FIVE YEAR COMPREHENSIVE HEALTH PLAN

April 1, 1980

TRUST TERRITORY OF THE PACIFIC ISLANDS

FIVE YEAR COMPREHENSIVE HEALTH PLAN

APRIL 1, 1980

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is a compilation of the data, problems, goals and objectives from each of the six District Health Plans. Out of necessity, this Territorial Health Plan is general; the different aspirations held by and the different resources available to each of the districts and each of the emerging national governments, precludes development of specific plans at the Territorial-level. However, this Plan will provide a common basis for each government to move ahead in further refinement of their plan development and plan implementation process. The health planning resources available to the TTPI over the next year and one-half will be increasingly devoted to assisting the various governments to develop self-sufficiency in health planning.

III. Health Planning Policy:

Health Planning activities in the TTPI have revolved around one single policy - the improvement in health status of the residents of these islands. The staff of the Agency has always believed this to be the core, the heart, and the intent of the health planning legislation under which this Plan is developed, (P.L. 93-641 as amended). All other aspects of the law, the reduction in cost, the improved coordination, the improved health system, are secondary to this main theme. Therefore, this Agency has directed all

its efforts toward the fulfillment of this one goal: the description of the area; the identification of problems; the estimation of existing resources; and the development of recommended actions are aimed at enabling the Micronesian residents to enjoy fuller lives free from social, mental, and physical diseases and disabilities.

IV. Service Area Characteristics:

The Plan has attempted to study and to describe the demographic, socio-economic, and physical environment characteristics of the different district/state populations. One of the objectives in doing this, has been to determine where people obtain different kinds of health services; by what means and how far they must travel to do so. Another objective has been to determine the impact upon health (and upon the health service system) of factors which are not strictly health-related (e.g. population growth, population distribution, economic productivity, communication and transportation systems, etc.).

V. Health Service Needs:

In estimating the future health service needs, the Plan has attempted to measure current utilization of services and apply it to the projected population

CHAPTER ONE

EXECUTIVE SUMMARY

I. History of Health Services in the TTPI:

In less than a century, the three island groups comprising the Trust Territory of the Pacific Islands have passed through three different national administrations and are currently under the fourth: Spanish, German, Japanese, and now the United States under the United Nations Trusteeship Agreement. Each of these administering nations have held different interests in and different goals for these islands. None, until the United States, held the improvement of health services as a priority. As a consequence, very limited health care services were available to the islands in the past. Under the United States' administration, health care facilities have been constructed ranging from dispensaries in outlying regions to modern, fully equipped hospitals; health professionals ranging from health assistants to physicians have been trained together with numerous paraprofessionals; and many health service programs have been initiated.

In less than one and one-half years, the Trusteeship is expected to dissolve and be replaced by three, independent national governments: the Marshall Islands, the Federated States of Micronesia, and the Republic of Belau. While each of these governments will remain linked to the United States through agreements of Free Association, each will be struggling to expand their economic resources to meet the needs of their populace in as self-sufficient a manner as possible. The overriding goal of the Trust Territory Bureau of Health Services, in these closing months of the Trusteeship, is to transfer the resources (funds, equipment, manpower, training, and others) required for the three national governments to meet their individual goals and objectives for health.

II. Health Planning Framework:

Health Planning is a function mandated in the TTPI and supported through act of the United States Congress, (U.S. Public Law 93-641, as amended). The health planning program has been on-going in the TTPI since July, 1976 administered by a Headquarters-based staff. In the three and one-half years of the health planning program, Headquarters staff has assisted each district/state of the TTPI in the development of a Comprehensive Health Plan. This Territorial-wide Health Plan

size and distribution at target future dates. Moreover, changes in age, sex, and specific populations at-risk, have been considered. To a certain extent, the Plan has considered the results of positive changes in the environment which are anticipated due to improvements in the present water and sewer systems. The Plan has considered positive/negative effects of changes in life-styles as more people are influenced by western styles of living. The Plan also has anticipated certain deteriorations in the society as different cultures clash in the lives of many, especially the young. The Plan has considered some positive results of changes through improved prevention and detection services (immunization, hypertension, cancer detection, and other programs). The negative aspects of these positive changes, such as population explosion leading to overcrowding and restlessness are also considered.

The Plan has considered over-utilization or inappropriate utilization of certain services such as over-utilization of hospital outpatient departments at the expense of under-utilization of local dispensaries. The Plan has considered unmet health needs of persons to whom services may not be readily available (e.g. services which are available only in the district centers) or persons who have difficulties

in access to services (who must travel by boat for example to receive certain services) or the unmet needs of those who are unaware of the importance of certain health measures (hygiene, home sanitation, early treatment of certain signs and symptoms, etc). The estimation of future needs has included changes in technology (new advances in medical science, new tranportation and communication devices, etc.). Finally the Plan also has considered statistical trends in utilization which may reflect changes in medical practice, knowledge of the general public about good health practices, etc.

VI. Health Services and Resources:

The Plan has inventoried the existing services and resources in each area and has tried to determine the extent that existing services and resources can meet current needs and anticipated future needs. The relationship between future needs and future resource availability is also examined. To the extent possible, within staff capability and time, inventories have been developed in this Plan for manpower, facilities, equipment, service organization, and financial resources.

VI. Plan Development:

This Plan, as a composite of six different District Health Plans, has identified those health services and

resources common to all areas and/or which depend on a central government for influence and change and/or which can most efficiently be handled by cooperation between the several Micronesian nations.

This Plan has identified problems regarding quantities of services available and problems regarding distribution of services to the areas of need. Whenever possible, it has identified problems with quality in terms of adequacy of organizational structure, financial resources, staffing structures, etc. in order to ensure the acceptability of existing services. The Plan identified problems with cost of health care, especially the inability or unwillingness of consumers of health care to bear the cost of their care.

The identification of problems has led to the setting of goals and objectives for achievement within a specified time. Achievements of the goals and objectives are expected to result in improved health status. Based on these goals and objectives, priorities can then be set for allocation of scarce resources among many competing needs. Recommendations of alternative actions for the achievement of goals and objectives and estimation of resources required to implement each action mark the conclusion of the plan development process used in this Plan.

VII. Review:

Evaluation and review are the linkages of the first planning process to the subsequent planning processes. A continuous review of the health needs, the existing health services and resources, and the development of the plans for amelioration of problems is needed to make planning a responsive activity. The evaluation of the impact of recommended strategies as well as the actual implementation of the recommended actions become the basis for the revision of the Plan.

CHAPTER TWO

ORGANIZATION AND USE OF THE PLAN

CHAPTER TWO

ORGANIZATION AND USE OF PLANS

I. ORGANIZATION:

The TTPI Health Plan is organized to provide the reader with an overview of both the health status and of the health system within the districts/states comprising Micronesia. The document attempts to logically present the health service environment, the health service system, together with their relationships to health status. Figure II.1 presents a graphic model of the organization of the various factors which impact on health and health care.

The TTPI Health Plan is composed of three distinct parts:

1. Health Plan Summary
2. The TTPI Territorial Health Plan and Annual Implementation Plan (AIP)
3. Six District Health Plans and AIPs.

These three components of the TTPI Health Plan are further supported by the TTPI Health Manpower Plan and the TTPI Health Facilities Plan.

Figure II.2 presents a conceptual model of the relationship between the various plan components.

FIGURE II

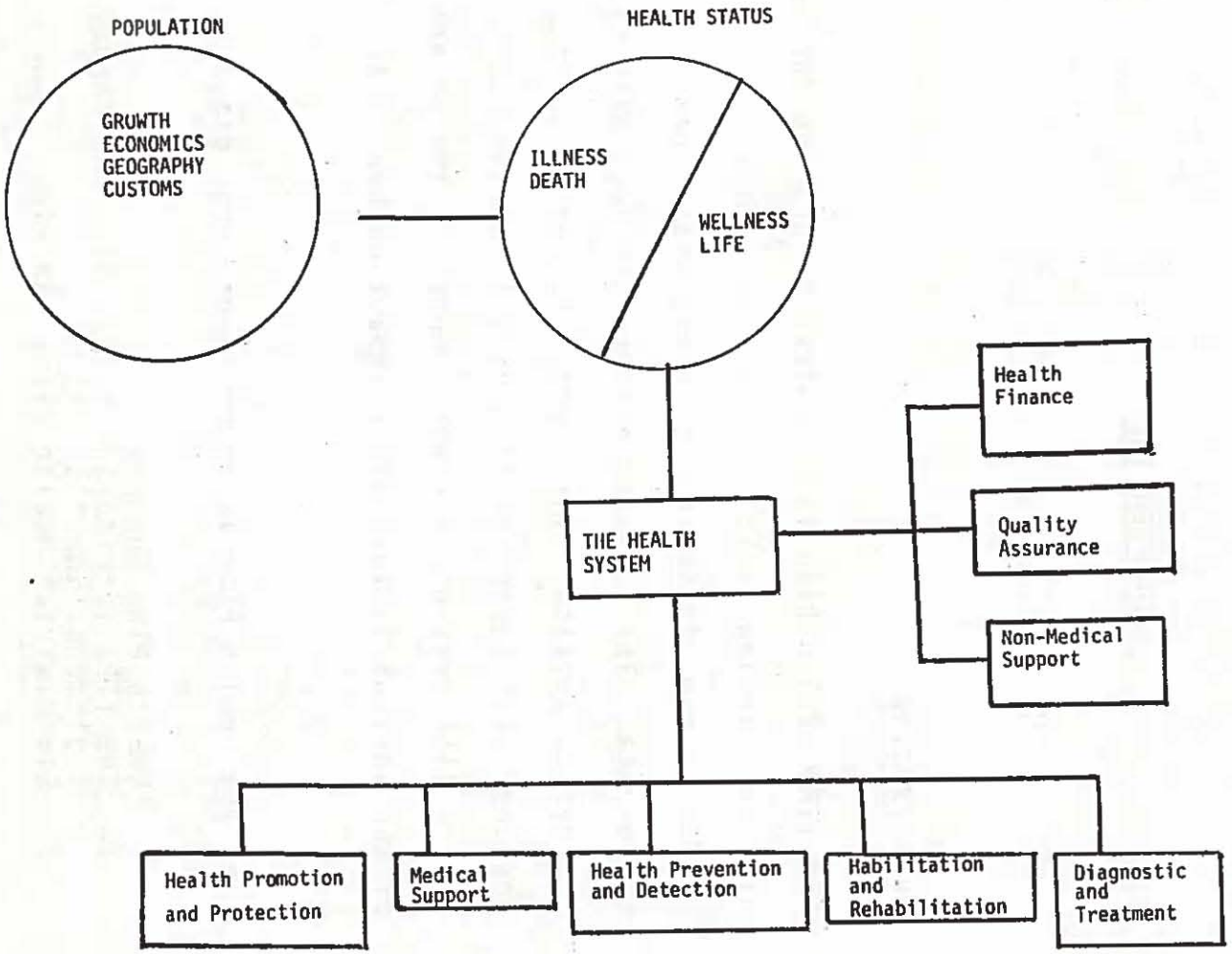
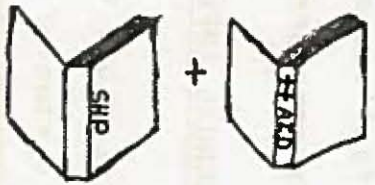

POPULATION
GROWTH
ECONOMICS
GEOGRAPHY
CUSTOMS
HEALTH STATUS
ILLNESS
DEATH
WELLNESS
LIFE
THE HEALTH SYSTEM
Health Finance
Quality Assurance
Non-Medical Support
Health Promotion and Protection
Medical Support
Health Prevention and Detection
Habilitation and Rehabilitation
Diagnostic and Treatment

FIGURE: II. 2

VOLUME I



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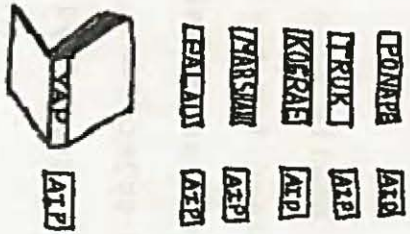

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T T P I STATE HEALTH PLAN

1979 -- 1984

TTPI STATE HEALTH PLAN	Goals, Objectives and Recommendations for FY 1979 Specific Strategies For Micronesia	DISTRICT FIVE YEAR COMPREHENSIVE HEALTH PLAN Overview of District Health Problems	DIRECTION FOR BETTER HEALTH CARE FOR MICRONESIANS

A. HEALTH PLAN SUMMARY:

The Health Plan Summary presents an overview of the major problems affecting health and health care in the TTPI. No supportive data is included in the Summary for verification of problem statements; this data is included in the Territorial Health Plan. Following presentation of the problem statements, the Summary lists the major goals, objectives, and strategies developed in the Territorial Health Plan.

Once the user of the Territorial Health Plan has studied the plan document and has determined for his/herself the validity of the data and analysis used to make problem statements and develop goals and objectives, the Health Plan Summary can be used as a self-contained guide to plan implementation.

The Health Plan Summary has been bound separate from the Territorial Health Plan to enable widespread dissemination across the Trust Territory and to facilitate translation into local languages, where this is considered necessary.

B. TTPI TERRITORIAL HEALTH PLAN AND ANNUAL IMPLEMENTATION PLAN:

The TTPI Territorial Health Plan describes the environment, the health status, and the health system of the Trust Territory; it presents pertinent data and data analysis; it defines problems; and it outlines goals, objectives,

and strategies (recommended actions) for solving those problems.

The Plan essentially addresses four types of issues:

1. Problems identified in all (or nearly all) of the District Health Plans and thereby, considered common across the TTPI;

2. Problems which require action by (or at least, can be most efficiently addressed by action of) a central government entity;

3. Problems which can be most efficiently addressed by close cooperation between the various government entities within the TTPI;

4. Problems which the health planning staff feels were not adequately addressed by the District Health Plans. Problems in this category include health care finance and health manpower, both of which were inadequately addressed due to lack of knowledge regarding political and economic trends.

The Territorial Annual Implementation Plan summarizes the objectives and strategies which must be done in any given year in order to achieve over-all TTPI health goals and objectives within the dates targeted by the Territorial Health Plan. The AIP is essentially a compilation of the six District AIPs developed pursuant to the six District Health Plans.

C. DISTRICT HEALTH PLANS AND AIPS:

The six health plans developed for each TTPI district/state form the basis for all subsequent plan development, including development of the Territorial Health Plan. These plans present a detailed analysis of health status and of the health system together with specific problem identification

and development of specific goals, objectives, and strategies to meet the unique needs of each district/state. These plans form the primary basis for development of the Territorial Health Plan.

The District AIPs are one-year documents outlining the actions required to be taken in a given year in order to achieve the goals and objectives contained in the District Health Plan. The six District AIPs, taken together, essentially comprise the Territorial AIP; although the Territorial AIP may, from time-to-time, incorporate a limited number of actions needed to be taken by either the TTPI Government or some other central governing body.

D. THE TTPI HEALTH FACILITIES PLAN:

The TTPI Health Facilities Plan inventories for each district/state all health facilities, together with information regarding cost (capital expenditure and maintenance), floor area, grounds area, type of construction (materials used and funding source), year constructed and renovated, and equipment contained. Information concerning the condition of the facilities is also incorporated, where data is available. This facilities inventory is then compared against demographic and utilization trends and communication/transportation systems. Based on the inventories and the additional information, recommendations are made regarding where future construction

and renovation monies can most efficiently be used.

A summary of the TTPI Health Facilities Plan is included in the Territorial Health Plan (Chapter 8), together with the recommendations, goals, objectives, and strategies developed in the Facilities Plan.

E. THE TTPI HEALTH MANPOWER PLAN:

The TTPI Health Manpower Plan inventories all TTPI health manpower resources (including persons presently employed by Health Services, persons formerly employed but still residing in the TTPI, Micronesian medical professionals residing abroad who might be recruited back to the TTPI, and Micronesian students studying health or health-related fields). Information contained in the inventory includes job position, years of experience, initial training received, continuing education received, and projected year of retirement.

Population and utilization trends are analyzed to determine their impact upon health manpower requirements and projections are made of the numbers of health personnel which will be required in future years. These projected needs are then compared against manpower resources and the output from on-going training centers (TT School of Nursing, TT School of Dental Nursing, TTPI Health Manpower Development Training Program, etc.) to determine where and when manpower surpluses and/or deficits may occur. Goals, objectives, and strategies are then developed to bring manpower resources

into conformance with projected manpower requirements.

A summary of the problems, goals, objectives, and strategies contained in the TTPI Health Manpower Plan is contained in the Territorial Health Plan (Chapter 9).

II. USE OF THE PLAN:

The main purpose of the Territorial Health Plan is as a policy and decision-making tool for government officials, health service administrators, and others in the community who take responsibility for improvement of the health status of the residents of the Trust Territory. In addition, it should prove to be a valu able budgeting tool for program administrators to use in documenting budget requests and for legislators to use in determining the magnitude of health needs versus needs in other sectors of the society and in establishing budgetary priorities.

It is mandated by law (U.S. P.L. 93-641 as amended) that the Preliminary Territorial Health Plan be drafted by the TTPI Health Planning and Development Agency staff and that the Final Territorial Health Plan be prepared by the Micronesia Health Coordinating Council, (MHCC). The MHCC is a body of consumers and providers of health care appointed by the Presidents of the three TTPI national governments and confirmed by the High Commissioner. This body is entrusted with responsibility for advising the High Commissioner, the TTPI Bureau of Health Services, and the Health Planning Agency on matters relating to

health. After the Council prepares the Final Draft of the Plan, the Plan will be submitted to the High Commissioner for his approval. Approval of the Plan (the Territorial Plan together with the District Health Plans) is being sought from TTPI national leaderships and state governments.

A detailed listing of specific uses of the Plan in the TTPI can be found in Chapter 3, The Health Planning Framework.

III. INTRODUCTION TO THE TERRITORIAL HEALTH PLAN:

The Territorial Health Plan is comprised of thirteen chapters:

1. Executive Summary
2. Organization and Use of the Plan
3. Health Planning Framework
4. Characteristics of the TTPI
5. Health Status
6. The Health Services System
7. Medical Support Services
8. Health Care Facilities
9. Health Manpower
10. Quality Assurance
11. Health Planning
12. Health Care Finance
13. Health Policy Analysis

A. CHAPTER 3 - HEALTH PLANNING FRAMEWORK:

This chapter discusses the legal basis and authority of current TTPI health planning activities; description of planning methodology; history of health planning in the TTPI; and the purposes of planning together with the current planning constraints.

B. Chapter 4 - Characteristics of the TTPI:

This chapter discusses TTPI characteristics which impact

upon health status or upon health care delivery. These characteristics include population growth and distribution, geography, culture, socio-economic characteristics, transportation and communications systems, among others. A small number of goals and objectives are included to address major health/health care problems associated with these characteristics.

C. CHAPTER 5 - HEALTH STATUS:

The most important aspect of health planning is a detailed analysis of health status for if there are no unmet health needs, there is very little justification for health planning.

This chapter presents and analyze data regarding birth rates, mortality rates (general mortality and infant mortality), the causes of death, the causes for outpatient and dispensary visits and for hospital discharges, communicable disease incidence, and the prevalence of chronic diseases in the TTPI.

Based on the data analysis, the most critical health status problems in the TTPI are identified and goals, objectives, and strategies are developed to eradicate those problems.

D. CHAPTER 6 - THE HEALTH SERVICE SYSTEM:

The introduction to this chapter defines for the reader the terminology and methodology used in the rest of the chapter. Terminology used to describe and analyze the

health system include "availability", "accessibility", "continuity", "cost", "acceptability", and "quality". Terminology used in making recommendations in the Plan include "goal", "objective", "strategy", and "resource requirements".

Following the introduction to the Chapter, there are detailed descriptions of each component of the TTPI health care system. The health care system is subdivided into: Administrative Services (including health service administration, hospital administration, and program administration); Health Promotion and Protection Services (including health education and environmental health services); Health Prevention and Detection Services (including public health services, mental health, and dental health services); Diagnostic and Treatment Services (including ambulatory care, secondary care, clinical nursing, specialized care, and medical referral services); Habilitation and Rehabilitation (including crippled children's services, vocational rehabilitation, and physical therapy).

Each section of Chapter 7 follows a similar outline: introduction and definition of the service; service description; presentation and analysis of pertinent utilization data; analysis of the service by the six characteristics; problem identification; and establishment of goals and objectives.

