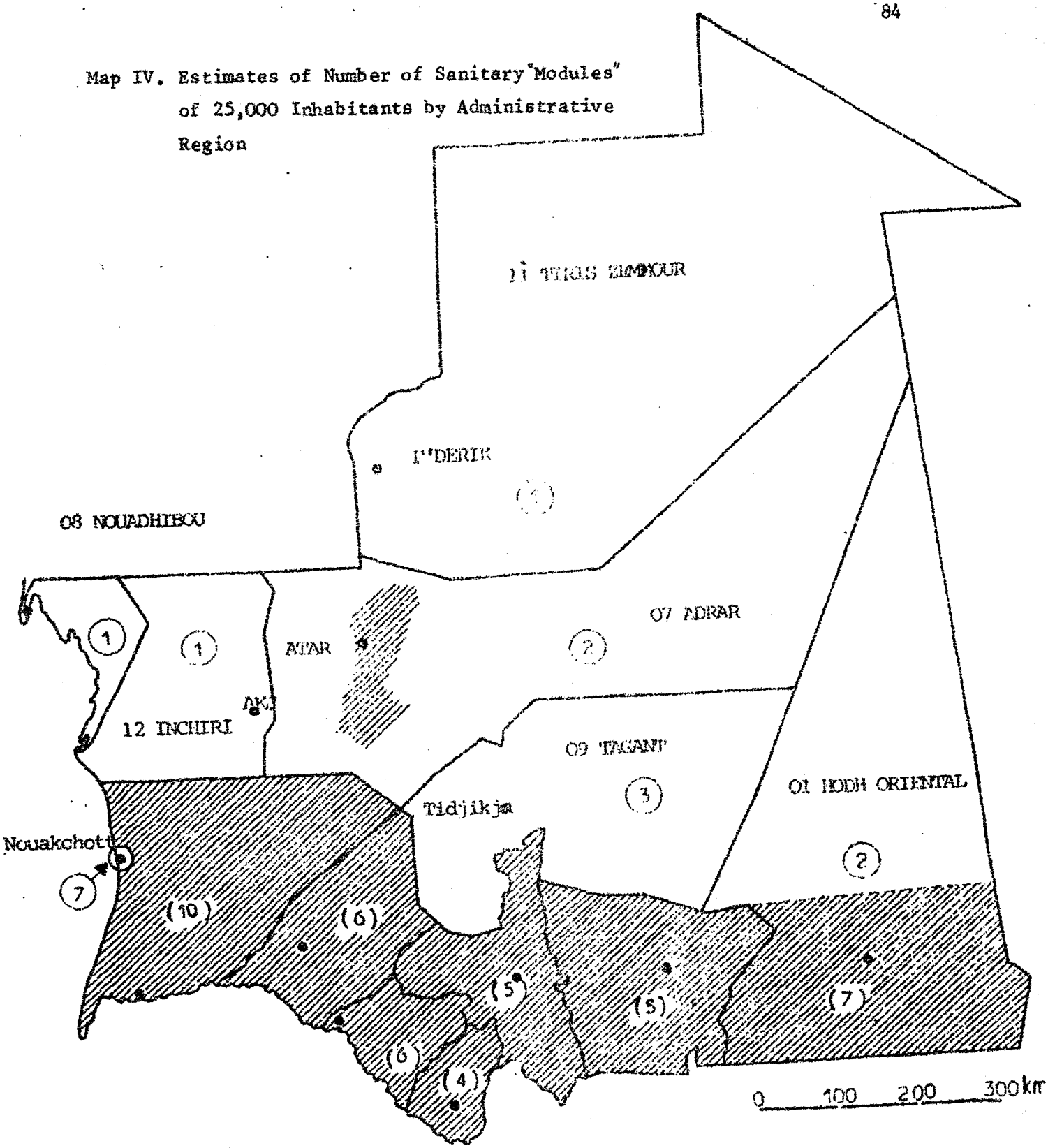
The Ministry should be reorganized with the objective of establishing:

(a) a more flexible management,
(b) technical planning,
(c) a school to train health personnel in approaches relating to the health problems of the country
(d) a more flexible logistic system, and,
(e) a planning office capable of following-up and evaluating programs.