E. Chapter 7 - SUPPORT SERVICES:

This chapter is divided into two sections: Medical Support

Services; and Non-Direct Care Support Services. Medical Support Services include laboratory, radiology, and pharmacy services. Non-Direct Care Support Services include medical records and vital statistics, medical supply, food services, medical equipment repair, and maintenance and housekeeping services.

The terminology used to analyze these support services and the outline for the service chapters are essentially the same as used in Chapter 6.

Goals and objectives drafted for Chapter 7 are directed toward improvement in quality of care and improvement in continuity of care available in the TTPI.

F. CHAPTER 8 - HEALTH CARE FACILITIES:

This chapter is a summary of the TTPI Health Facilities Plan. A description is provided for all TTPI health care facilities. Present and projected facility needs (including bed needs, dispensary needs, capital construction needs, and equipment needs) are presented along with goals, objectives, and estimates of resource requirements to meet the needs in coming years.

G. CHAPTER 9 - HEALTH MANPOWER:

This chapter summarizes the problems identified and goals and objectives developed in the TTPI Health Manpower Plan.

H. CHAPTER 10 - QUALITY ASSURANCE:

This chapter addresses the need for quality control mechanisms in the TTPI health service system and evaluates alternative strategies for implementation of quality assurance programs.

I. CHAPTER 11 - HEALTH PLANNING:

This chapter examines the present health planning system in the TTPI and makes recommendations regarding the work program of the Health Planning Agency in the remaining 1-1/2 years of the Trusteeship in order to prepare the districts/states for assumption of their own health planning programs. The needs and capabilities for health planning after 1981 (and in the event that P.L. 93-641 will no longer apply to the TTPI) are explored and recommendations made regarding agency structure and work efforts.

J. CHAPTER 12 - HEALTH CARE FINANCE:

This chapter reconciles the goals and objectives of Chapters 4, 5, 6, 7, 8, 9, 10, and 11 with the financial resources projected to be made available to the TTPI governments. Mechanisms to increase present and projected funding levels in order to meet identified needs are explored.

K. CHAPTER 13 - HEALTH POLICY ANALYSIS:

Health policies of the various TTPI governments have profound impact upon health and the health care system. Although

relevant policies are discussed, as appropriate, in the Health Service sections, this chapter will attempt to provide the user of the plan with a comprehensive overview of government policies on health. These policies will be linked to problems identified in earlier chapters of the Plan, and recommendations will be made for reevaluation of policies in several areas.

IV. IMPORTANT NOTE:

Attempt has been made to insure that the Territorial Health Plan, in no way, contradicts any of the District Health Plans. However, in the event that discrepancies and/or contradictions between the Territorial and the District Health Plans have developed, the District Health Plan will be considered to have precedence until such time as staff can reconcile the discrepancies.

CHAPTER THREE

FRAMEWORK FOR HEALTH PLANNING IN THE TRUST TERRITORY OF THE PACIFIC ISLANDS

CHAPTER 3

FRAMEWORK FOR HEALTH PLANNING IN THE TRUST TERRITORY OF THE PACIFIC ISLANDS

I. Planning Period:

Calendar years 1980-1985

II. Preface:

In 1975, the United States Congress enacted Public Law 93-641,[1/] The National Health Planning and Resources Development Act of 1974. This act established a nationwide system of health planning agencies responsible for the development of area-wide and statewide comprehensive health plans. These plans are to recommend strategies for decreasing the cost of health care; improving availability and accessibility of health care services; improving quality and continuity of medical care; and emphasizing prevention of disease.

Public Law 93-641 defines the Trust Territory of the Pacific Islands (TTPI) as a "state" for purposes of funding eligibility and responsibility for compliance with federal health planning regulations.

Public Law 93-641 requires the Chief Executive Officer (in the Trust Territory, this is the High Commissioner) of the "state" to designate a State Health Planning and Development Agency (SHPDA) and a State Health Coordinating Council (SHCC) to jointly prepare a Comprehensive Five Year State (Territorial) Health Plan. Funds are provided through federal grants to support both the SHPDA and the SHCC.

1/ Amended in 1979 by U.S. Public Law 96-79.

In 1976, the High Commissioner designated the TTPI Bureau of Health Services as the "State" Health Planning and Development Agency for the Trust Territory. The Director of Health Services is therefore simultaneously and co-terminously the Director of SHPDA.

The Director of SHPDA has delegated to the Office of Health Planning within the Bureau of Health Services responsibility for development of the health plans and performing other planning functions required of the SHPDA by health planning legislation. The SHPDA also serves as staff to the SHCC (or Micronesia Health Coordinating Council - MHCC).

The Micronesia Health Coordinating Council (MHCC) was created by proclamation of the High Commissioner in October, 1976. At its creation, the MHCC was composed of 27 members representing each of the TTPI districts; all members were appointed by the High Commissioner. In the three intervening years, political changes and budgetary pressures have reduced the size of the Council. Today, the MHCC has 16 members representing the three TTPI political entities (Marshalls, FSM, and Palau) who are appointed by the Presidents of the respective governments and confirmed by the High Commissioner. Membership in the Council is divided nearly equal between providers of health care services (doctors, nurses, dentists, etc) and consumers of health services. The MHCC is responsible for preparing the Final TTPI Territorial Health Plan based on a Preliminary Plan submitted to it by the SHPDA staff. The Council is also responsible for plan implementation and health program review and coordination activities.

Public Law 93-641 requires only the development of a Territorial (State) Comprehensive Five Year Health Plan; the development of district plans is not required. The SHPDA in conjunction with the MHCC, however, determined that it was necessary to develop District Comprehensive Health Plans as the basis for the development of the Territorial Health Plan.

There were four primary considerations in the decision to develop district health plans. (1) The unique needs of each district must be projected in a Territorial plan; (2) Since delivery of health care services occurs in the districts, the actual conditions of health and delivery of health services can be analyzed for inclusion in the Territorial plan only through detailed planning done at the district level; (3) The TTPI operates under a decentralized government structure. The Headquarters Bureau of Health Services exercises only advisory powers over most health service activities at the district level. Budgeting and finance procedures likewise are decentralized; health planning consequently must relate to six nearly autonomous local budgeting systems; (4) Each district is comprised of one or more cultural groups quite distinct from the cultural groups of other districts. This fact alone would be sufficient to require local detailed planning to precede Territorial-wide planning; (5) Political fragmentation of the TTPI into two or more national political entities was anticipated and has since been realized.

Thus, the Trust Territory Comprehensive Five-Year Health Plan developed under PL 93-641 is composed of six separate local plans representing each of the six administrative districts/states of the Trust Territory, and a single Territorial Plan consolidating the common elements from the six local plans.

III. Authority for the Plan:

This plan is developed pursuant to the authority vested in the TTPI Bureau of Health Services.

1. Title 63, Chapter 1, Section 2 of the Trust Territory Code which designates the TTPI Bureau of Health Services as the sole provider of health care in the TTPI;
2. United States Public Law 93-641, the National Health Planning and Resource Development Act of 1974, Section 1536, which designates the TTPI as a "state" for the purposes of health planning;
3. High Commissioner letter of April 8, 1976, designating the Department of Health Services of the TTPI as the State Health Planning Agency under U.S. PL 93-641;
4. United States Department of Health, Education and Welfare Grant Award 09-H-001167-01 of June 30, 1976, which funded the State Health Planning and Development Agency of the TTPI;

and pursuant to the authority vested in the Micronesia Health Coordinating Council by:

1. United States Public Law 93-641;
2. High Commissioner Proclamation of October 6, 1976, creating the Micronesia Health Coordinating Council (MHCC);

3. United States Department of Health, Education, and Welfare Grant Award 09-H-001167-01 of June 30, 1976, which funded the Trust Territory (Micronesia) Health Coordinating Council.

IV. Purpose of the Plan:

This plan reflects both United States national health priorities (where appropriate to the TTPI) and the TTPI health priorities.

The overriding purpose of this health plan is to systematically organize available health and health-related resources in the Trust Territory (both government and non-government) into a comprehensive health care delivery system. This system will strive to improve the health of the population and to continuously maintain the health of the population. To accomplish this, the Plan has had to balance the sometime conflicting needs of Micronesia as a federation of "emerging nations" and of Micronesia as a "state" under the United States Government.

In order to accomplish its purpose, the plan is organized around four principal themes:

(1) The need for increased self-sufficiency in the protection of health and the provision of health services;

(2) Shift of the current emphasis away from curative health services toward an emphasis on promotion of healthy living practices and the prevention of avoidable and unnecessary conditions of ill health;

(3) Improvement in the equality of access to health services;

(4) Improvement in the quality of direct health care services and health supportive services provided in the Trust Territory.

Underlying these four themes is the concept that the health of a community is the responsibility of the community as a whole, not just a few members of that community who work in the field of health care. The primary role of doctors is to cure those who become sick. It is the responsibility of the entire community to protect the health of its members and to prevent people from becoming sick. It is this education of the community on the prevention of illness which is the number one priority of the Trust Territory Comprehensive Health Plan.

The Plan is designed to be used as a basis for evaluation of current levels of health status, the health care delivery system, and health-related environmental factors so that documented deficiencies and inefficiencies may be reduced. The plan is expected to be a guide to how the health delivery system and environmental health program should change over time to meet both the identified needs of the community at large and the highest attainable professional standards. Specifically, it is intended that the plan should address itself to the national health priorities as set forth in Section 1502 of Public Law 93-641.

"NATIONAL HEALTH PRIORITIES

"Section 1502. The Congress finds that the following deserve priority consideration in the formulation of national health planning goals and in the development and operation of federal, state, and area health planning and resource development programs:

"(1) The provision of primary care services for medically under-served populations, especially those which are located in rural or economically depressed areas.

"(2) The development of multi-institutional systems for coordination or consolidation of institutional health services (including obstetric, pediatric, emergency medical, intensive and coronary care and radiation therapy services).

"(3) The development of medical group practices (especially those whose services are appropriately coordinated or integrated with institutional health services), health maintenance organizations, and other organized systems for the provision of health care.

"(4) The training and increased utilization of physician assistants, especially nurse clinicians.

"(5) The development of multi-institutional arrangements for the sharing of support services necessary to all health service institutions.

"(6) The promotion of activities to achieve needed improvements in the quality of health services including needs identified by the review activities of Professional Standards Review Organization under Part B of Title XI of the Social Security Act.

"(7) The development by health service institutions of the capacity to provide various levels of care (including intensive care, acute general care, and extended care) on a geographically integrated basis.

"(8) The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health care services.

"(9) The adoption of uniform cost accounting, simplified reimbursement and utilization reporting systems and improved management of procedures for health service institutions.

"(10) The development of effective methods of educating the general public concerning proper personal (including preventive) health care and methods for effective use of available health services."

"(11) The promotion of an effective energy conservation and fuel efficiency program for health service institutions to reduce the rate of growth of demand for energy.

"(12) The identification and discontinuance of duplicative or unneeded services and facilities.

"(13) The adoption of policies which will (A) contain the rapidly rising costs of health care delivery, (B) insure more appropriate use of health care services, and (C) promote greater efficiency in the health care delivery system.

"(14) The elimination of inappropriate placement in institutions of persons with mental health problems and the improvement of the quality of care provided those with mental health problems for whom institutional care is appropriate.

"(15) Assurance of access to community mental health centers and other mental health care providers for needed mental health services to emphasize the provision of outpatient as a preferable alternative to inpatient mental health services.

"(16) The promotion of those health services which are provided in a manner cognizant of the emotional and psychological components of the prevention and treatment of illness and maintenance of health.

The Trust Territory Health Plan will incorporate National Health Priorities numbers (1), (2), (4), (6), (7), (8), (10), (12), (13), (15), and (16). Federal priorities (3), (5), (9), (11), and (14) are not included for the following reasons:

(3) There is almost no private medical care offered in the TTPI. Virtually all of the medical services offered are a function of the Trust Territory Bureau of Health Services. At such time that a substantial private practice is developed, the development of medical group practices will become a planning issues.

(5) All support services within the Trust Territory are proivded by the Bureau of Health Servicds and therefore, the development of multi-institutional arrangements is not a priority at this time.

(9) Since there is basically only one institution providing health care services -- the Bureau of Health Services -- there is already a uniform cost accounting and utilization reporting system.

(11) It is recognized that the rising fuel prices and the total dependence of the TTPI upon imported fuel oils, makes development of alternative energy sources and fuel conservation measures an important health planning concern. However, due to the rapid technological explosion

in the energy field which requires extensive study on the part of TTPI health planning staff and due to the many pressing problems in direct health care services, it has not been possible for this Plan to address energy issues. Future revisions of the Plan will incorporate this national health priority.

(14) This priority relating to institutional care for the mentally ill does not apply to the current TTPI situation as there are no institutional services available for the mentally ill; patients are treated in the general hospitals on a short term basis until their conditions have been stabilized sufficiently to allow their release to family.

Priority number 17 which addresses the need to increase competitive forces in the health service industry touches an area of some controversy in the TTPI. At the present, the TTPI health care system is purely government owned and operated. Some people believe services will be improved and costs reduced by encouraging the development of a private health care sector. Other people believe the districts/states of the TTPI are too small and too poor to sustain two or more health care systems and still maintain reasonable standards of quality. This health plan addresses the issue of competition in Chapter 12, Health Care Finance; the debate, however, is ongoing and resolution cannot be expected soon.

In addition to addressing national health priorities, the Territorial Plan is intended to have the following uses which are specific to the Trust Territory of the Pacific Islands:

(1) Serve as a basis for future Bureau of Health Services program decision-making and as a guide to effective resource allocation;

(2) Serve as the basis for Bureau of Health Services budget presentations to the Congress of the Federated States of Micronesia; and the Palau and Marshall Islands legislative bodies;

(3) Serve as the basis for development of grant applications to the U.S. Department of Health, Education and Welfare;

(4) Serve as a technical document supporting needed health or health-related legislation and as a health resource document for the Congress of the Federated States of Micronesia and the governments of Palau and the Marshall Islands;

(5) Serve as a basis for states negotiators from the three entities to use in establishing grounds for negotiation with the United States;

(6) Serve as the basis for integrating health-related planning in other Trust Territory Government bureaus, and in special purpose agencies which may exist within the planning area;

(7) Assist in establishment of community health expectations;

(8) Serve as the basis for providing increased awareness of health issues to other branches of the Trust Territory Government and the public at-large;

(9) Serve as the basis for internal Bureau of Health Services decision-making, and for review and evaluation of programs and activities; and

(10) Serve as the basis for public review of the programs, activities, and progress of the various health services or health-related services within the TTPI.

V. Methodology:

The Territorial Health Plan was developed over a period of three years (January, 1977 - March, 1980) which can be subdivided into eight phases:

Phase I - (January-May, 1977) was a preplanning period in which the format for the district and territorial health plans was developed, relevant data available at Headquarters Health Services was assimilated, provider and consumer interview questionnaires were developed, and training in health planning methodology was provided for the Micronesia Health Coordinating Council members.

Phase II - (May, 1977 - December, 1977) was the initial development phase of the district plans. Teams of two or three health planners from the Headquarters Health Planning Office visited each district for a period of four to six weeks. During this period, working closely with the District Directors of Health Services and the District MHCC members, the planners conducted interviews with all health service division chiefs, other key individuals in the health system, directors of departments with health-related functions (Public Works, Education, Public Affairs, etc.) and members of the legislatures and the government administrations. Consumer meetings were held to explain the health planning task and to elicit community input into the plan document.

Phase III - (August, 1977 - February, 1978) was centered in Saipan. The health planners, after returning from the districts, compiled a problem-oriented health systems analysis utilizing data gathered from the districts as well as that available at Headquarters.

Phase IV - (September, 1977 - August, 1978) one planner from the original team returned to the districts to review and correct the systems analysis with district health service staff and to write goals and objectives based on the analysis. Each plan upon completion, was submitted to the MHCC for review and approval.

Phase V - (June, 1978 - May, 1979) was concentrated on development of the preliminary Territorial-wide Plan which focuses on problems common to all districts and requiring a coordinated approach for solution. The Territorial Plan focuses primarily upon the inter-relationship between population characteristics, health status indicators, and the health system components. Phase V relied heavily upon input from the staff of Headquarters Bureau of Health Services and the MHCC, which established the plan priorities.

Phase VI - (May, 1978 - January, 1980) concentrated on development of the Annual Implementation Plans (AIPs) based on each District Health Plan. District AIPs were developed by district MHCC representatives and district health planners with technical assistance from the Headquarters Health Planning staff. It is hoped that now the AIP process has been initiated in each district/state, that process will be on-going for future years with minimal assistance from Headquarters.

Phase VII - (May 1979 - March, 1980) concentrated on refinement of the Territorial Health Plan in accordance with the desires of the MHCC. During this phase, the TTPI Health Facilities Plan was finalized and the TTPI Health Manpower Plan was completed.

Phase VIII - (1979 - 1981) will focus on upgrading district health planning capabilities, on timely revision of comprehensive health plans, on writing of specific detailed plans for high priority areas (e.g., health education), and on the implementation of the plans at the local, the entity, and the Territorial levels.

VI. Health Planning Constraints

Because of the unitary, government-sponsored system of health care delivery, virtually no obstacles stood in the way of the defined health planning mission. Total cooperation to the planning process was

provided by the District Administrators/Governors, the District Directors of Health Services and all governmental department heads. This cooperation also extended outward to include the leadership and populace of the different villages and islands of the districts/states.

At Headquarters, cooperation was extended by officials in Territorial Office of Planning and Statistics, the Bureau of Transportation, Communication, Public Works, Public Safety, Medical Supplies and Procurement, Education and other departments from which the health planning team requested assistance.

Due to logistics of transportation and communication, the planning process was limited to the centers and intermediate areas of each district and the TTPI headquarters in Saipan. Health problems of the outer islands were, in most cases, identified through discussion with the district health providers and other community service providers, (e.g., head start program workers, old age program workers and community action group). An effort was made in each district to talk with persons, residing in the centers but citizens of outlying regions, regarding health and health services in their areas.

One of the major problems during the planning period was the scarcity of dependable data. In some instances, no reporting format existed for systematic statistic notation and compilation; occasionally, data were mandated in a program area, but no specific reporting assignments had been made; in several instances (e.g., medical referrals),

certain portions of needed information were routinely reported, while other critical items (such as "medical costs" of referral cases) were not included as data headings on the subject report forms. Late reporting and inaccurate and/or conflicting data entries were also problems.

The major constraint in this health planning process were political uncertainties and their implications for health care delivery. At the time of the writing of the first draft of the plan when goals and objectives for health services were being drafted and when priorities for health care were being set, two events took place that had great impact on the health planning process. There were: (1) the proclamation made by President Carter that his administration was committed to the termination of the United States administration of the Trust Territory Islands under the United Nations Trusteeship Agreement in 1981 and (2) the results of the July 12, 1978 referendum on the Constitution of Micronesia, which split the Trust Territory Islands into three government entities (the Marshalls, the FSM, and the Republic of Belau).

Because of the uncertainties in the funding levels for the three entities after the termination of the Trusteeship and because of the lack of knowledge regarding the negotiations each of the three entities has undertaken with the United States, the planning process is sometimes limited to speculations or education guesses with regard to the future of certain health care issues such as (a) financing of health care (b) data collection and management; (c) utilization of health manpower; (d) medical referral policies; and finally (e) health policy in general.

Details of these uncertainities will be found in the pertinent section of the Plan.

VII. Previous Health Planning in the Trust Territory:

Health Planning has been an on-going activity in the Trust Territory of the Pacific Islands since 1968 and has resulted in a compendium of health and health-related issued entitled State Plan for Health Services. This document has a historical value and serves as a baseline to monitor future planning endeavors. It also has been utilized to expand the TTPI's response capability to health needs by assisting in the identification and utilization of federally assisted programs. Additionally, it has significance in that it represents an early attempt to systematize the health delivery system. The work exhibited in the Plan represents an effort to arrange, in an orderly fashion, the needs, issues, opportunities, goals and objectives of the TTPI's health program.

As a working document, the State Plan for Health Services has proved most serviceable and exhibits the professional dedication of the planners who developed it. However, since much of the data are not current, its validity is somewhat weakened. Much of the data included in the document were collected in the period between 1968 and 1974 and have not been monitored or comprehensively maintained.

While the State Plan still has validity, its content and structure do not conform to the format for state plans mandated by guidelines for planning under PL 93-641. The intended scope of present and future plans has been so enlarged by the consolidation of several past programs, i.e., Hill Burton, Regional Medical, 314 A-D, etc., as to

make past efforts obsolescent. This is not the fault of the past planning efforts; rather, it results from changes in legislation which require a completely new definition of comprehensive health planning.

VIII. Priorities of the Territorial Health Plan:

The MHCC is responsible, under health planning law for the establishment of priorities for the Territorial Health Plans. Accordingly, in September, 1978, the MHCC adopted the following planning priorities:

Health Status Priorities:

1. Communicable Disease
1. Diarrheal Diseases
1. Infant Deaths

2. Nutrition-related diseases
2. Diabetes
2. Hypertension

Health System Priorities:

1. Health Education
1. Manpower Development
   - Health Services Administration
   - Health Educators
   - Sanitarians
   - Medex
   - Nurses
   - Physicians

2. Environmental Protection
2. Medical Supplies

3. Hospitals and Other Health Care Facilities
3. Diagnostic Services (including support services)
3. Nursing Care

Health Related Priorities:

1. Sewage Disposal
1. Safe Drinking Water

Health Related Priorities: (Cont'd)

2. Financing of Health Services
2. Housing
2. Health Legislation

3. Medical Fee Schedules
3. Recreational Facilities
3. Crime Prevention

This prioritization has been used by the SHPDA to determine which sections of the health Plan should be comprehensively developed as opposed to sections which are handled in a less-than-comprehensive fashion. This prioritization has also been used as a basic for determination of special service plans needed--for this reason Health Manpower and Health Education Plans have been developed. However, prioritization has its greatest value in the development of AIPs; clearly choices must be made between alleviation of the many pressing health and health service needs; the AIP is the document which sets forth those choices and these MHCC priorities provide general guidelines for making the choices.

CHAPTER FOUR

CHARACTERISTICS OF THE TTPI

CHAPTER 4

CHARACTERISTICS OF THE TTPI

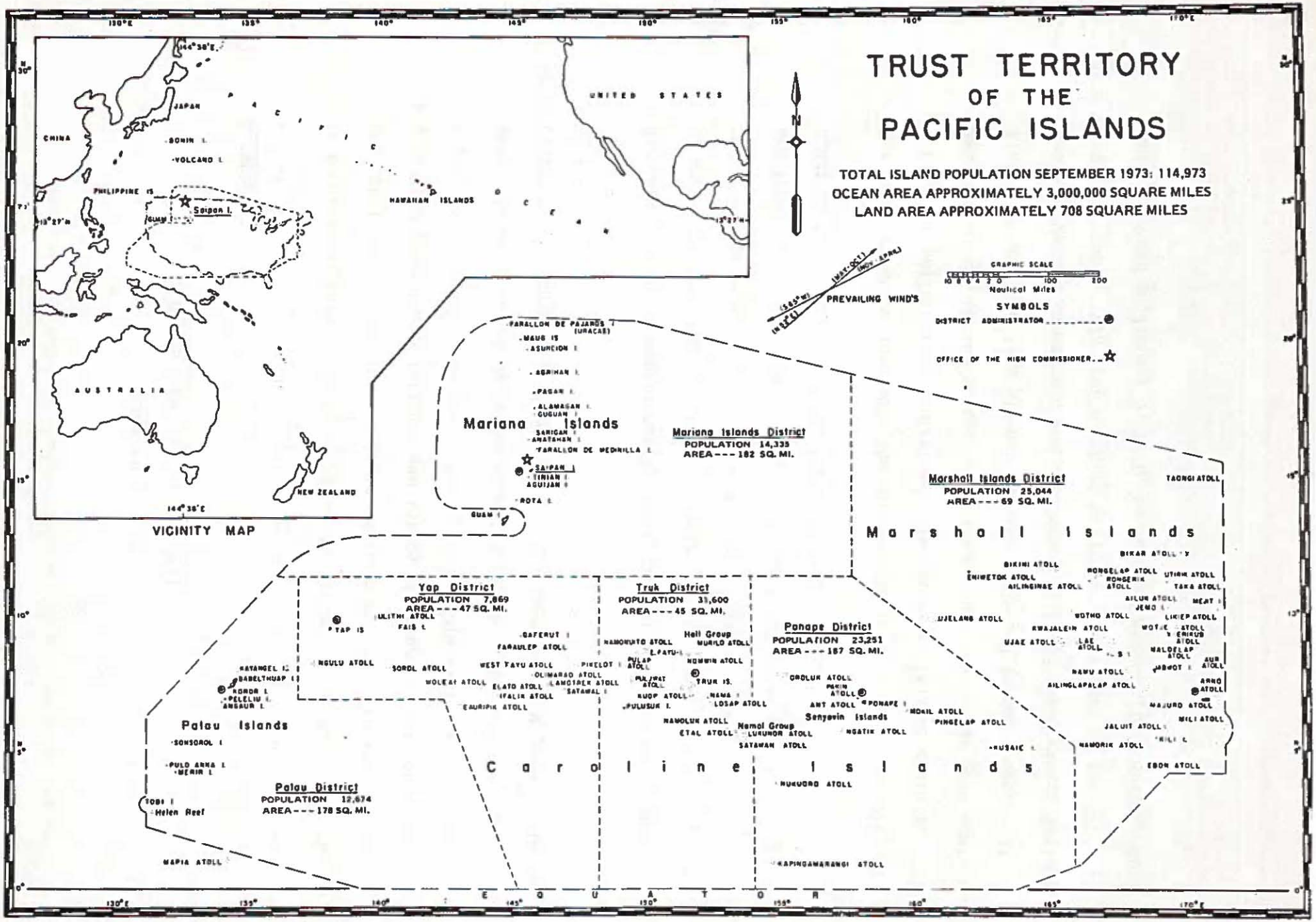
I. Geography:

The Trust Territory of the Pacific Islands (also known as Micronesia), is composed of three islands chains - the Marianas, the Marshalls and the Carolines - extending across the Western Pacific from approximately 3 to 25 degrees north latitude and 131 to 174 degrees east longitude. Figure IV.1 contains two maps: The major map diagrams the relationship between the various Micronesian Islands while the vicinity map (inset in the upper left corner) shows the location of Micronesia in the Pacific Ocean.

Micronesia occupies approximately three million square miles of ocean or about the same area as the continental United States. Within these three million square miles, there are some 2,000 islands of which 97 are inhabited. The total land area is about 700 acres (which corresponds to the land area of the State of Rhode Islands).

For administrative purposes, the Micronesian Islands have been divided into eight political jurisdictions. The Marianas Islands chain is composed of the United States Territory of Guam (which has been administratively separate from Micronesia since 1896 and is now a center of Western Pacific commerce), and the Commonwealth of the Northern Mariana Islands. Until 1978, the Northern Marianas were a part of the TTPI, but separated on January 9, 1978, to form a Commonwealth. Neither Guam

FIGURE IV.1. MAPS OF THE TTPI



nor the Commonwealth of the Northern Mariana Islands are included in this health plan. The political jurisdictions which are covered by this plan are: in the Caroline Islands, the District of Palau, soon to become the Republic of Belau; in the Caroline Islands, the Federated States of Micronesia (FSM) composed of the states of Yap, Truk, Ponape, and Kosrae; the Marshall Islands, which are united under a single national administration.

Each of the six TTPI districts/states is comprised of a District Center, Intermediate area and Outer Island. The district center is generally the largest of the islands and is the center of commerce and government. Approximately 47% of the Trust Territory population reside in the district centers. Because the district centers have the greatest exposure to the world beyond Micronesia, they tend to be highly westernized and, therefore, attract a large number of intermediate and outer island residents seeking entry into the monetary economy and the "better" way of life symbolized by the district center. Due to this in-migration, although the district centers cannot be classified as cities, they experience many of the urban problems afflicting other population centers of the world, i.e., overcrowding, poor living conditions, poor sanitation, etc. The term "intermediate area" refers to areas which are more than two hours's travel time in distance from the district center, but less than one day's travel time. The term "outer islands" refers to those areas which are more than one day's travel time from the district center. Table IV.1 shows the minimum and maximum travel distance from the district center to the outer islands for each district of the TTPI. In several districts/

TABLE IV.1

TRUST TERRITORY OF THE PACIFIC ISLANDS
Average Direct Travel Distances,
District Center to Populated Outer Islands or Island Groups

District	Number of Outer Islands of Island Groups	Travel Distance from District Center (Miles) Minimum	Maximum
Marshall Islands, Majuro	21	35	687
Palau Islands, Koror 1/	7	30	365
Ponape Islands, Kolonia 2/	6	88	364
Truk Islands, Moen 3/	24	51	202
Yap Islands, Colonia	11	80	620
Kosrae, Toful	0	0	0

1/ Excludes 8 localities on Babelthaup which average 22 miles distance from Koror;

2/ Excludes shore communities on Ponape Island;

3/ Excludes Truk Lagoon having 13 populated islands averaging 13 miles distance from Moen.

Source: Rendel B. Alldredge, Program Officer (PPBS)
Office of the High Commissioner
Trust Territory of the Pacific Islands

states one or more subdistrict centers have been established in an effort to make essential government services more readily accessible to the outlying populations. However, when this Plan uses the term "subdistrict centers" it is referring only to Ebeye, Marshall Islands as this is the only subdistrict with essentially urban characteristics. The other subdistricts do not differ greatly from outer islands in general.

II. Cultures of the TTPI:

The Trust Territory of the Pacific Islands embraces a group of societies in rapid transition. It is important to emphasize that there is a group of cultures/societies clustered under the name of Micronesia and that all of them are changing, though the rates of change vary from group to group and from island to island.

In the three archipelagos constituting the TTPI, there are nine recognized major languages and many distinct dialects. In the Marshall Islands one language, Marshallese, is common. The people living in the two island chains which constitute the Marshall Islands are generally considered as belonging to one broad culture, although traditions and customs may vary from atoll to atoll in small specific ways.

There are four distinct cultural groups living within the Ponape District of the Eastern Caroline Islands. They are: Ponapeans; Polynesians from Kapingamarangi and Nukuoro Islands; and Pingelapese and Mokilese on the atolls of Pingelap and Mokil.

Kosrae is a single island with its own language.

Truk District of the Eastern Caroline Islands has one major language group. Though there are a number of minor differences in cultural patterns between the district center area and the outlying islands, The Truk District is composed of people who share one culture.

In the Yap District of the Western Caroline Islands, there are two major cultural groups and two major languages. The inhabitants of Yap Island speak Yapese and belong to one culture. The inhabitants of the outer islands speak Trukese and broadly share the Trukese outer island culture.

In the Palau District, there is one major language, Palauan. The inhabitants of the three distant outer islands speak a separate language related to dialects spoken in the Central Carolines.

There is another way of categorizing differences between cultures in Micronesia. The societies which developed on the high volcanic or mountainous islands differ significantly within a cultural group from the societies living on small atolls. The differences are attributable to the different source, varieties and amounts of food, materials for shelter, access to the lagoons and ocean for fishing and population densities.

Because Micronesia does not consist of a single culture, but instead, nine major cultures with many local variations, it is difficult to generalize about cultural influences on health. There are, however, certain attitudes and practices which exist in segments of the TTPI which have specific impacts on the health care delivery system and on the health status of the residents. Among these are:

1. Culturally, the patients in the Trust Territory are quite bashful and inhibited in submitting to physical examinations. This stems from several reasons: (a) Islanders have not completely understood the concept of medical confidentiality. Many people are still reluctant to be seen and examined by the physician, nurse or health aide. The medical providers have done much to ameliorate this situation as they have, over the years, shown to the community that they do keep medical information in strict confidence. (b) In small communities most everybody is related to each other and it is considered culturally unacceptable for relatives to see each other's private parts. Because of this reluctance and lack of understanding of preventive measures, people only come to seek medical care when they have to, and sometimes, that is too late. (c) Many women are reluctant to undergo gynecological examinations by a male care provider. Related to this is the belief held by some islanders that a women should not be seen or examined after delivery until the bleeding has completely stopped. To some extent, this belief has impeded the post natal clinics of the public health programs.

2. In many islands, there is still the belief that men members of the household must eat first and separately. Moreover, since they do all the hard work, they are entitled to the best food. This belief sometimes affects the nutritional status of children and women, especially women who are pregnant or who are a special nutrition risk after delivery.

3. Many Micronesians believe that certain illnesses or diseases are brought upon a person by gods and/or ancestors for various reasons, (such as punishment for certain members of the family or clan who have offended the gods or ancestors). Because of such beliefs, certain illnesses are believed to be remedied only by reconciliation of the gods, families or individuals and cannot be remedied by western medicine.

4. According to some cultures, certain castes of people cannot hold high positions in the society. This has presented problems to members of low caste clans who have achieved certain levels of skills and education only to have their authorities and responsibilities ignored by members of the society's higher classes.

There are however, other concerns related to culture which are of importance for health planning. One fact, which must be kept in mind is that the general level of public awareness concerning public health (including environmental health, prevention strategies, and health education) is at a stage which might be compared to the United States in the last century. This is due to the fact that the Trust Territory

is an 'emerging" nation which has not been part of the industrialized world during the growth of public education and health science development. In fact, a system of universal public education has not been achieved and the local education system is markedly less sophisticated than that of industrialized countries. A large number of adults cannot read nor write English although they can read, write, and speak Japanese. Various orthographies have been developed for the major local languages, but it is estimated that only about one-half of the adult population (over the age of 40) can read and write in their own languages. Thus, health education in the modern sense has been neither a long-established part of a school curriculum, nor part of the local cultures. Attempts at health education must face strong conservation attitudes held by adults and formidable culture, language and logistical problems.

A second important factor is water supply and waste disposal. Public sanitation is generations behind U.S. standards and seriously affects the health of the population. Since the population of Micronesia is spread in tiny culsters of small islands and atolls hundreds of miles apart, and since there is an extremely limited economic base to produce wealth or foreign exchange, it is not economically feasible to install modern, mainland-style water and sewage treatment systems either as an initial capital investment nor in terms of long-term operation and maintenance.

Health status indicators show a mortality pattern similar to that of an industrialized nation, although the TTPI is most certainly not an

industrialized nation. The mortality patterns are attributable in large part to an effective communicable disease control program which has virtually eliminated epidemics of serious communicable disease as a major cause of death. This high level of health is directly due to strong financial support from the United States for health care services. Morbidity data, however, shows that most outpatient visits and a significant number of inpatient episodes are directly related to unsanitary water and improper waste disposal. This is one example of a major reality in the Trust Territory; even though this is a government-owned and operated health service delivery system, major resources which affect the health status of the population are under the control of government agencies other than the Bureau of Health Services. A major task of health planning is to explore the relationship between health status and other government resources and priorities. Increasing the difficulty of this task is the fact that the future funding level of all government agencies is uncertain due to the approaching political transition.

III. Climate:

The climate of Micronesia is tropical with temperatures ranging from the mid-70's to the mid-80's. The uniformity of the temperatures is due to the prevailing trade winds which provide cooling breezes. Humidity in Micronesia averages 80%.

The annual amount of rainfall varies widely among the islands, ranging from as high as 300-400 inches in some areas of Ponape to as low as 10-15 inches in some of the northermost Marshalls. For most of the islands, the average rainfall is moderate. Almost all of the islands

have pronounced wet and dry seasons with some experiencing periodic droughts. During the typhoon season (November to May) storms carrying high winds and torrential rainfall are frequent. Storms generally begin near the Truk lagoon region and travel northwestward through the Marianas or westward through Yap and Palau Districts. Occasionally, storms do begin as far east as the Marshalls. These storms can cause millions of dollars of damage to property, homes and crops. Salt water deposited on land by the winds can devastate vegetation and plant life so that full recovery may take as long as six or seven years.

Although natural disasters, impact upon health status occasionally, these are not the major climatic factors affecting health. Each year, at the beginning of the rainy season, there is tremendous runoff from the land into water systems; this runoff includes raw sewage and other pollutants. As a result, almost all health care providers associate the onset of rainy season with an upsurge in gastrointestinal diseases. In addition, the hot, humid climate is one casual agent in the high incidence of skin infections prevalent throughout the TTPI.

IV. Transportation:

The most striking physical characteristic of Micronesia is the smallness of the islands and the greatexpanse of water which separates the islands. The limited land area and the distances separating the islands have always been obstacles to trade and mobility. The problem of logistics must be considered in the planning of every activity.

(A) Inter-District Transportation:

Passenger:

Air Micronesia (a sibsidiary of Continental Airlines) services five of the six district centers with Boeing 727 jet service with terminals in Guam and Honolulu. (Only Kosrae District does not have the airfield capability to handle jet aircraft although an airport is to be constructed in the early 1980's.)

Air Micronesia has four flights through the Micronesian islands. Two-three 1/ days each week a westbound flight links Honolulu with Tokyo via Majuro, Kwajalein Atoll, Ponape, Truk, Guam and Saipan. Two to three 1/ days each week an eastbound flight links Tokyo with Honolulu via the same islands. Three days each week flight link Guam with Yap and Palau. One or more flights per day link Guam and Saipan. It is not possible to transfer from the Yap/Palau flight to the Tokyo/Honolulu flight (or vice versa) without a minimum of one day's layover in either Guam or Saipan. Guam and Honolulu are both serviced by several major airlines with flight connections throughout the Pacific Basin.

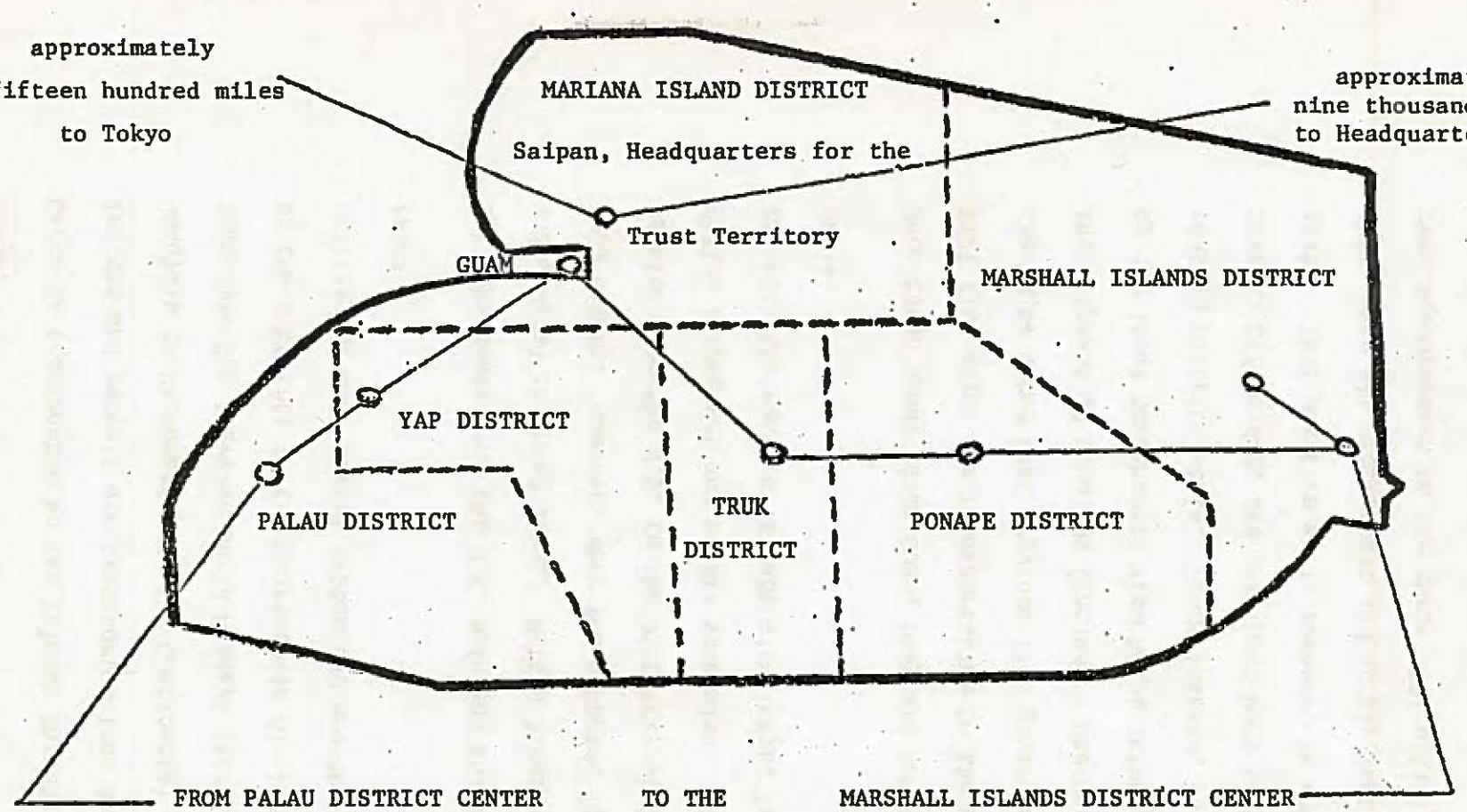
Figure IV.2 is a map showing air routes and times required for intra-TTPI travel.