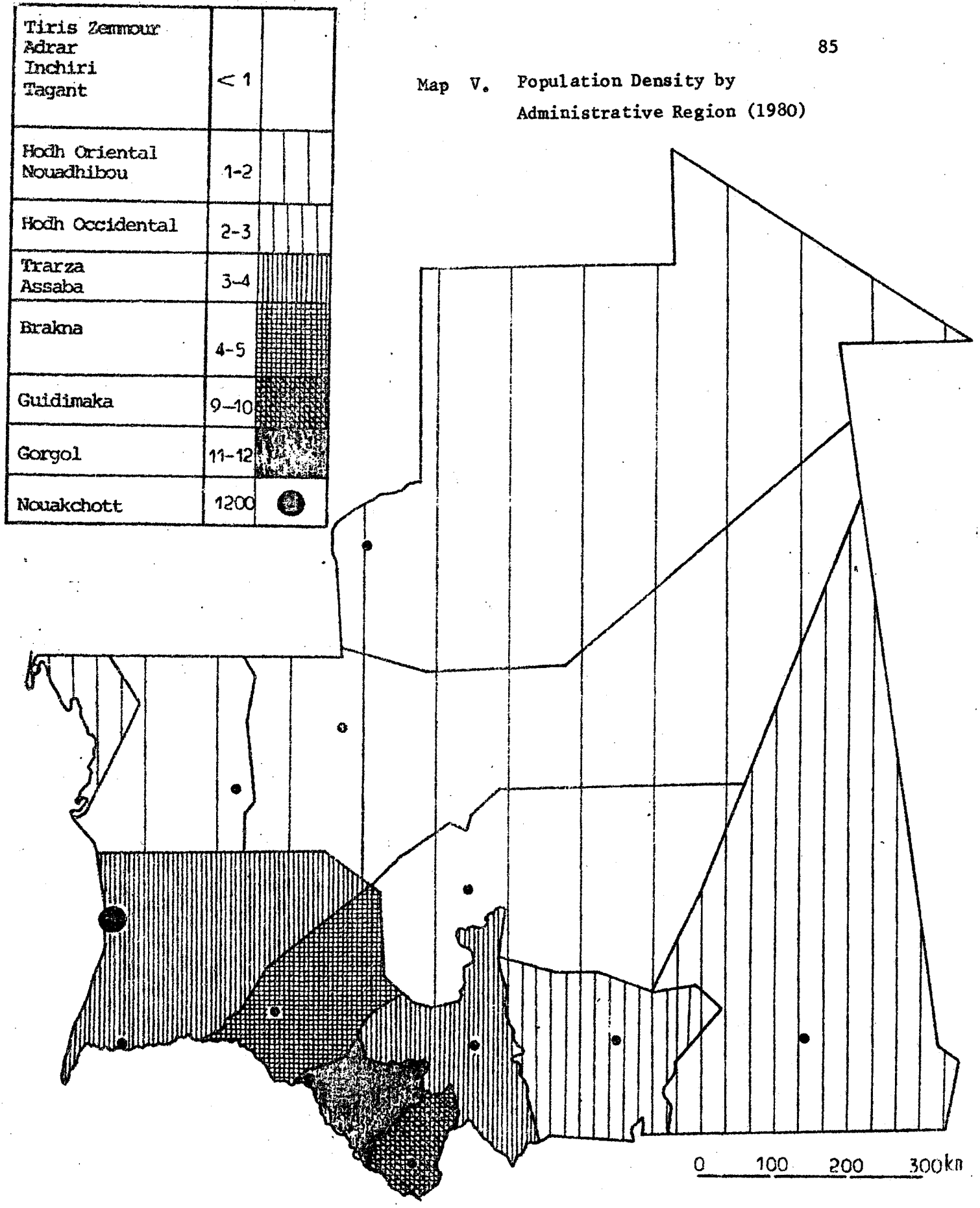
The working methods of the Ministry's civil servants would be more inter-disciplinary and would have the support of the entire technical staff.