The only regular inter-district passenger transportation by ship via a Naureau-owned cargo/luxury passenger liner which travels San Francisco to Saipan via Honolulu, Majuro, Ponape and Truk.

1/ Flight schedules change frequently largely resulting from seasonal fluctuations in demand.

FIGURE IV.2. AIR TRAVEL ROUTES AND TIME IN THE TTPI

A BRIEF EXAMPLE OF AIRPLANE TRAVEL IN THE TRUST TERRITORY OF THE PACIFIC ISLANDS



it takes three days: leave Palau Monday morning (travel time from District Center to airport, plus check-in time is usually 2-3 hours); arrive Guam late Monday afternoon; one day lay-over Tuesday (no flight scheduled); fly out on Wednesday morning to the Marshalls (the third step down the line), arriving in the Marshall Islands late Wednesday afternoon- with two (2) days remaining in the work-week...

Cargo:

Cargo is transported to the islands through several means. Air freight and parcels are transported from mainland U.S.A. and Honolulu to Micronesia via the Continental Airlines, and sometimes via Pan American World Airways (servicing Guam). Air cargo to the districts is transported via Air Micronesia. The islands utilize the U.S. postal system and use the U.S. domestic mail rates.

Bulk shipments from the U.S. Mainland and Hawaii can come to Guam via several shipping lines. Matson lines also serves Majuro direct from Hawaii. However, very few shipping lines provide direct service from the U.S. to the districts/states and those which do follow infrequent and eradic schedules. At least one shipping line connects the eastern islands with Tokyo, Taiwan and other Asian ports.

Once cargo goods reach Guam, they are generally off-loaded onto TTPI flag ships for transportation to the district centers. It should be noted that previous TTPI government policy has prevented the shipment of supplies (including pharmaceuticals) purchased by the local governments from being shipped directly to the purchasing district/state. Goods instead, have been shipped to Saipan, off-loaded, and reshipped back to the purchasing district/state. This practice will, however, be abondoned as of July 1, 1980, when all procurement and supply functions are decentralized from Headquarters to the three TTPI political entities.

The TTPI owns and operates twelve ships ranging from 500 to 3,300 tonnage. Each of the six districts have been assigned one ship for the transport of goods and people within the district and to the districts nearby. One ship services all the districts and connects them with Japan, Philippines, and Taiwan. The smaller district ships also make trips to the southeastern Asian countries for repair and for bringing needed goods and materials from those countries. With impending termination of the Trusteeship, ownership of these vessels is being transferred to the three political entities and should be complete in the spring of 1980.

(B) Intra-district Transportation:

Land:

With the exception of Ponape and Kosrae, each district center island in the Trust Territory has a road which circumnavigates the island. These roads, however, are rarely paved and generally poorly maintained. Outside of the district centers, there are limited road systems and few vehicles. Only Kosrae has a public transportation system (bus service) although private taxi service is availabel in several of the district centers at a reasonable cost.

Air:

Yap District is linked with Ulithi Atoll (90 miles away) by a twin engine light aircraftowned by a Protestant missionary air service, (Pacific Missionary Aviation or PMA).

Kosrae District has had sporadic air service linking it to Ponape. It is hoped that regular air service will begin early in 1980 with the introduction of "prop-jet" planes.

Water:

Water transportation is the principal link between the district centers and the intermediate and outer island regions.

In many intermediate areas, the only transportation to the district center is via small, privately-owned motorboats.

Transportation between the district centers and the outer islands is provided via a government-owned fleet of small freighters known as "field-trip-ships". These ships are operated on a commercial basis with transportation of cargo as their first priority. They seldom remain at anchor in an outer island for more than a single day at a time. Passengers ride on the deck and sleep on mats they have brought for that purpose. The field trip fleet is undergoing modernization; on the newer ships there are a limited number of cabins intended for the priority use of sick passengers.

Field trip schedules are extremely variable. Weather conditions, ship repairs, and ship diversions (ship may be diverted for the evacuation of critically ill outer island residents, for emergency service of vital island equipment, such as generators or radios, and other reasons as ordered by the Governors) may leave passengers stranded weeks at a strech. In addition, some islands receive

field trip service only 3-4 times per year and almost no island is serviced more frequently than once per month.

(C) Emergency Transportation:

Except in the few islands which have airfields, all emergency medical patients in the outer islands are evacuated via field trip ships which have been diverted from their scheduled route for this purpose. The cost of the diversion is approximately $1500. per day. Intermediate area residents may be evacuated by private boat or in some districts by hospital-owned ambulance boats. All hospitals in the Trust Territory own ambulances for emergency service to district center and some intermediate area residents. These ambulances, however, are not equipped with emergency medical equipment nor with communication linkage to the hospital; medical personnel often do not accompany the ambulance on its runs.

V. Communications:

Communications between the district centers and the outer islands and between the district centers, Saipan, and the outside world are the responsibility of the Trust Territory Bureau of Communication. Telephone communications within the district centers are the responsibility of the district/state Bureaus of Public Works.

(A) District Center - Saipan Communications:

An overseas telephone system links the district centers to Saipan and through Saipan, to other parts of the world. Work is now

underway to give each district center the ability to communicate via phone directly to the rest of the world. A teletype system also links the district centers with Saipan and other district centers. In addition, an ATS-1 satellite system links the district centers to other district centers and Saipan and any telephone in the United States plus other satellite stations in the South Pacific. The satellite system is available to each district department of Health Services for 1/2 - 1 hour segments on a scheduled basis each day.

(b) Intra-district Communications:

At least one island of each inhabited atoll of the Trust Territory has a high frequency radio unit which links these islands with the district center, other outer islands and nearby ships. Some of the units are powered by a generator while others utilize solar panels. The latter tend to be more reliable and a gradual conversion of all units to solar power is taking place in most districts/states. Maintenance of the radio units is a continuing problem with estimates of down time in some districts/states approaching 17 percent.

Communication between the district center and the intermediate regions differs from district to district. Palau, Truk and Majuro have a limited radio communication network. Kosrae has a more extensive network; while Yap and Ponape do not have a communications system between their district centers and intermediate areas. All district centers have a limited phone network which primarily links government offices and a small number of government residences.

CHAPTER 4

VI. DEMOGRAPHY

A. Population Size:

Table IV-2 shows the number and percentage of TTPI citizens residing in each district/state of the Trust Territory. Truk has the TTPI's largest population, followed in order of size by the Marshalls, Ponape, Palau, Yap and Kosrae.

TABLE IV -2 DISTRICT POPULATION (TTPI CITIZENS), 1980*

District	Population	Percent of Total TTPI Population
Kosrae	4,940	4.1%
Marshalls	29,670	24.5%
Palau	14,800	12.2%
Ponape	23,140	19.2%
Truk	38,650	32.0%
Yap	9,320	7.7%
TTPI TOTALS	120,840	99.9

Source: OPS Bulletin of Statistics 12/77

*Excluding those individuals of unspecified place of residence and citizens of foreign nations including the U.S. Population estimates prepared by the TTPI Office of Planning and Statistics; projected from 1967, 1973, and 1977 census data.

B. Age Distribution:

Table IV-3 shows the percentage of each district's population according to age groups. They youthful character of Micronesia's population is clearly evident; in 1973 approximately 47% of the population were under fifteen years of age.[1/] Conversely, less than ten percent of all Micronesians were older than fifty-five years. The youthful nature of the T.T.P.I. population is graphically displayed by the population pyramid found on Figure IV.3 .

TABLE IV-3 POPULATION OF THE TRUST TERRITORY AND THE NORTHERN MARIANAS BY AGE AND SEX, 1973 [2/] - all persons, percentages

(De Facto Population by District of usual residence)

District / Age Group	Total Trust Territory			Kosrae			Marshalls			Palau			Ponape			Truk			Yap			Northern Marianas		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
0-4	18.1	18.5	17.8	18.8	18.4	19.1	19.3	19.6	18.8	15.0	15.1	14.9	18.7	18.7	18.6	18.5	18.9	18.1	15.5	15.9	15.0	16.9	16.5	17.1
5-9	15.6	15.9	15.3	17.6	17.2	17.6	15.9	16.0	15.8	15.9	15.4	16.5	15.4	15.7	15.1	15.1	15.5	14.8	14.0	14.2	13.9	15.3	15.1	15.6
10-14	13.4	13.6	13.2	14.4	16.7	12.1	12.5	12.2	12.9	14.4	14.4	14.5	13.9	14.2	13.7	12.9	13.0	12.9	12.8	13.4	12.2	13.4	13.3	13.5
15-19	11.5	11.6	11.4	11.5	11.0	12.0	11.3	11.0	11.7	12.3	12.6	11.9	11.3	11.5	11.1	11.2	11.5	10.9	11.0	10.3	11.7	11.4	10.4	12.6
20-24	8.3	8.3	8.3	7.4	6.4	8.6	8.5	8.7	8.3	8.5	9.4	7.6	8.1	8.1	8.2	8.4	8.0	8.8	8.0	7.9	8.0	8.8	7.9	9.8
25-29	5.7	5.6	5.8	6.1	5.9	6.4	6.4	6.3	6.6	5.7	6.2	5.2	4.9	4.7	5.0	6.1	6.0	6.3	5.6	6.0	5.2	6.9	7.2	6.5
30-34	4.0	3.9	4.2	4.4	4.1	4.6	4.2	4.6	3.9	4.4	4.4	4.4	4.1	3.8	4.3	4.2	4.1	4.2	4.5	4.1	5.0	5.3	6.1	4.4
35-39	4.2	4.0	4.4	4.3	4.2	4.3	3.7	3.7	3.7	4.2	4.1	4.2	4.2	4.0	4.3	4.6	4.3	5.0	4.9	4.7	5.0	5.0	5.5	4.4
40-44	3.8	3.8	3.7	3.9	3.9	4.0	3.4	3.6	3.1	3.5	3.4	3.6	4.0	3.9	4.1	3.9	4.1	3.8	4.6	4.6	4.6	4.2	2.8	3.5
45-49	3.3	3.1	3.5	2.6	2.1	3.1	3.1	3.0	3.2	3.5	3.0	3.9	3.6	3.6	3.6	3.3	3.1	3.5	3.7	3.6	3.9	3.1	3.7	2.5
50-54	3.3	3.2	3.5	2.8	3.0	2.6	3.0	2.9	3.0	3.3	3.5	3.1	3.7	3.4	4.0	3.3	3.2	3.4	4.2	3.7	4.6	2.9	3.1	2.8
55-59	2.6	2.5	2.6	1.5	1.7	1.3	2.6	2.7	2.6	2.9	2.6	3.1	2.7	2.9	2.5	2.3	2.1	2.4	3.2	3.4	2.9	2.3	2.1	2.5
60-64	2.2	2.2	2.2	1.6	1.6	1.5	2.1	2.1	2.1	1.7	1.6	1.8	2.0	2.1	1.9	2.6	2.6	2.5	2.6	2.6	2.5	1.9	2.0	1.7
65-69	1.5	1.4	1.6	1.3	1.4	1.2	1.4	1.3	1.6	1.6	1.4	1.8	1.3	1.4	1.3	1.5	1.4	1.6	1.8	1.7	1.9	1.2	1.1	1.3
70-74	1.1	1.1	1.1	1.1	1.4	0.7	1.0	0.9	1.2	1.1	1.0	1.2	1.0	1.0	1.0	1.1	1.2	1.0	1.6	1.6	1.5	0.8	0.6	0.9
75 and over	1.4	1.3	1.4	0.9	0.9	0.9	1.5	1.4	1.6	2.0	1.8	2.2	1.1	1.0	1.3	1.0	1.0	1.0	2.1	2.1	2.0	0.7	0.6	0.8

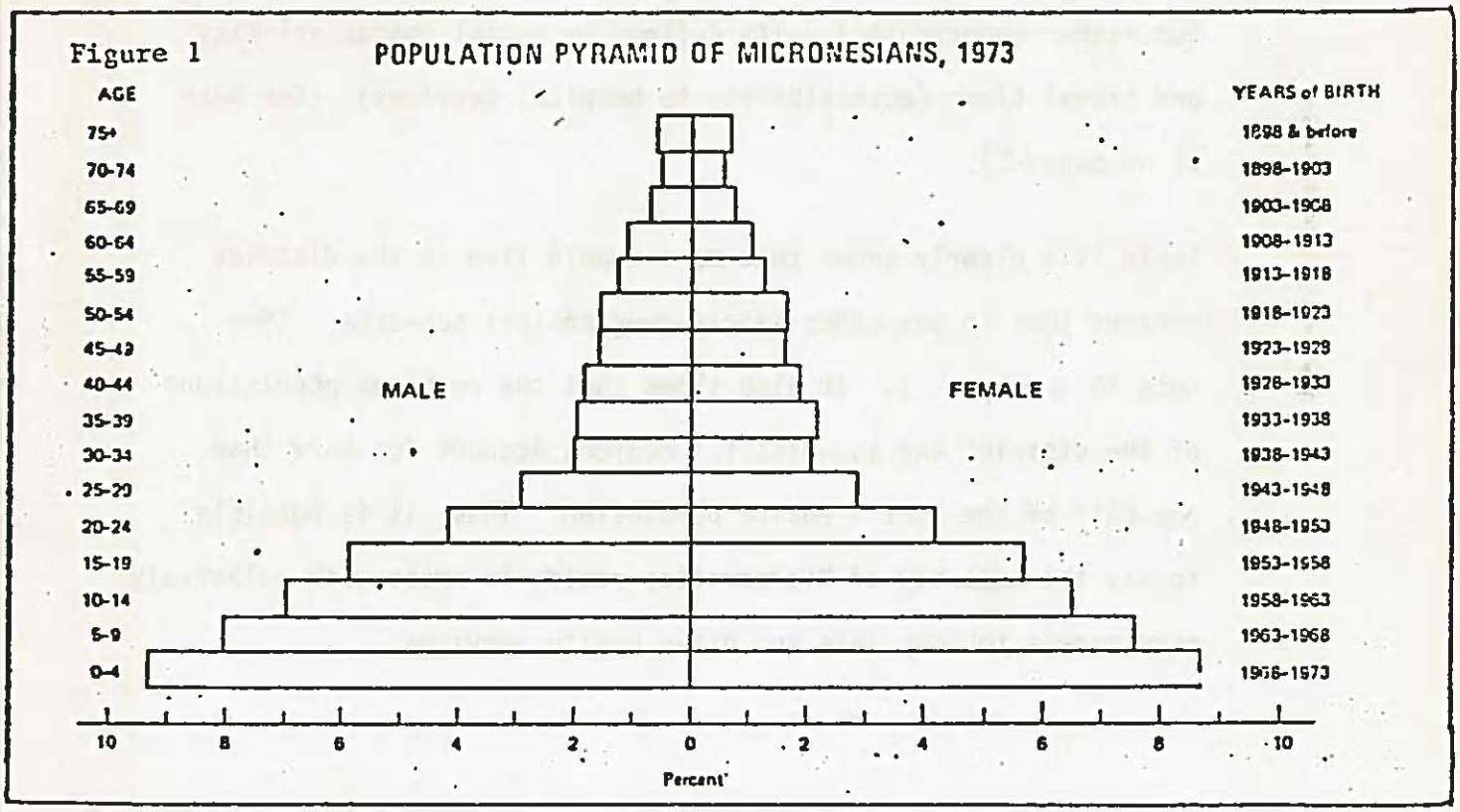
Source: OPS Bulletin of Statistics 12/77

1/ Results of a 1977 census conducted by the TTPI Office of Planning and Statistics in conjunction with a skill and occupational survey indicate 44% of the TT population to be under 14 years of age.

2/ Although the TTPI Office of Planning and Statistics has projected population through the year 2000, these projections break the population into three broad age categories: 0-14; 15-64; 65 and over (see Table IV-7). 1973 is the last year for which a detailed age breakdown is available. Another census will be performed in 1980 to enable updating of this data.

The great majority of Micronesians (more than 72 percent) are less than thirty years old, and the Territory's median age (16.2 years) is one of the world's lowest. Particularly significant for population planning is the fact that 72 percent of all females are less than thirty years of age. This represents an extremely high "fedundity"--i.e., biological potential) for reproduction--in the population. (See Figure IV-3) (See note #1 on page 59).

Figure IV-3



Source: Figure IV-3 is taken from Alan Kay, "Population Growth in Micronesia," Micronesian Reporter, XXII (2nd Quarter, 1974) No. 2, P. 17

C. Geographic Distribution:

Table IV-4 shows Trust Territory citizens by place of residence at the time of the 1977 census,[1/] both in absolute numbers and as percentages of the total district population.

This table slightly understates the proportion of residents in District Centers since it excludes aliens, who reside almost exclusively in District Centers.

The geographical areas selected are not political sub-divisions, but rather geographical units defined by social characteristics and travel times (accessibility to hospital services) (See Note #2 on page 85).

Table IV-4 clearly shows that more people live in the district centers than in any other single geographical sub-area. (See note #3 on page). It also shows that the combined populations of the district and sub-district centers account for more than one-half of the TTPI's entire population. Thus, it is possible to say the majority of Micronesians reside in areas with relatively easy access to hospitals and other health services.

1/ The 1st TTPI census was conducted in 1967 by Peace Corp. The 2nd census and 1st official census was completed in 1973. The 1977 census, from which data in Table IV-4 is drawn, was an unofficial census conducted by the TTPI Office of Planning and Statistics as part of a skills and occupations survey.

TABLE IV-4

TRUST TERRITORY CITIZENS BY PLACE OF RESIDENCE
September, 12, 1977

District	D.Center	Sub D.C.	Intermediate*	Outer Islands**
Total				
109,644	15,344	1,577	30,621	23,169
100%	46.8%	4.2%	27.9%	21.1%
Kosrae	Lelu, Malem, Tafunsak		Walung	
4,731	4,605		126	
100%	97.3%		2.7%	
Marshalls	Majuro (DUD, Laura)	Ebeye	Arno	Likiep; Utirik; Ailuk; Mejit; Wotje; Maloelap; Aur; Namorik; Mili, Ebon; Kili; Ailinglaplap; Jaluit, Lib; Jabwot; Rongelap; Namu; Ujelang; Bikini; Wotho; Law; Ujae; N.S.
25,457	10,087	4,577	1,199	9,594
100%	39.6%	18%	4.7%	37.7%
Palau	Koror		Babelthuap; Angaur; Peleliu; Kayangel	Pulo Anna; Sonsorol; Tobi; N.S.
12,911	8,298		4,509	104
100%	64.3%		34.9%	0.8%
Ponape	Kolonia; Nett, Sokehs.		Uh; Kiti; Metalanim	Pingelap; Mokil; Nukuoro; Ngatik; Kapingamarangi
22,524	12,297		7,883	2,344
100%	54.6%		35.0%	10.4%

Source: Quarterly bulletin of Statistics, TTPI Office of Planning and Statistics, Volume II, No. 1, pp. 3-4.

* An intermediate area is more than 2 hours but less than 1 day's travel time from the district center.

** More than one day's travel time from district center.

TABLE IV-4 (Cont'd)

District	D. Center	Sub D. C.	Intermediate	Outer Islands
Truk	Moen		Dublon; Tol Uman; Fefan; Romanum; Udot; Tsis; Param; Eot; Fala-Beguest	Nama; Losap; Pis-Losap; Namoluk; Oneop; Satawan; Lukunor; Fananu; Etal; Kutu; Moch; Tamatam; Ta; Pulusuk; Puluwat; Pulap; Nomwin; Magur; Ulul; Onari; Ono; Ruo; Pisaras; Pisaras; Murillo; N.S.
36,253 100%	10,944 30.2%		16,773 46.3%	8,503 23.5%
Yap	Rull; Weloy; Gagil; Map; Tomil; Fanif; Filman; Dalipebinau; Kanifay		Rumung	Ulithi; Fais; Sorol; Lamotrek; Ngulu; Woleai; Faraulep; Elato; Eauripik; Ifalik; Satawal; N.S.
7,768 100%	5,013 64.5%		131 1.7%	2,624 33.8%

D. Distribution of High Risk Populations:

Table IV-5 shows distribution among the sub-areas of those persons defined as High-risk in terms of health care problems.[1/] The first three groups (0-1 year, infants; 1-4 year, children; and females in the prime child bearing ages, 15-44 years) are the critical ages for maternal and child health care; the last (persons aged 55 years and over) are of importance because of the special health needs of the elderly.

TABLE IV-5

GEOGRAPHIC DISTRIBUTION OF HIGH-RISK AGE GROUPS (TTPI CITIZENS), 1973

GEOGRAPHIC AREA	Total Pop. of Sub-area 1973	INFANT (0-1 year) NUMBER	%	CHILD (1-4 years) NUMBER	%	FEMALE (15-44 years) NUMBER	%	ELDERLY (55 & Over years) NUMBER	%	Total % of Sub-area pop. in High-Risk Category
District Center	46,458	1,982	4.3	6,799	14.6	10,562	22.7	3,744	8.1	49.7
Sub-District Center	5,469	440	8.0	1,488	27.2	1,865	34.1	2,754	12.6	81.9
Intermediate	27,787	1,235	4.4	4,236	15.2	4,709	16.9	2,754	9.9	46.4
Outer Island	21,204	843	4.0	2,940	13.9	3,469	16.4	2,245	10.6	44.9
TTPI Total	100,918	4,500		15,463		20,605		9,434		
Percentage of TTPI Population Falling Into High-Risk Afe Categories			4.5		15.3		20.4		9.4	

* Percentage of Are Population in High-Risk Groups

Source: TTPI SHPDA - Note: The combined populations of these high-risk age group (50,002) represent 49.6% of the total TTPI population in 1973.

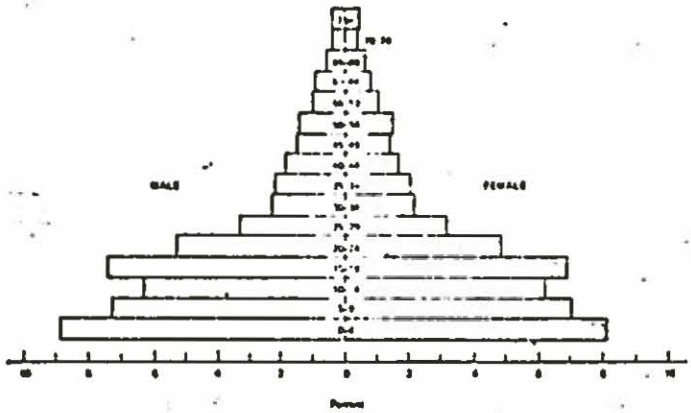
1/ Table is based on 1973 data; data unavailable to update according to specific age categories.

Various characteristics of the district center and outer island populations are summarized in Figure IV-3d. It shows that 25 percent of the district center population is between 15 and 24 years of age, while only 15 percent of the outer island population falls into this age group. Figure IV-3d also shows the small proportion of elderly persons in the TTPI, with more residing in the outer islands than in the district center. (See Note #6 on Page 86).

NOTE: THERE IS NO FIGURE IV-3A.

Figure IV-3b

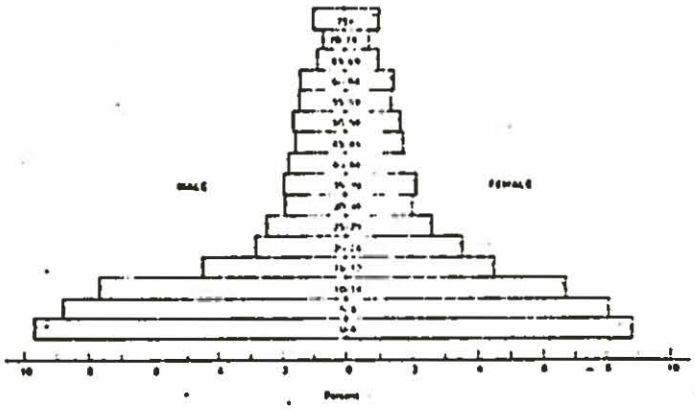
POPULATION PYRAMID OF
DISTRICT CENTER RESIDENTS, 1973



Source: Kay's - See Footnote 5

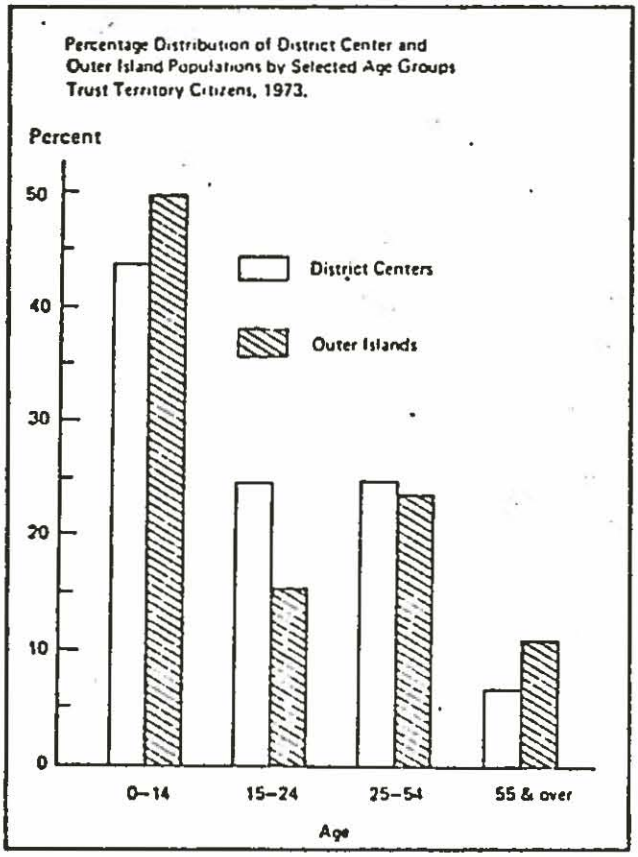
Figure IV-3c

POPULATION PYRAMID OF
OUTER ISLAND RESIDENTS, 1973



Source: Kay's - See Footnote 5

Figure IV-3d



Source: Kay's - See Footnote 5

Table IV-5 shows that 49.6 percent of all TTPI citizens fall into high-risk population groups, i.e., nearly one-half of Micronesia's population can be considered of special interest to health planning because of the propensity of these persons to require special health services. Table IV-5 also shows that there are proportionately more elderly persons residing in the outer islands and intermediate areas than in the district centers. At the same time, proportionately more women of the prime child-bearing ages live in the district and sub-district centers than in the intermediate areas and outer islands. Given this latter fact, it may seem surprising that all four geographic subdivision (excepting the subdistrict etc) have relatively similar proportions of infants and children among their populations. This apparent discrepancy is explained by the fact that many district center women of child-bearing age send their children to live with relatives and friends in the other geographic sub-areas of Micronesia.

Figures IV-3b and IV-3c analyze the district center and outer island populations in terms of age, as well as sex. These two population pyramids show there is a large proportion of young adults of both sexes aged 15-24 years living in the district centers than in the outer islands. This selective migration to the district centers from the outlying areas of the Trust Territory, is probably due to the increased educational and vocational opportunities at the district centers, as well as the attraction exerted by the "modern" amenities available in the district center. (See Note #5 on page 86)

E. Population Trends and Projections:

The population characteristics in Section 4. VI. D (High Risk Population) were extracted from data compiled in the TT Census of 1973, the Trust Territory's last official population enumeration. When these are compared with data contained in the 1967 and 1977 census, a number of significant changes in the size, composition, and distribution of Micronesia's population become evident. In the following section, we establish these population "trends" (changes between 1967, 1973, and 1977), and use them to project plausible patterns of future growth. Our projections assume, of course, that the components of future population growth will continue to closely approximately the rates existing between 1967, 1963, and 1977. (See Note #7 on Page 86).

The left-hand side of Table IV-6 contain the 1967,1973, and 1977 TTPI citizen populations of each district/state, and shows the average annual growth rate for each district/state between 1967 and 1973; 1973 and 1977; and 1967 and 1977.

The table shows the TTPI population grew at an extremely rapid rate between 1967 and 1973 (4.6% annually). However, this growth rate decreased between 1973 and 1977 to a 2.2% annual growth rate. The ten-year average annual growth rate was 3.7%.

Among the districts/states, Kosrae and Ponape show increased rates of growth between 1967-73 and 1973-77. All other districts/states show decreased rates of growth between 1967-73 and 1973-77. Yap

TABLE IV-6 DISTRICT POPULATION GROWTH

(TT CITIZENS) 1967--1977

DISTRICT	RESIDENT POPULATION 1967	1973	1977	Annual* Growth Rate 1967-1973	Annual Growth Tate 1973-1977	Average Annual Growth Rate 1967-1977
Kosrae	3,226	3,952	4,731	3.7%	4.9%	4.7%
Marshalls	18,599	25,599	25,457	5.8%	9.7%	3.7%
Palau	10,991	12,673	12,911	2.6%	0.5%	1.7%
Ponape	14,838	19,263	22,524	5.0%	4.2%	5.2%
Truk	24,821	31,609	36,253	5.0%	3.8%	4.6%
Yap	6,618	7,870	7,768	3.1%	-0.3%	1.7
TTPI TOTALS	79,093	100,918	109,644	4.6%**	2.2%**	3.7%

* Crude rates per 1,000 population during average year.

** The 1970-75 average annual growth rate for various other workd areas is estimated to be approximately: for Africa, 2.6; for Latin America, 2.7; for East Asia, 1.7; for Southeast Asia, 2.5; for Europe, 0.6; for Melanesia 2.4; for North American, 0.9.

Source: Demographic Year book, 1975, United Nations Department of Economic and Social Affairs, New York, New York, 1976, pp. 139, 142-147.

Yap experienced negative growth (i.e., population loss) between 1973 and 1977. The average annual growth rate (1967-77) remains higher than the TT average for Kosrae, Truk, Ponape and the Marshalls. Yap, and Palau have growth rates lower than the TTPI average.

It must be understood that the 1977 census figures may be less accurate than those for 1973 as it was not an official census. The 1967 census was likewise unofficial and there are no estimates of its validity. Nevertheless, the figures would indicate that, with the exception of Kosrae and Ponape, the trend may be toward decreasing growth. A census is scheduled to be conducted Territorial-wide in 1980 after which more definitive statements can be made regarding TTPI populations.

Despite the possible trend toward lower rates of growth, given the current growth rates, the TTPI population can be expected to double within the next two decades. This population growth can be attributed primarily to high rates of natural increase -- i.e., most areas of the TTPI have many more births each year than they have deaths.

However, as will be discussed in Chapter 5, the TTPI birth rates have not shown the degree of decrease which average annual population growth rates have shown. It is probable out-migration from the TTPI has a significant impact on the decreasing population growth rate.

Table IV-7 shows the mid-year TTPI population projections by age groups from 1978-2000.

Table IV-7

Projected mid-year population of the Trust Territory and Northern Marianas by district, agegroup and sex, 1979 - 1985, 1990 & 2000.
TTPI Citizens

District	Sex	Agegroup	1979	1980	1981	1982	1983	1984	1985	1990	2000
Trust Territory											
Total TTPI	Both	Total	116,960	120,840	125,020	129,460	134,150	139,060	144,090	171,760	242,210
		0 - 14	52,350	53,770	55,430	57,300	59,360	61,510	63,690	76,850	110,460
		15 - 64	59,750	62,040	64,390	66,810	69,300	71,860	74,520	87,990	123,740
		65 over	4,860	5,030	5,200	5,350	5,490	5,690	5,880	6,920	8,010
	Male	Total	59,630	61,580	63,700	65,950	68,340	70,830	73,380	87,390	123,020
		0 - 14	27,010	27,710	28,530	29,470	30,510	31,590	32,670	39,280	56,470
		15 - 64	30,240	31,410	32,620	33,860	35,150	36,480	37,870	44,820	62,820
		65 over	2,380	2,460	2,550	2,620	2,680	2,760	2,840	3,290	3,730
	Female	Total	57,330	59,260	61,320	63,510	65,810	68,230	70,710	84,370	119,190
		0 - 14	25,340	26,060	26,900	27,830	28,850	29,920	31,020	37,570	53,990
		15 - 64	29,510	30,630	31,770	32,950	34,150	35,380	36,650	43,170	60,920
		65 over	2,480	2,570	2,650	2,730	2,810	2,930	3,140	3,630	4,380
Kwaje	Both	Total	4,780	4,940	5,110	5,300	5,490	5,680	5,890	7,100	10,190
		0 - 14	2,240	2,290	2,340	2,410	2,480	2,560	2,650	3,220	4,710
		15 - 64	2,380	2,490	2,610	2,730	2,850	2,970	3,080	3,680	5,190
		65 over	160	160	160	160	160	150	160	200	290
	Male	Total	2,420	2,490	2,580	2,680	2,770	2,860	2,970	3,580	5,150
		0 - 14	1,130	1,150	1,180	1,220	1,260	1,300	1,350	1,650	2,410
		15 - 64	1,200	1,250	1,310	1,370	1,420	1,480	1,540	1,830	2,610
		65 over	90	90	90	90	90	80	80	100	130
	Female	Total	2,360	2,450	2,530	2,620	2,720	2,820	2,920	3,520	5,040
		0 - 14	1,110	1,140	1,160	1,190	1,220	1,260	1,300	1,570	2,300
		15 - 64	1,180	1,240	1,300	1,360	1,430	1,490	1,540	1,850	2,580
		65 over	70	70	70	70	70	70	80	100	160
Marshalls	Both	Total	28,720	29,670	30,710	31,840	33,050	34,300	35,580	42,510	60,330
		0 - 14	13,270	13,600	13,990	14,440	14,940	15,460	15,960	19,140	27,740
		15 - 64	14,290	14,860	15,460	16,100	16,760	17,460	18,190	21,770	30,830
		65 over	1,160	1,210	1,260	1,300	1,350	1,380	1,430	1,600	1,760
	Male	Total	14,640	15,120	15,640	16,220	16,840	17,480	18,130	21,640	30,650
		0 - 14	6,880	7,040	7,230	7,460	7,710	7,970	8,210	9,780	13,180
		15 - 64	7,210	7,500	7,810	8,140	8,480	8,850	9,230	11,090	15,630
		65 over	550	580	600	620	650	660	690	770	840
	Female	Total	14,080	14,550	15,070	15,620	16,210	16,820	17,450	20,870	29,680
		0 - 14	6,390	6,560	6,760	6,980	7,230	7,490	7,750	9,360	13,560
		15 - 64	7,080	7,360	7,650	7,960	8,280	8,610	8,960	10,680	15,200
		65 over	610	630	660	680	700	720	740	830	920
Palau	Both	Total	14,320	14,800	15,320	15,870	16,460	17,040	17,670	21,170	29,720
		0 - 14	6,110	6,260	6,440	6,660	6,920	7,220	7,570	9,590	13,530
		15 - 64	7,630	7,950	8,260	8,550	8,840	9,110	9,360	10,730	15,240
		65 over	580	590	620	660	700	710	740	850	950
	Male	Total	7,350	7,590	7,860	8,130	8,430	8,730	9,050	10,830	15,150
		0 - 14	3,130	3,210	3,310	3,420	3,540	3,710	3,890	4,900	6,920
		15 - 64	3,940	4,100	4,260	4,400	4,550	4,690	4,810	5,520	7,810
		65 over	280	280	290	310	320	330	350	410	420
	Female	Total	6,970	7,210	7,460	7,740	8,030	8,310	8,620	10,340	14,570
		0 - 14	2,980	3,050	3,130	3,240	3,380	3,510	3,680	4,690	6,610
		15 - 64	3,690	3,850	4,000	4,150	4,290	4,420	4,550	5,210	7,430
		65 over	300	310	330	350	380	380	390	440	530
Ponape	Both	Total	22,420	23,140	23,920	24,770	25,690	26,630	27,600	32,900	46,900
		0 - 14	9,990	10,250	10,560	10,930	11,330	11,740	12,130	14,570	21,280
		15 - 64	11,580	12,000	12,430	12,870	13,350	13,840	14,370	16,950	23,560
		65 over	850	890	930	970	1,010	1,050	1,100	1,380	1,660
	Male	Total	11,440	11,800	12,200	12,630	13,100	13,580	14,070	16,730	23,600
		0 - 14	5,130	5,260	5,420	5,600	5,800	6,000	6,200	7,450	10,860
		15 - 65	5,880	6,090	6,310	6,540	6,780	7,040	7,310	8,620	11,950
		65 over	430	450	470	490	520	540	560	660	770
	Female	Total	10,980	11,340	11,720	12,140	12,590	13,050	13,530	16,170	22,900
		0 - 14	4,860	4,990	5,140	5,330	5,530	5,740	5,930	7,120	10,400
		15 - 64	5,700	5,910	6,120	6,340	6,570	6,800	7,060	8,330	11,610
		65 over	420	440	460	470	490	510	540	720	890
Truk	Both	Total	37,400	38,650	40,010	41,460	42,970	44,600	46,140	54,800	77,200
		0 - 14	16,910	17,410	17,980	18,590	19,250	19,970	20,570	24,470	35,060
		15 - 64	18,960	19,670	20,410	21,180	21,980	22,810	23,690	28,180	39,560
		65 over	1,530	1,570	1,620	1,690	1,740	1,870	1,900	2,150	2,580
	Male	Total	18,960	19,580	20,280	21,020	21,800	22,660	23,450	27,790	39,160
		0 - 14	8,760	9,000	9,280	9,570	9,900	10,230	10,550	12,500	17,930
		15 - 64	9,470	9,840	10,240	10,650	11,070	11,510	11,910	14,290	20,030
		65 over	730	740	760	800	830	920	930	1,000	1,200
	Female	Total	18,440	19,070	19,730	20,440	21,170	21,940	22,710	27,010	38,040
		0 - 14	8,150	8,410	8,700	9,020	9,350	9,690	10,020	11,970	17,130
		15 - 64	9,490	9,830	10,170	10,530	10,910	11,300	11,720	13,890	19,530
		65 over	800	830	860	890	910	950	970	1,150	1,380
Yap	Both	Total	9,020	9,320	9,630	9,940	10,260	10,600	10,950	12,960	17,930
		0 - 14	3,810	3,930	4,080	4,230	4,390	4,560	4,750	5,780	8,020
		15 - 64	4,730	4,890	5,040	5,190	5,340	5,500	5,640	6,620	9,170
		65 over	480	500	510	520	530	540	560	660	760
	Male	Total	4,560	4,710	4,870	5,020	5,190	5,370	5,550	6,560	9,070
		0 - 14	1,970	2,030	2,110	2,180	2,260	2,350	2,440	2,960	4,100
		15 - 64	2,350	2,430	2,500	2,580	2,660	2,740	2,870	3,290	4,630
		65 over	240	250	260	260	270	280	290	310	340
	Female	Total	4,460	4,610	4,760	4,920	5,070	5,230	5,400	6,400	8,860
		0 - 14	1,840	1,900	1,970	2,050	2,130	2,210	2,310	2,820	3,920
		15 - 64	2,380	2,460	2,540	2,610	2,680	2,760	2,870	3,230	4,540
		65 over	240	250	250	260	260	260	270	350	420
Northern Marianas	Both	Total	15,390	15,970	16,600	17,260	17,930	18,630	19,360	23,120	33,130
		0 - 14	7,010	7,250	7,530	7,830	8,150	8,490	8,870	10,910	15,210
		15 - 64	7,900	8,210	8,540	8,870	9,200	9,530	9,860	11,700	17,060
		65 over	480	510	530	560	580	610	630	710	860
	Male	Total	7,770	8,060	8,390	8,720	9,060	9,420	9,790	11,780	16,760
		0 - 14	3,580	3,700	3,850	4,000	4,160	4,340	4,530	5,580	7,770
		15 - 64	3,960	4,120	4,290	4,460	4,630	4,790	4,960	5,870	8,580
		65 over	230	240	250	260	270	290	300	330	410
	Female	Total	7,620	7,910	8,210	8,540	8,870	9,210	9,570	11,340	16,370
		0 - 14	3,430	3,550	3,680	3,830	3,990	4,150	4,340	5,330	7,440
		15 - 64	3,940	4,090	4,250	4,410	4,570	4,740	4,900	5,830	8,480
		65 over	250	270	280	300	310	320	330	380	450

DISTRICT CENTER POPULATION TRENDS:

Table IV.8 presents data on district center populations; their size their average annual growth rates; and the proportion of the total TTPI populations which reside there. Almost half of the TTPI population resides in the district centers. IV.8 shows between 1967 and 1973 there was tremendous growth in all district centers with the populations of the district centers, Territorial-wide increasing by 55% in the six year period. The average annual rate of growth between 1967 and 1973, in all district centers, was in excess of the annual growth rate for the total district/state populations. However, the growth rate between 1973 and 1977 decreased significantly. Although all district centers experienced growth rates still in excess of the growth rate for the total district/state populations, the average growth rates were much lower than in the previous 6 years. The total populations of TTPI district centers increasing by only 12.4% over the 1973-1977 period (as compared to the 55% from 1967-1973).