The structure would be like a matrix in which the services of preventive medicine, of MCH, of the anti-tuberculosis campaign of primary health care, of Pharmapro, and of the services of regional health units and the District of Nouakchott would be regrouped under a Programming Directorate. This unit would work in close collaboration with 4 other directorates: (1) Planning, (2) Integrated services, (3) Personnel training, (4) Administration and logistic support, and (5) Evaluation and supervision. The matrix would be as shown below:

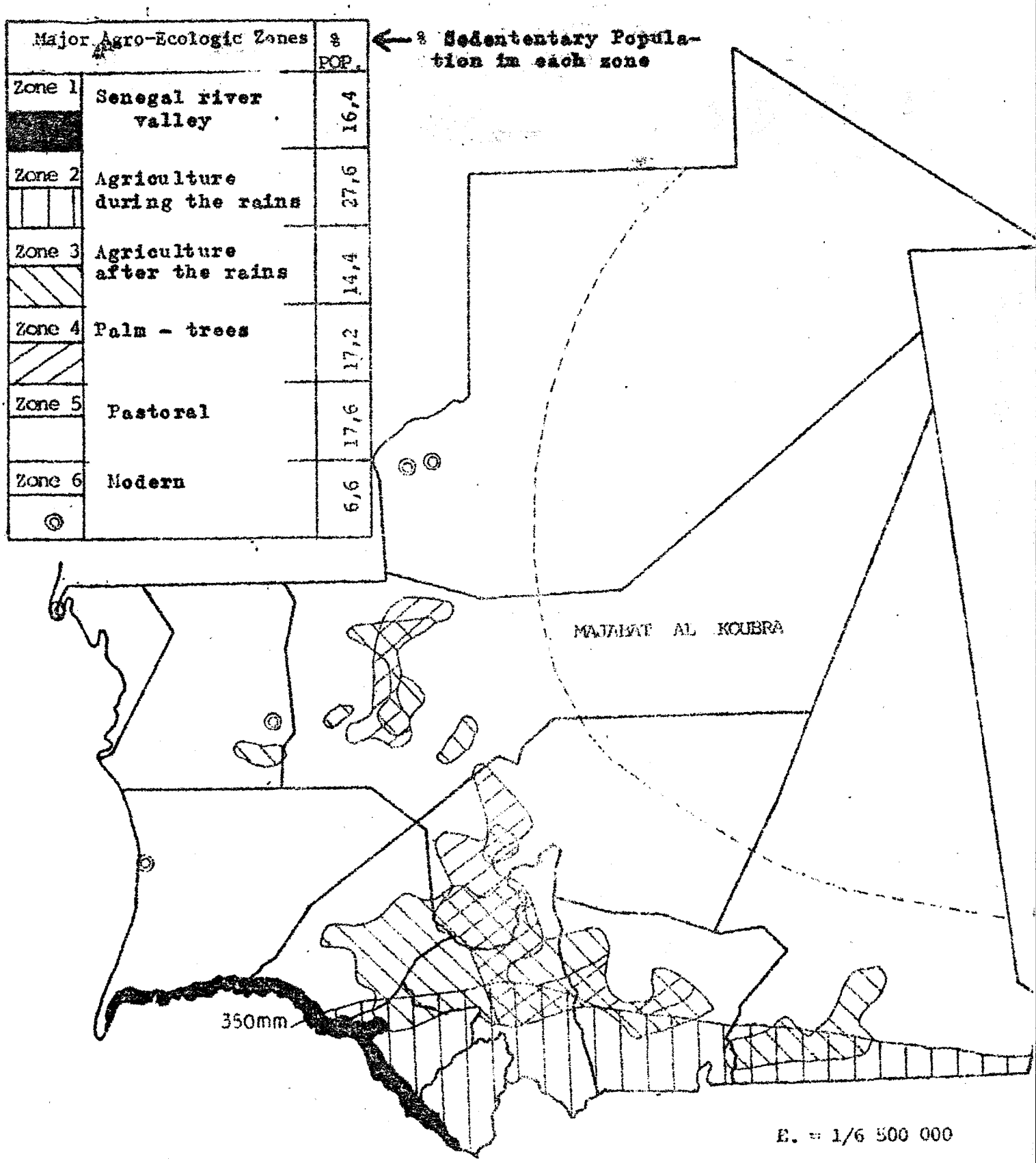
Map IV. Estimates of Number of Sanitary "Modules" of 25,000 Inhabitants by Administrative Region