It is probable the increase from 1967 to 1973 is partially attributable to the influx of U.S. dollars in the form of increased government budgets and availability of Federal categorical grant programs. During this period, the size of the TTPI governments mushroomed as a result of these monies. Between 1973 and 1977, Federal dollars continued to flow into the TTPI but the yearly budgetary increases were not as significant as in earlier years. Certainly there are factors besides the availability of jobs which motivate people to move from the intermediate and outer island areas into the district centers -- e.g., better educational opportunities, hospitals, roads, modern conveniences, etc. But certainly the employment market is a major consideration.

TABLE IV.8.

DISTRICT CENTER GROWTH RATES, 1967-77
DISTRICT CENTER POPULATIONS AS PERCENTS OF TOTAL TTPI POPULATIONS, 1967-77

DISTRICT	DISTRICT CENTER POPULATIONS			Average Annual Growth Rates of District Center Populations **			District Center Populations as Percents of Total Populations		
	1967	1973	1977	1967-73	1973-77	1967-77	1967	1973	1977
MARSHALLS	5,077	9,661	10,087	+15.0	+ 1.1	+ 9.9	27.2%	38.6%	39.6%
TRUK	5,772	9,293	10,944	+ 6.1	+ 3.0	+ 8.9	23.2%	29.4%	30.2%
PONAPE	6,311	10,070	12,297	+ 9.9	+ 5.5	+ 9.5	42.5%	52.3%	54.6%
YAP	3,741	5,011	5,013	+ 5.7	0.0	+ 3.4	56.5%	63.7%	64.5%
KOSRAE	3,226	3,989	4,605	---	---	---	100%	100%	100%
PALAU	5,363	7,669	8,298	+ 7.2	+ 2.0	+ 5.5	48.7%	60.5%	64.3%
TTPI TOTAL	29,490	45,693	51,344	+ 8.8	+ 3.5	+ 7.4	37.2%	42.3%	46.8%

** Crude rates per 1,000 population during average year.

SUBDISTRICT CENTER POPULATION TRENDS:

Ebeye, the only sub-district center for which data is presented, experienced a 10% average annual population increase between 1967 and 1973 (the population rose from 3,460 to 5,469). However, the trend reversed between 1973 and 1977 with an average annual decrease in population of 4% (the population decreased from 5,469 to 4,577). Ebeye was therefore, the only TTPI urban area to experience negative growth between 1967 and 1977. However, it must be noted that due to the transient population residing in Ebeye, an accurate estimation of residents is difficult to obtain. As a consequence, there may be significant error in the figure presented here.

INTERMEDIATE AREA POPULATION TRENDS:

Table IV.9 presents data on the demographic trends of TTPI intermediate areas. Truk and Ponape were the only states to show consistent increases in the population of their intermediate areas although in both districts, the rate of increase was far lower than the growth rate for the total state population. All other intermediate areas showed negative growth rates. The proportion of the total district/state populations residing in the intermediate areas, for all districts/states decreased for all years between 1973 and 1977 (except in Truk where there was a 0.10% increase). However, except in the Marshalls and Palau, the proportion of the population residing in the intermediate areas appears to stabilize after 1973.

TABLE IV.9.
INTERMEDIATE AREA POPULATION GROWTH, 1967-77
INTERMEDIATE AREA POPULATIONS AS PERCENT OF TOTAL TTPI POPULATIONS, 1967-77

DISTRICT	Intermediate Area Population			Average Annual Growth Rates of Intermediate Area Populations **			Intermediate Area Populations as Percent of Total Populations		
	1967	1973	1977	1967-73	1973-77	1967-77	1967	1973	1977
MARSHALLS	1,263	1,462	1,199	+ 2.6	- 4.5	- 0.5	6.8%	5.8%	4.7%
TRUK	12,131	14,600	16,773	+ 3.4	+ 3.7	+ 3.8	48.9%	46.2%	46.3%
PONAPE	6,376	6,861	7,883	+ 1.3	+ 3.7	+ 2.4	43.0%	35.6%	35.0%
YAP	158	129	131	- 3.2	+ 0.6	- 1.7	2.4%	1.6%	1.7%
KOSRAE	---	137	126	---	- 2.0	---	---	3.5%	2.7%
PALAU	5,500	4,867	4,509	- 2.1	- 1.9	- 1.8	50%	38.4%	34.9%
TTPI TOTAL	25,248	28,056	30,620	+ 1.7	+ 2.5	+ 2.0	32%	27.8%	27.9%

** Crude rates per 1,000 population during average year.

OUTER ISLANDS POPULATION TRENDS:

Table IV.10 presents data on the demographic trends of the TTPI outer islands. Significantly, there was a negative growth rate Territorial-wide for the 1967-1973 era, but this was reversed between 1973 and 1977. Between 1973 and 1977, the growth rate Territorial-wide was in excess of the total TTPI population growth rate and exceeded the individual district/state growth rates of the Marshalls and Ponape and equalled that of Truk. Only in Yap, does there seem to be a consistent tendancy toward population loss in the Outer Islands.

The proportion of the total TTPI population residing in the Outer Islands decreased significantly between 1967 and 1973 but increased between 1973 and 1977. Again, this trend holds true for each district/state except Yap.

TABLE IV.10
OUTER ISLAND POPULATION GROWTH, 1967-77
OUTER ISLAND POPULATIONS AS PERCENT OF TOTAL TTPI POPULATIONS, 1967-1977

District	Outer Island Population			Average Annual Growth Rates** of Outer Island Populations			Outer Island Populations as Percent of Total District Pop.		
	1967	1973	1977	1967-73	1973-77	1967-77	1967	1973	1977
MARSHALLS	8,799	8,086	9,594	- 1.3	+ 4.7	+ 0.9	47.3%	32.3%	37.7%
TRUK	6,918	7,372	8,503	+ 1.1	+ 3.8	+ 2.3	27.9%	23.3%	23.5%
PONAPE	2,151	1,995	2,344	- 1.2	+ 4.4	+ 1.0	14.5%	10.3%	10.4%
YAP	2,728	2,709	2,624	- 0.06	- 0.8	- 0.3	41.1%	34.4%	33.8%
KOSRAE	-0-	-0-	-0-	---	---	---	---	---	---
PALAU	128	133	104	+ 0.6	- 5.4	- 1.9	1.2%	1.0%	0.8%
TTPI	20,724	20,295	23,169	- 0.3	+ 3.5	+ 1.2	26.2%	20.1%	21.1%

** Crude rates per 1,000 population during average year.

TABLE IV.11.
SUBAREA POPULATIONS AS PERCENT OF TOTAL TTPI POPULATION, 1967-77

DISTRICT	% of Total Population in Outer Islands			% of Total Population in Intermediate Area			% of Total Population in Subdistrict Centers			% of Total Population in in District Centers		
	1967	1973	1977	1967	1973	1977	1967	1973	1977	1967	1973	1977
MARSHALLS	47.3%	32.3%	37.7%	6.8%	5.8%	4.7%	18.6%	21.8%	18%	27.2%	38.6%	39.6%
TRUK	27.9%	23.3%	23.5%	48.9%	46.2%	46.3%	---	---	---	23.2%	29.4%	30.2%
PONAPE	14.5%	10.3%	10.4%	43%	35.6%	35%	---	---	---	42.5%	52.3%	54.6%
YAP	41.1%	34.4%	33.8%	2.4%	1.6%	1.7%	---	---	---	56.5%	63.7%	64.5%
KOSRAE	---	---	---	---	3.5%	2.7%	---	---	---	100%	96.5%	97.3%
PALAU	1.2%	1.0%	0.8%	50%	38.4%	27.9%	---	---	---	48.7%	60.5%	64.3%
TTPI TOTAL	26.2%	20.1%	21.1%	32%	27.8%	27.9%	4.4%	5.4%	4.2%	37.2%	42.3%	46.8%

Note: Percentages may not equal 100% due to rounding and due to the elimination of persons without specified residences from this table.

Source: TTPI Office of Planning and Statistics, Census Reports.

TRENDS AND PROJECTIONS FOR HIGH RISK POPULATIONS:

Figures IV-4a, IV-4b, IV-4c and IV-4d show population trends and growth projections for four high risk age groups, according to geographical sub-area of residence. The figures are based on 1967 to 1973 population growth rates[1/] for these high risk groups (See Table IV.5). In view of the demographic trends evidenced between 1973 and 1977 as discussed on preceding pages, the reader is urged to use these figures only with extreme caution.

1 Distribution of Infants:

Figure IV-4b indicates that the infant population (0-1 year) is expected to grow at the highest rate in the district centers, followed by the intermediate areas. The sub-district centers and the outer inslands are expected to grow at lower levels, but nearly identical rates. At the same time the total number of infants is expected to remain greatest in the district centers, followed by the intermediate areas, the outer islands, and the sub-district centers. By 1982, nearly one-half (48 percent) of all infants are projected to be living in the district centers--an increase of four percent from 1973. However, despite this steady increase in the numbers of district center infants, population group will continue to constitute 3.8 percent of the total district center population through 1982. By comparison, infants are expected to constitute increasingly larger proportions of the total sub-district center, intermediate area, and outer island populations. Again this can be attributed to the practice

1/ No demographic data is available since 1973 which breaks down the TTPI population by specific age categories.

Figure IV-4a.

GEOGRAPHICAL SUBDIVISION GROWTH
(T.T.P.I. Citizens) 1967-2000
1967-2000

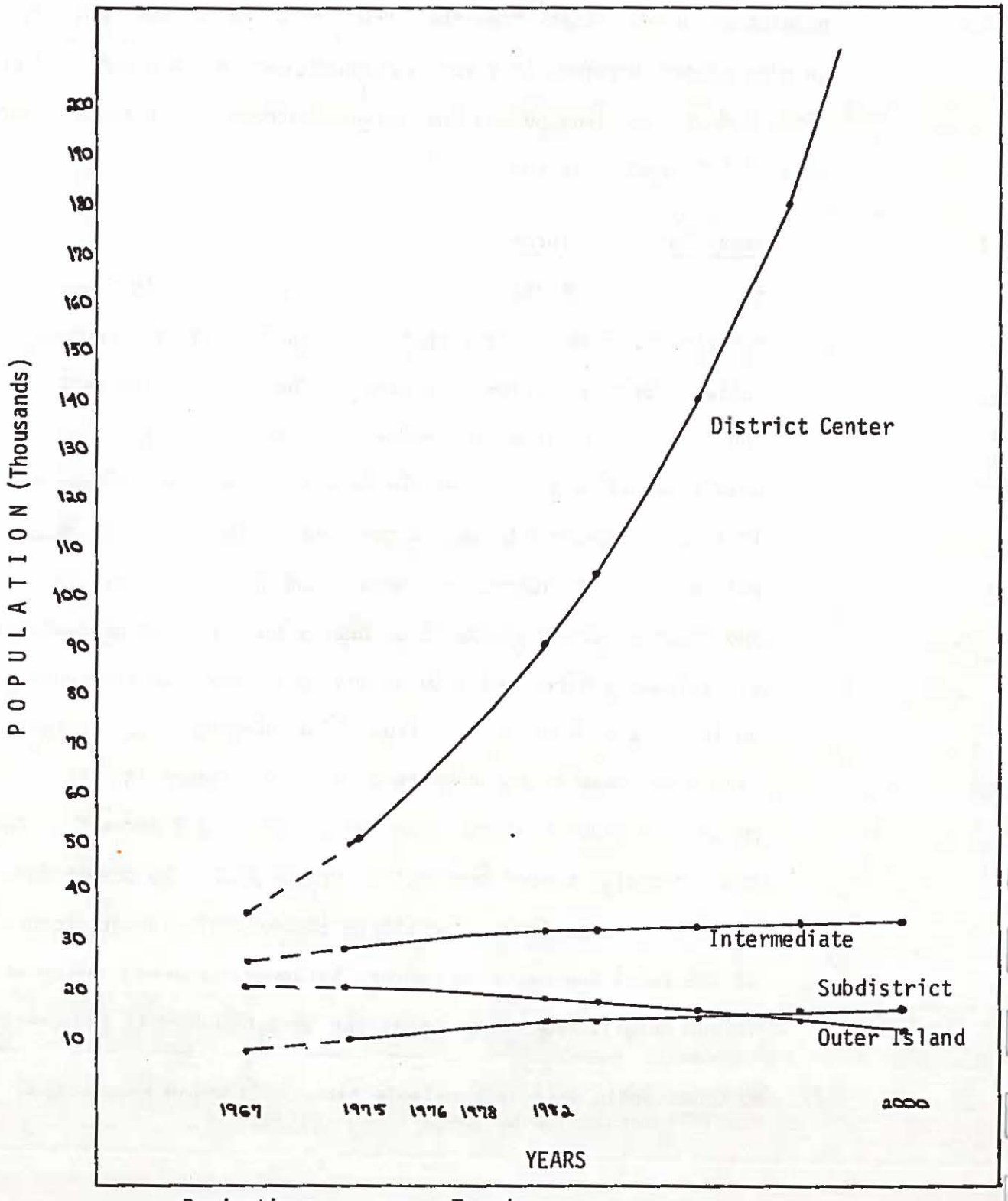
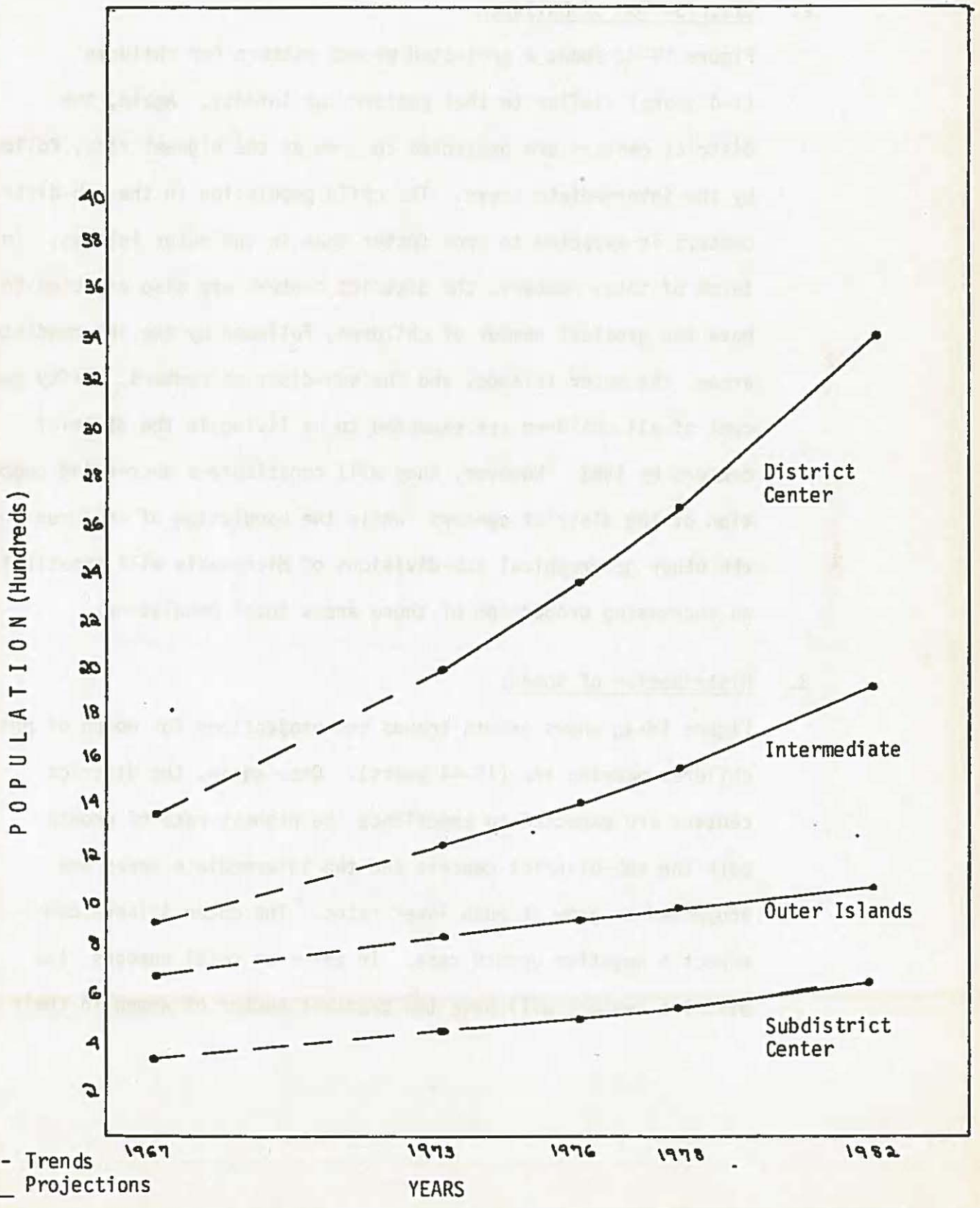


Figure IV-4b.

GEOGRAPHICAL DISTRIBUTION OF INFANTS (0-1 Year)
1967-1982 (T.T.P.I. Citizens)



of young women who reside in the dist ict centers, sending their children to live with relatives in outlying regions.

2. Distribution of Children:

Figure IV-4c shows a projected growth pattern for children (1-4 years) similar to that pattern for infants. Again, the district centers are projected to grow at the highest rate, followed by the intermediate areas. The child population in the sub-district centers is expected to grow faster than in the outer islands. In terms of total numbers, the district centers are also expected to have the greatest number of children, followed by the intermediate areas, the outer islands, and the sub-district centers. Fifty percent of all children are expected to be living in the district centers by 1982. However, they will constitute a decreasing proportion of the district centers while the population of children in the other geographical sub-divisions of Micronesia will constitute an increasing proportion of those areas total population.