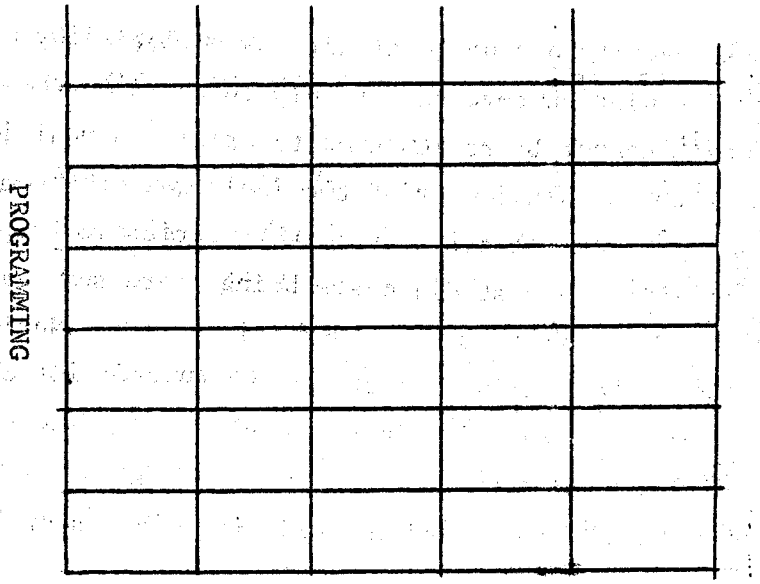


Map V. Population Density by Administrative Region (1980)



Map VI. Major Ecologic Zones in Mauritania and Percentage of Population





TECHNICAL DIRECTORATE

The Technical Directorate would then be responsible for the coordination of specific aspects of all programs.

The duplication of effort would, therefore, be avoided.

6. Supervisory and Evaluation Capacity

The evaluation and supervision of health programs are not yet a part of the regular work of the Ministry of Health.

One of the reasons for this shortcoming is the lack of a system to collect statistical data. In the absence of an information system, the Ministry develops annual summary tables on the number of medical consultations and patients, on the most frequent diagnoses and the prevalence of communicable diseases which are recorded in health units. The MCH, the recovery and nutritional education centers (CREN) and the Expanded Vaccination program (PEV) collect more detailed information on their specific activities.

There has never been a national survey on morbidity in Mauritania. With a population coverage of only 20 or 25%, the information from health units cannot be relied upon to provide a real image of the health status of the population or of the incidence of the most important diseases. The general absence of laboratories in hospitals and health centers results in most diagnoses being mere suppositions, for they are only based on symptoms and observations, made during brief clinical check or the filling out of a very superficial clinical form. Only two or three laboratories in the country can be considered as trustworthy. Among them are the National Hygiene Center of Nouakchott which has achieved a remarkable record in epidemiologic research.

There is no systematic training system either at national levels or regional levels: training centers do not have a qualified basis on which to measure the quality of the training provided or to assert the need to change their syllabus. On the other hand, without a well established training system, the Ministry of Health cannot control the quality of medical care or measure the difficulties that personnel encounter in the field. In short, the lack of a training program makes it impossible for the Ministry to develop its technical resources -- resources which constitute its most precious capital.

C. Exogenous Constraints

These have already been mentioned and they will be studied more in-depth in the Health/Nutrition Option Papers.

D. Other Constraints

These come as a result of the inter-relationship which exists between the exogenous factors in the national health system (health state, nutritional state, population growth, socio-economic structure and environment characteristics) and the endogenous factors of the system

management planning capacity, personnel training, service operations, administration, evaluation). To these two types of factors correspond a series of fairly strong constraints which will influence, directly and indirectly, the quality of the national health system. Only the endogenous factors are under the control of the Ministry of Health; the exogenous factors, on the other hand, depend upon a number of variables of the "setting", and they are moderated by the behavior and the attitude of society. A deep understanding of these aspects is, therefore, indispensable in formulating a rational nation-wide health plan of action. The conclusion is obvious: the Ministry of Health and its operating units must gain a technical capacity in order to improve the quality of life of the population. A well developed health program can catalyze the entire community. Conversely, the investments in health infrastructure or in large-scale health programs are not recommende for a Ministry of Health that has no political authority, nor technical nor financial power in matters that directly affect it.