3. Distribution of Women:

Figure IV-4d shows growth trends and projections for women of prime children bearing are (15-44 years). Once again, the district centers are expected to experience the highest rate of growth. Both the sub-district centers and the intermediate areas are projected to grow at much lower rates. The outer islands can expect a negative growth rate. In terms of total numbers, the district centers will have the greatest number of women in their

Figure IV-4c.
GEOGRAPHICAL DISTRIBUTION OF CHILDREN (1-4 years)
1967-1982 (T.T.P.I. Citizens)

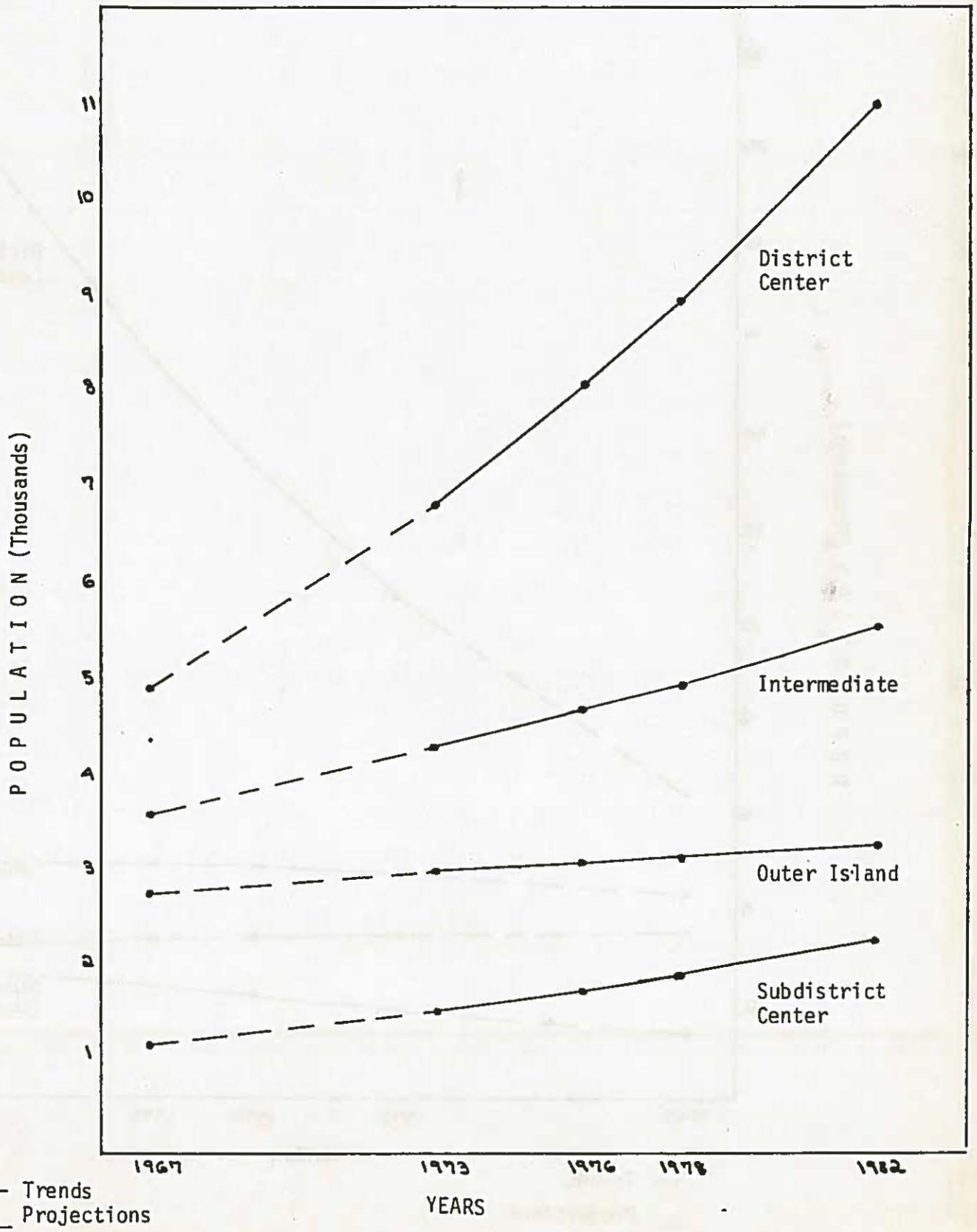
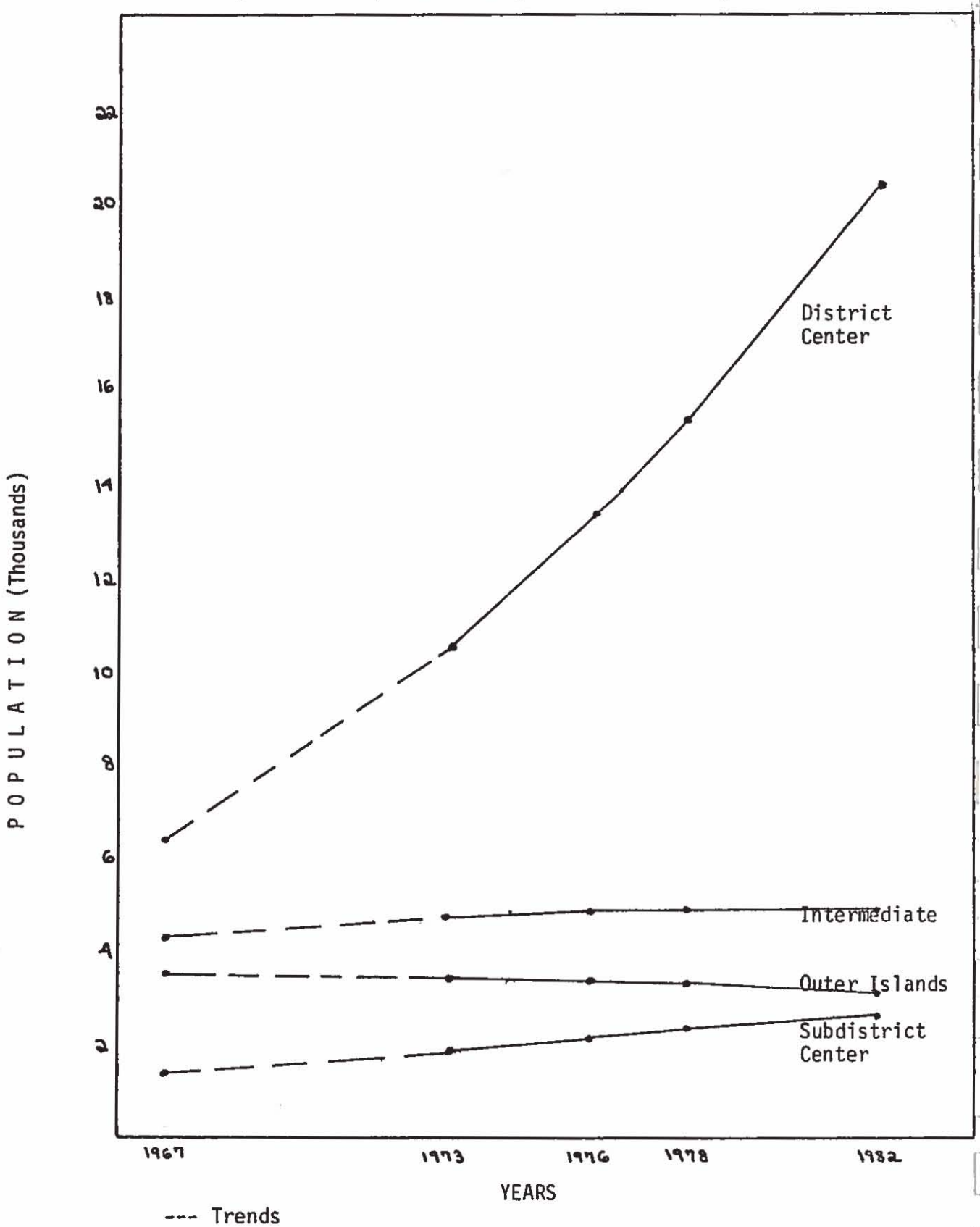


Figure IV-4d.

GEOGRAPHICAL DISTRIBUTION OF WOMEN IN PRIME CHILD-BEARING YEARS
(15-44 Years) 1967-1982 (T.T.P.I. Citizens)



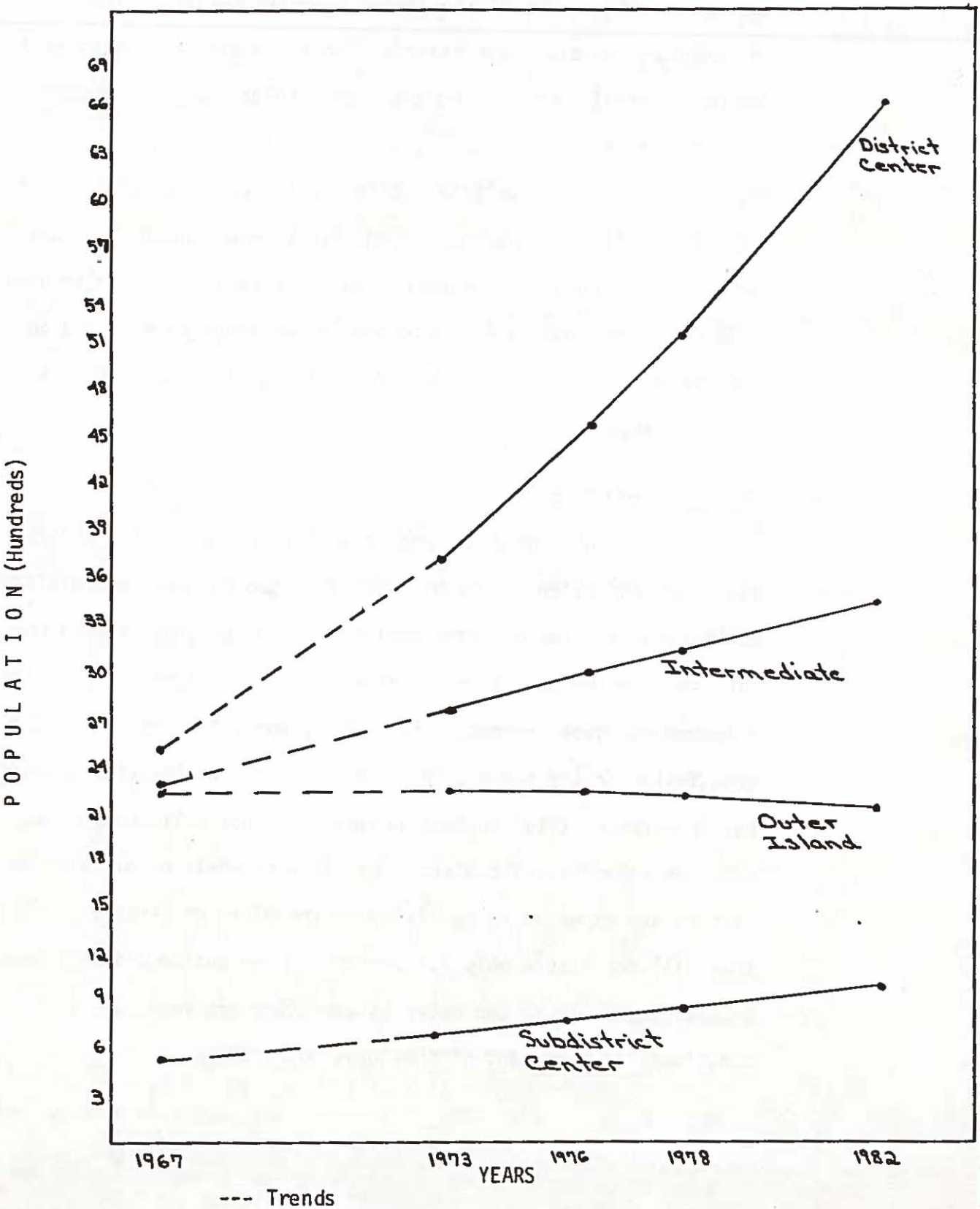
child-bearing year, with 66 percent of all women aged 15-44 expected to be living in the district center by 1982. The intermediate areas, outer islands, and sub-district centers will follow in total numbers. However, despite the negative growth expected in the outer islands, women of prime child-bearing age will actually constitute a slightly increasing proportion of that area's total population. Conversely, even though the intermediate areas should experience a positive rate of growth through 1982 for women aged 15-44, this population group is expected to constitute a slowly decreasing proportion of the sub-districts' total population.

4. Distribution of the Elderly:

Figure IV-4e shows growth trends and projections for the elderly (55 years and older) in each of the four geographical sub-divisions of Micronesia. The district centers should continue to lead the TTPI in terms of both rates of growth and total numbers, with the intermediate areas second. The elderly population is expected to grow faster in the sub-district centers than in the outer islands, but in terms of total numbers of outer islands will continue to lead the sub-district centers. By 1982, one-half of all elderly persons are expected to be living in the district centers. However, they will constitute only 7.2 percent of the entire district center population, while in the outer islands they are expected to constitute 11.9 percent of the total population.

Figure IV-4e.

GEOGRAPHICAL DISTRIBUTION OF THE ELDERLY
(55 years and older) 1967-1982 (T.T.P.I. Citizens)



IV. DEMOGRAPHIC IMPLICATIONS FOR HEALTH

1. The youthful character of the TTPI population implies there will be increasing demand for pediatric health services in coming years.

2. The large number of young (under age 30) females implies that the TTPI has a high "fedundity", i.e., biological potential for reproduction and indicates need for maternal health services may be increasing.

3. A large number of intermediate and outer island residents (Table IV.5 indicates approximately 46% of all intermediate and outer island residents) fall into high risk population categories. These people do not have direct and easy access to many health care services. Providing appropriate care in these areas will continue to challenge the health care system.

4. The large number of people residing in the urbanized district centers will continue to challenge public services (water, sewer, health, etc.) although there are indications that the growth rates for the district centers are decreasing.

5. The proportion of the population residing in intermediate areas has decreased and stabilized over 1967-77 . A larger proportion of the population residing in outlying regions as opposed to the district centers will relieve some of the pressures from government services which in some districts/states, have had difficulty keeping astride of increasing demand. However, providing adequate health services in the Outer Islands will continue to challenge the health care professions.

Notes

1. In this instance, and in all subsequent use of Kay's graphic materials, it must be noted that Kay's figures do not always correspond exactly to figures in this report (differing in most cases by statistically insignificant proportions). Kay's graphs are intended to suggest broad demographic features, and they accurately illustrate the population characteristics indicated by this data, which are presented with more precision in tabular form.

2. For the purposes of this report, the following definitions have been used to describe each geographical sub-division:

   "Dist ict Centers" and "Sub-District Centers" have been defined, whenever possible, to conform with the criteria

of the 1973 census. For example, the census defines Ponape's district center to include Kolonia Municipality and certain census enumeration districts in Nett and Sokehs Municipalities. However, we were unable to express our data in terms more specific than whole municipalities. At the same time, good road conditions have made the amenities of district center living readily available to the residents of Nett and Sokehs Municipalities. Consequently, we chose to include all of Nett and Sokehs in our district center totals. In other cases, we disagreed with the definitions used in the census. For example, we decided that because of the excellent condition of the roadway connecting Laura to Majuro (DUD), they both warranted inclusion as the Marshalls District Center. In the case of the Yap Islands complex, only Rumung is inaccessible by road to the hospital services of Colonia. Although Rumung is within two hours travel to Colonia by boat, tide and weather conditions frequently increase travelling time by one or two hours, and therefore, we have designated Rumung an intermediate area. Similar considerations prompted us to designate Walung in Kosrae as an intermediate area.

4. Sub-district center hospitals are much more limited in services, equipment and personnel than district center hospitals. The two-geographic sub-areas are not exactly comparable.

5. These figures are reproduced from Kay, "Population Growth" P. 20. See his discussion of them. P. 20-21.

6. Ibid

7. Changing future political status (See Section VIII), may change population variables in ways which cannot now be predicted, especially the migration patterns.

TABLE IV-14

GOVERNMENT WORKFORCE AND EARNINGS IN THE MONETARY ECONOMY AS PROPORTION OF TOTAL TTPI EMPLOYMENT AND EARNING - 1976

District	Percentage of Workforce Employed by Government (%)	Percentage of Total District Earnings Derived From Government Employment
Marshalls	53	54.7
Kosrae	83	90
Ponape	63.8	76
Truk	63.9	79.8
Yap	73	81.9
Palau	57	65.8
TTPI	64	72.6

Source: Social Security Administration

number of persons not employed and not seeking work remains at the 1973 level of 31% of the workforce, a total of 49,722 new jobs must be created by 1985 to absorb the new members of the workforce in addition to the 7,213 jobs required in 1973 to absorb the unemployed population. Given the heavy reliance in the TTPI upon government employment and the anticipated 1981 termination of the United Nations Trusteeship Agreement, which may require a reduction of the government budgets, there is little probability that the required number of jobs will be created by 1982.

A high unemployment rate means a large proportion of the population will be financially unable to pay for their health service needs and will not have sufficient economic resources to provide a healthful environment (pure water, safe sewage disposal, well-balanced diets, etc.) for themselves and their families. In addition, unemployment in many societies leads to social disorganization and low mental health status as reflected by rates of violence, suicide, and alcohol/drug abuse.

B. Overview of the Economy, FY 1975[1/]:

Total Gross Domestic Product (GDP) in fiscal year 1975 amounted to $126 million. This estimate is based on the actual expenditure

1/ In 1975, the Marianas Islands District was still an integral part of the Trust Territory and the location of the Government, and it was not possible to separate all the income data for each district. Therefore, this section covers the entire TTPI economy in 1975, including the Northern Mariana Islands.

TABLE IV-15 PRELIMINARY ESTIMATES OF THE GROSS NATIONAL PRODUCT OF THE TRUST TERRITORY BY DISTRICT, FY 1975 (July 1974 - June 1975) and FY 1977 (October 1976 - September 1977). ($ Millions)

District	Kosrae		Marshalls		Palau		Ponape		Truk		Yap		Total TTPI	
Item	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977
Compensation of Employees														
Taxable wages & salaries	1.0	1.7	13.3	12.4	7.5	9.2	6.9	8.2	7.6	8.6	3.9	4.6	40.2	44.7
- public	0.8	1.4	7.0	9.2	5.1	5.8	4.8	5.0	5.6	5.2	2.9	3.1	26.2	29.7
- private	0.2	0.3	6.3	3.2	2.4	3.4	2.1	3.2	2.0	3.4	1.0	1.5	14.0	15.0
Imputed rental value of free employer-furnished accomodation	0.1	-	0.2	0.1	0.2	0.1	0.3	-	0.3	-	0.2	-	1.3	0.2
Personnel benefits and other income	0.1	0.1	0.4	0.7	0.2	0.5	0.4	0.3	0.4	0.4	0.2	0.2	1.7	2.2
Sub-Total	1.2	1.8	13.9	13.2	7.9	9.8	7.6	8.5	8.3	9.0	4.3	4.8	43.2	47.1
Operating Surplus														
Private business enterprises	0.3	0.3	3.3	3.2	3.1	3.4	3.5	3.2	3.1	3.4	1.1	1.5	14.4	15.0
Copra production	0.1	0.1	1.4	0.7	-	-	0.3	0.2	0.6	0.2	0.2	0.1	2.6	1.3
Value of non-marketed production	0.7	0.8	3.9	4.3	2.0	2.2	3.2	3.5	5.0	3.5	1.2	1.0	16.0	15.3
Imputed rental value of owner-occupied housing	0.1	0.1	0.7	0.7	0.4	0.5	0.6	0.7	1.0	1.1	0.2	0.2	3.0	3.3
Imputed rental of free government accomodations	-	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.5	-
Sub-Total	1.2	1.3	9.4	8.9	5.6	6.1	7.7	7.6	9.8	8.2	2.8	2.8	36.5	34.9
Consumption of fixed Capital	0.1	0.1	0.9	1.0	0.5	0.5	0.9	1.0	0.8	0.9	0.4	0.4	3.6	3.9
Indirect taxes less subsidies	0.1	0.1	0.9	1.0	0.6	1.0	0.7	0.8	0.9	1.1	0.5	0.4	3.7	4.4
GROSS DOMESTIC PRODUCT	2.6	3.3	25.1	24.1	14.6	17.4	16.9	17.9	19.8	19.2	8.0	8.4	87.0	90.3
Mid-Year Population ('000)	4.1	4.4	25.2	26.9	12.6	13.4	19.8	21.0	32.5	34.9	7.9	8.4	102.0	110.0
Per Capita GDP (dollars)	630	745	995	895	1,160	1,295	855	850	610	550	1,015	1,000	850	820

in the economy for that year. Of these expenditures, about $23.1 million were transferred from abroad. This gives a figure of $102.9 million for Gross National Product (GNP). Perhaps the most informative figure is the actual amount of resources available (National Disposable Income) which was $166.5 million, i.e., GNP plus $63.6 million of transfer payments received from abroad. Further details regarding makeup of GDP, GNP, and NDI are given in Table IV-15, 16.

Preliminary data for 1970 to 1975 indicate the Gross Domestic Product increased at a rate of about 12% annually in current prices. During the same period, public expenditures financed by United States government grants increased at almost the same rate (11%). To calculate the actual rate of economic growth, the annual rate of inflation in Micronesia must be subtracted. The inflation rate for the years 1970-1975 is not known.

Production from Micronesia reasources during the period from 1971-1975, increased at the very unimpressive rate of about 1%. There was no real discernible growth in the TTPI economy during these five years, only an increase in monetary income as a result of United States government transfers paid out through public expenditures for salaries, wages, travel and other governmental operating costs.

In 1975, the total of private and government consumption expenditures exceeded GDP by $25.1 million. This deficit was made

TABLE IV-16

EXPENDITURES ON GROSS DEOMESTIC PRODUCT FY 1975 ($ MILLION)

Private Consumption		$ 80.1
Imports	$ 43.2	
Subsistence Production	15.8	
Production for the Market	2.6	
Services	18.5	
Government Consumption		$ 71.0
Wages and Salaries	$ 41.5	
Supplies	13.9	
Travel	4.0	
Free Housing	.7	
Personnel Benefits	.6	
Other Services	4.5	
Depreciation	2.9	
Other Expenditures	2.9	
Gross Fixed Capital Formation		$ 36.6
Public	$ 17.8	
Private	18.8	
Exports		$ 17.8
Agriculture and Fisheries	$ 6.4	
Tourism	5.0	
Services	6.4	
Less Imports		$ 79.5
Private	$ 52.5	
Government	27.0	
Gross Domestic Product (GDP)		$ 126.0
Less Net Factor Incomes to Abroad		23.1
Gross National Product (GNP)		$ 102.9
Plus Net Current Transfers from Abroad		63.6
National Disposable Income (NDI)		$ 166.5

up by transfer payments from the United States government. These transfer payments were used largely to finance imports for the private and government sectors since receipts from exports accounted for only 22% of total imports. Because of the high level of imports, the income multiplier effect of these transfer payments in the TTPI economy was very small, meaning that most of the expenditures made possible by United States government grants were immediately spent on imports with no consequential impact on stimulating local production.