Health, with education, are the key elements of the government's social action programs. A sick and illiterate population will never achieve development. The quality of a population can be measured by the analysis of health statistics, especially those concerning life expectancy, infant mortality, the growth and development of the child's mental process.

These various factors should also include communications between the government and the local community, and vice-versa.

The constraints here are important:

a. Low priority to health by the government
b. Low priority accorded to preventive medicine by the Ministry of Health.
c. Weak community participation in the activities and programs of the Ministry of Health
d. Weak health education program
e. Gap between the urban and rural world

f. Exaggerated priority accorded to Nouakchott and to other urban areas in the distribution of resources in the health sector: operating costs, investment costs, special programs

g. Lack of integration between the programs in different sectors

h. Operating budget almost inexistant in rural health services.

IV. Conclusions and Recommendations

The Ministry of Health must envision the improvement of the management, planning, operation of services, personnel training, supervision and evaluation. This is based on the need to organize public administration according to rational principles of efficiency, submitting all its elements to a critical analysis. Government resources must be distributed according to well-defined priorities. Education and health are among the most important sectors and also the most expensive -- hence the importance of defining every functional aspect of of its operation.

The preceding pages discussed the organization of the health services and the major constraints were underscored in order to improve the Ministry's management. It is obviously up to the Government of Mauritania to define its health policy as an integral part of its policy of economic and social development, the measures to be taken, and the resources to be allocated to achieve its objectives.

The recommendations which follow are intended only to indicate which health programs should be given priority attention:

1. Management Requirements

The administrative organization of the Ministry should be restructured by creating technical units to replace currently existing services. This would require

the integration of experts ((Mauritanians insofar as possible) in the aspects of: planning, programming, personnel training, bio-statistics, epidemiology, health administration and evaluation.

The programs and existing units should be reinforced before initiating new projects and appointing new personnel.

2. Need of a System to Collect and Analyze Statistical Data

The system of health statistics must first be developed on a experimental basis, attached to the office of planning and studies. The system must be simple and flexible so that the national health situation can be followed every month. At the same time, the regional units should participate in the analysis of information in their area in order to facilitate the central compilation of information.

3. Need to Identify the Target Populations Benefitting from the Various Health Programs

The target population selected for a vaccination pre-natal and post-natal care, nutrition, control or endemic diseases, school-health, etc., must be calculated specifically by region and department in order to determine coverage and cost/benefit rates.

4. Need to Develop a Detailed Plan in Successive Stages

The existing plan consists of a series of major orientations, but the formulation of a basic epidemiologic plan is necessary. The advantage of having a specific plan is to economize personnel at all levels, and especially to establish a clear and definite impact on morbidity and mortality.

5. The Need to Plan and Make Primary Health Care Activities Operational

It is not necessary to extend the training of primary health care personnel to all of the regions. A well-conceived program with adequate resources must be developed, but it is also indispensable to develop a strategy of community participation with all its implications;

6; The Need to Establish a Supervisory and Evaluation System

Without this system, the Ministry's programs will not be able to achieve concrete results. Programs and activities of the personnel must be periodically followed up so as to understand their problems and thereby plan concrete actions to solve them.

7. Need to Organize Personnel Training

The aim is to establish a multi-disciplinary approach which would allow a reduction in personnel and formulation of better integrated programs. The recycling of the established personnel must form part of the global strategy of personnel training.

It must be recognized that a very important effort is being made by the leadership of the Ministry in order to increase the efficiency of the different services. However, an administrative reorganization and reorientation is necessary, as is the elaboration of a carefully defined Plan of Action. All these actions must be supported by an explicit health policy integrated into a global development effort.

With this concern expressed, a series of option papers in health and nutrition are being submitted in a separate document. These options represent a variety of technical approaches which can guide the government in its choice of a health policy of sufficient scope to contribute importantly to improving the quality of life in Mauritania.

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