Private consumption expenditures, which made up $80.1 million, or 54% of total consumption, were distributed between goods ($61.6 million) and services ($18.5 million). Approximately 53% of consumer expenditures were for imports while 45%, or $36.9 million was spent on locally produced goods and services. Consumption in the subsistence sector accounted for approximately $15.8 million of the $61.6 million. Another $2.6 million of locally produced goods were sold on the domestic market for private consumption. The largest single item under private sector consumer expenditures was services, which accounted for $18.5 million, or 23% of total private consumption; 36% of total expenditures for services were spent for rental (including $4.4 million for owner occupied housing and $2.2 million for subsidized housing). The remaining 64% of consumer expenditures for services were for a wise variety of other services.

Government consumption expenditures 1/ amounted to $71 million. The deficit of government expenditures over revenues amounted to $63.9 million. Wages and salaries, the largest component in government expenditures, accounted for about 32% of total GDP expenditures in the TTPI economy. The high level of government expenditures was made possible by transfer from the United States government.

Total per capita income in FY 1975 2/ amounted to $1,051, but consumption per capita was $1,260 or about 20% more than was actually created in the TTPI economy in that year. This was distributed between private consumption expenditures, $668 (53%) and Government $592 (47%).

C. Distribution of Income by District:

The distribution of income between the districts in 1975 varied from a high of $40.6 million in the Marianas to a low of $2.6 million for Kosrae (See Table IV-14). The district with the second highest income was the Marshalls ($25.1 million), followed by Truk ($19.8 million), Ponape ($16.9 million), Palau ($14.6 million) and Yap ($8 million). The differences in total district incomes can be explained largely by the variation in government payrolls among districts.

1/ Includes U.S. Department of Interior, other U.S. Grants, Congress of Micronesia and District Governments.

2/ Including non-TTPI citizens employed in the TTPI.

TABLE IV-17. EMPLOYMENT, WAGES AND SALARIES BY INCOME CLASS
TRUST TERRITORY -- 1976
(Number of Employees, income in $000's)

Income Level $		Kosrae		Marshalls		Palau		Ponape		Truk		Yap		Trust Territory	
From To		Number	Income	Number	Income	Number	Income	Number	Income	Number	Income	Number	Income	Number	Income
1- 1000	Total	400	110	1995	537	1331	474	1499	415	1761	543	591	194	7577	2273
	Micronesian	383	102	1633	397	1125	385	1457	394	1751	539	572	182	6921	1999
	Expatriate	17	8	362	140	206	89	42	21	10	4	19	12	656	274
1001- 2000	Total	74	111	707	1055	509	736	455	680	573	841	284	421	2602	3844
	Micronesian	65	98	465	702	433	637	431	646	559	819	264	390	2217	3292
	Expatriate	9	13	242	353	76	99	24	34	14	22	20	31	385	552
2001- 3000	Total	112	278	665	1645	528	1316	506	1256	485	1234	261	648	2557	6377
	Micronesian	101	248	511	1259	490	1224	482	1196	480	1220	237	583	2301	5730
	Expatriate	11	30	154	386	38	92	24	60	5	14	24	65	256	647
3001- 4000	Total	97	340	550	1918	453	1567	352	1205	513	1788	251	868	2216	7696
	Micronesian	81	287	422	1472	406	1402	326	1116	495	1726	220	741	1950	6764
	Expatriate	16	53	128	446	47	165	26	89	18	62	31	107	266	922
4001- 5000	Total	69	298	566	2537	375	1671	308	1357	381	1668	130	578	1829	8109
	Micronesian	67	299	441	1979	335	1494	277	1220	367	1605	112	495	1599	7083
	Expatriate	2	8	125	558	40	177	31	137	14	63	18	83	230	1026
5001-10000	Total	30	200	1087	7638	366	2405	296	1976	265	1818	140	903	2184	14945
	Micronesian	26	178	557	3617	291	1895	230	1527	247	1692	92	591	1443	9500
	Expatriate	4	22	530	4021	75	510	66	449	18	126	48	317	741	5445
10001-15000	Total	8	96	734	9351	55	656	40	497	51	627	36	441	924	11668
	Micronesian	4	49	34	404	25	284	18	214	31	372	16	189	129	1512
	Expatriate	4	47	700	8947	30	372	22	283	20	255	20	252	796	10156
15001-20000	Total	2	36	676	11639	18	311	22	383	13	227	15	255	746	12851
	Micronesian	2	36	10	171	8	135	7	123	7	124	4	69	38	658
	Expatriate	-	-	666	11468	10	176	15	260	6	103	11	186	708	12193
20001-25000	Total	3	70	231	5090	14	308	8	173	6	137	8	181	270	5959
	Micronesian	-	-	3	67	6	132	2	41	3	70	4	88	18	398
	Expatriate	3	70	228	5023	8	176	6	132	3	67	4	93	252	5561
25001-30000	Total	-	-	79	2135	5	136	4	114	2	53	2	56	92	2494
	Micronesian	-	-	-	-	-	-	1	28	-	-	-	-	1	28
	Expatriate	-	-	79	2135	5	136	3	86	2	53	2	56	91	2466
30001-35000	Total	-	-	54	1754	1	35	1	30	1	35	-	-	57	1854
	Micronesian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Expatriate	-	-	54	1754	1	35	1	30	1	35	-	-	57	1854
35001-40000	Total	-	-	35	1309	1	39	1	41	1	36	-	-	38	1425
	Micronesian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Expatriate	-	-	35	1309	1	39	1	41	1	36	-	-	39	1425
40001-50000	Total	-	-	20	889	-	-	-	-	-	-	-	-	20	889
	Micronesian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Expatriate	-	-	20	889	-	-	-	-	-	-	-	-	20	889
50001-Over	Total	-	-	3	160	-	-	-	-	-	-	-	-	3	160
	Micronesian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Expatriate	-	-	3	160	-	-	-	-	-	-	-	-	3	160
TOTAL	Grand Total	795	1539	7402	47657	3656	9654	3402	8127	4052	9907	1714	4550	21115	80534
	Micronesian	729	1288	4076	10048	3119	7588	3231	6535	3940	8167	1521	3349	16616	36964
	Expatriate	66	251	3326	37589	537	2066	241	1622	112	840	197	1202	4499	43570

Source: Income tax returns 1976 tax year

Most districts can be characterized as having mixed economies, i.e., the population dependent upon both government wages and subsistence agriculture and fishing for its income. Monetary income from the private sector of the economy was $19.6 million compared to the income earned from the subsistence sector of $15.8 million. In the Kosrae and Truk Districts, income from the subsistence sector accounted for 25% or more of total income as compared to only 4% in the Northern Marianas.

Of greater significance than the total income of each district is the wide dispersion in per capita income. The Northern Mariana Islands had the highest income per capita at $2,713 followed by Palau ($1,103), Yap ($974), Marshalls ($853), Ponape ($839), Kosrae ($630), and Truk ($600). Futhermore, there was a mal-distribution of income compared to population among the districts. The Northern Mariana Islands with 32% of TTPI income had only 12% of the population, while Truk with only 15% of the income had 25% of the total population. The Marshalls Islands District and Ponape District also have a large percentage of TTPI population than income. Palau, Yap, and Kosrae had a relatively equitable distribution of income compared to population with 11%, 6% and 3% respectively.

On the average, monetary compensation to employees in all the districts accounted for 50% of GDP during FY 1975. However, this varied from a high of 58% in the Northern Mariana Islands

to a low of 42% in Truk. The distribution of taxable wages and salaries between the public and private sectors was about 67% and 33% respectively, but these percentages also varied considerably between districts. For instance, in Kosrae, 80% of taxable wages and salaries paid were in the public sector, followed by Yap (74%), Truk (73%), Ponape (69%), Palau (68%), Marshalls (67%), and Northern Marianas (61%). However, the Northern Marianas had the highest absolute level of government wages and salaries amounting to $13.6 million as compared to only $2.9 million in Yap.

CHAPTER FOUR

VIII. Political Characteristics of the TTPI:

Since the end of World War II, the Micronesian Islands have been held in a United Nations Trusteeship under the administration of the United States. The Trusteeship has included all of the Marshall and Caroline Islands and the Northern Mariana Islands.

In 1976, the decision was made, by popular referendum, that the Northern Marianas Islands (NMI) would not participate in any future National Micronesian Government. The people of the NMI expressed their desire to join with the United States in Commonwealth status. Negotiations for Commonwealth status were concluded and the Commonwealth established in January, 1978. However, the NMI remains a formal part of the Trusteeship until it is released from the Trusteeship by the United Nations; this release has not yet been granted pending the negotiation of final political status for all of the Micronesian Islands. Except for data processing and certain Federal categorical grant programs which are still administered in the NMI by the TTPI Bureau of Health Services, there are few formal relationships remaining between the two governments in the area of health. The NMI receives their own Federal health program grants, including health planning grants. Therefore, this Plan will not address NMI issues and services.

In 1978, a referendum was held in the six remaining TTPI districts on the Draft Constitution of the Federated States of Micronesia. The constitution was rejected by voters in Palau and the Marshalls and

accepted by voters in the four central Caroline Islands (Yap, Truk, Ponape, and Kosrae). This referendum marked the initiation of the Government of the Federated States of Micronesia (FSM) under the terms of the constitution and was quickly followed by development and ratification of the Constitution of the Marshall Islands. Work has been on-going since the 1978 referendum to develop the Constitution of the Republic of Belau (Palau). It is hoped finalization and ratification of the Belau Constitution will be accomplished in 1980.

Since the 1978 Constitutional Referendum, the following events have taken place:

1. Each of the three political entities has appointed its own status negotiation team and entered into separate negotiations with the United States;

2. The President of the United States has reaffirmed his desire to terminate the Trusteeship by October 1, 1981;

3. The Congress of Micronesia has been dissolved and replaced by elected national congresses in the three political entities;

4. Constitutional governments have been inagurated in the FSM and the Marshall Islands;

5. The TTPI Headquarters administration has moved ahead on decentralization of all government functions to the three national governments. A schedule for assumption of administrative responsibilities has been drafted. This schedule will terminate most government functions at the Headquarters-level by July 1, 1980. What will remain the responsibility of Headquarters after July 1 will be primarily administration of certain Federal programs which are mandated by U.S. law to the government of the TTPI and can only be decentralized by act of the U.S. Congress;

6. The High Commissioner and his staff continue to search for mechanisms under the law, which will enable the transfer of Federal program monies to the national governments;

7. The FSM has held several Leadership Conferences in an effort to clarify the relationship between the National FSM Government and the State Governments. At this time, it appears primary responsibility for health and health services will rest with the state governments. However, the National FSM Government will have a health staff, although its exact responsibilities are not yet known.

A. FUTURE POLITICAL STATUS:

Each of the three political entites are negotiating with the United States for a Free Associated status. Under Free Association, the United States will retain responsibility for certain government functions which are not feasible for the Micronesian nations to assume independently at this time. These functions include defense, postal services, weather reconnaisance, and Federal Aviation Administration assistance. Responsibility for foreign affairs will be held jointly by the United States and the respective island nations.

In addition to the above assistance, in exchange for certain land and sea use rights and in recognition of their continued obligation toward the Micronesian Islands, the United States will agree to financially assist the Micronesian nations in order to stimulate local economic development and to support certain social programs (including health) until such time as the Micronesian economies can become self supporting.

In relation to health services, there remain to be answered two major questions:

1. How much financial support will the United States

provide to the three nations and what proportion of those monies will be allocated for health;

2. Will the Federal categorical grants (maternal and child health, communicable disease control, health planning, etc) continue after Trusteeship termination. This is a very important question as most preventive health programs in the TTPI are supported by Federal categorical grants.

For the purposes of health planning, neither question can be answered definitively, even at this late date in the negotiation process. The assumption has been made in the past that Federal assistance to the Micronesian Governments in the post-Trusteeship era will be drastically reduced over present budgets. There are, however, new indications that this assumption may be incorrect, and while there may be some reductions, they will not be of the magnitude previously envisioned.

Regarding Federal categorical program grants, again, it has been assumed that these monies may be reduced or terminated after Termination. In acceptance of this assumption, the TTPI government policy in the last 2-3 years has been one of containment of Federal programs and gradual reduction in an effort to lessen the impact of sudden termination. However, once more, there are indications that this assumption may have been incorrect and that the negotiation process will make some provisions for Federal programs.

If Federal grants are to continue, though, it is possible their form may change from categorical to block grants. These block grants would then be appropriated by the national governments according to internal priorities and general U.S. guidelines.

B. IMPLICATIONS OF POLITICAL TRANSFORMATION FOR HEALTH PLANNING:

The preceeding discussions of future political (and financial) status of the TTPI impacts upon health care for the following reasons:

1. The total TTPI health expenditures for FY 79 exceeded 10.3 million dollars.

2. Data for FY 77-80 indicates that health receives approximately 15.6% of the total TTPI budget.

3. The total TTPI government receipts (including the six districts and Headquarters) from internal sources was approximately 8.2 million dollars for a 12 month period between April, 1977 and March, 1978. 1/

4. The world inflation rate is in excess of ten percent annually.

5. The TTPI population is growing at a rapid rate.

6. There is increased demand for more and better health services from a population whose education and expectations are increasing.

7. There are pressures on the TTPI governments (see plans developed in 1976-77 by the United Nations Development Administration) to devote a larger share of its resources to economic development activities while containing or reducing the proportion expended on social activities.

8. This health plan and those developed for the six districts/states document major deficiencies in the TTPI health care system.

All of the above factors are discussed in detail in Chapter 12, Health Care Finance, but a superficial examination shows the TTPI health care system is more expensive than internal resources can possibly support. Therefore, the details of the final negotiation agreements between the United States and the TTPI political entities

1/ Bulletin of Statistics. TTPI Office of Planning and Statistics. Volume II, No. 1, March, 1979, p. 54.

are essential elements of a realistic health planning process.

However, the financial uncertainities in the TTPI for the post-Trusteeshi era are a fundamental reality of health planning. It is recognized all health plans, and particularly all Annual Implementation Plans, may need extensive revision once the negotiations are finalized. It is felt the health plans can be of maximum utility now by:

1. Recommending services and/or facilities which could be discontinued or reduced in scope without significantly reducing health status;
2. Documenting current operating inefficiencies and recommending methods for increased efficiency;
3. Developing strategies for preventing ill health and eradicating the causes of diseases;
4. Developing strategies to increase the financial support of health services by persons using the services;
5. Exploring the feasibility of various alternative strategies for the finance of health care services.

CHARACTERISTICS OF THE TTPI

IX. SUMMARY:

IMPLICATIONS OF DESCRIPTIVE CHARACTERISTICS ON THE DELIVERY OF HEALTH CARE

A. GEOGRAPHY:

1. Small population centers scattered across vast distances restrict access to health services. Most outer islands are only accessible by ship.
2. The distances and time involved in coordinating any type of workshop or training seminar are tremendous. This greatly impedes continuing education opportunities for dispensary personnel in particular but also for all staff.

B. CULTURE:

1. There are more than nine distinct nationalities, languages and cultures. Traditional attitudes and practices are both varied and unique for each group.
2. Traditional medicine and health practices are widely accepted. In many instances, the traditional healer (which has been part of the custom for centuries) is consulted prior to visitation to a health facility.
3. Open public concensus and discussion is a new concept. Delegation of rights to an authority figure (chief, magistrate, head of clan, etc.) is customary.

4. Public awareness regarding health matters lags behind that of the United States and other industrialized areas. Health education is a relatively new concept.
5. The development of sanitary systems and facilities in the Trust Territory is difficult due to the small and widely scattered populations.
6. The absence of health awareness among the general populace and the lack of a sanitary infrastructure leads to a high incidence of disease, related to sanitation and personal hygiene deficiencies.
7. Shyness and lack of understanding the concept of "medical confidentiality" impedes progress of maternal health services.

C. CLIMATE:

1. The frequent typhoons and tropical storms in the Micronesia area interrupt communication and transportation networks, which impede the provision of continuous health service to the outlying areas of the Trust Territory.
2. Salt spray, frequent storms and a humid climate shorten the life of building and equipment and make maintenance difficult as well as expensive.

D. TRANSPORTATION:

1. The absence of adequate road networks and of public transportation systems in most areas of the Trust Territory limit accessibility of residents to the hospitals. This prevents

the closing of dispensaries on the district center islands which, while having low rates of utilization, remain the only accessible source of health care for many residents.

2. Field trip ship schedules are not conducive to the provision of comprehensive and continuous health services to outer island populations by public health, environmental health, and dental health field teams.
3. Emergency evacuation of patients from the outer islands is a slow and costly undertaking. Evacuation of patients from areas near the district centers are hampered by the inadequate road systems and ambulances which are not properly staffed or equipped to provide emergency services.
4. The cost of air travel is expensive and impedes both supervision of services and coordination within districts/states and among districts/states. High air fares also add to the cost of referral for medically needy patients. The round trip air fare from Saipan to Majuro (2130 miles) is approximately fifteen cents per mile. A round trip ticket from Saipan to Guam costs forty-five cents per mile. A stretcher patient requires 6 seats on the plane plus a medical escort. Air fares increase frequently.

E. COMMUNICATIONS:

1. Frequent breakdowns of communications equipment on the outer islands impede consultation between dispensary personnel and physicians located at the district center hospitals.

2. Very few intermediate regions have electricity or access to radio communications to the district hospitals, which impedes consultation between the dispensary and hospital and the evacuation of emergency patients.

F. POPULATION:

1. The median age in the TTPI is 16.2 years and one of the lowest in the world.
2. Seventy-two percent of the females are less than thirty years of age.
3. This young median age, coupled with the large percentage of women of reproductive age, creates a high fedundity (i.e., biological potential for reproduction).
4. The population of the TTPI is growing at an extremely rapid rate (3.6 percent annually) which has serious implications for economic and social development as well as for the provision of health services.
5. 49.5 % of the TTPI population falls into medically high risk groups. A high proportion of these medically high risk persons (females 14-44 years, children 0-4 years, and the elderly) are residing in the intermediate and outer island areas without direct access to hospital services.
6. The district centers are growing at a rate faster than other geographic regions. In many instances, these in-migrants cannot be absorbed into the labor force, which means that a large number of persons are potentially at risk for mental health-related peoblems due to their isolation from family ties and absence of a defined role in society.

G. ECONOMICS:

1. Micronesia has a high unemployment rate, which means that many persons are not financially able to pay for their health care and to provide a healthful environment for themselves and their families.
2. It is likely, due to population growth and political transition, that the unemployment rate will increase in the future.
3. The Trust Terrritory is highly dependent upon the government (and thereby upon United States financial support) for employment opportunities.
4. The rate of economic growth from Micronesia's own resources was only one percent between 1970 and 1975 (without taking into consideration the rate of inflation). Although the inflation rate in the TTPI cannot be calculated at this time, the figures would indicate that economic development, rather than progressing is actually regressing.
5. The cost of health care accounts for 11.3% of the gross national product. This means that 10% of the per capita income is applied to the cost of health care.

H. POLITICAL TRANSITION:

1. Political fragmentation in the TTPI may impede the efficient provision of certain health services which can be provided more economically on a regional basis rather than a state-by-state basis. Health manpower development and training programs, medical supply and procurement systems, data

Processing, medical specialty consultation, etc., are just a few of the programs which require regional cooperation for maximum efficiency.

2. The lack of knowledge regarding government administrative structures under the new political status, impedes the planner's ability to develop specific, detailed recommendations and strategies.
3. The lack of knowledge regarding future funding levels for health services is a basic reality of this health planning effort. For this reason, the plan must concentrate on development of strategies to finance health services from internal funding.

PROBLEM IDENTIFICATION:

Four major problems clearly present themselves in this chapter of the characteristics of the TTPI They are:

(1) The variety of subculture which form the basis of values and attitudes and govern the behaviors of the different peoples who need and demand health services;

(2) The logistics of transportation and communication which greatly affect the cost and configuration of the delivery of health care services to the residents of the Trust Territory islands who reside on islands hundreds of miles apart;

(3) The implications and impacts of the high rate of population growth in the Trust Territory Islands and the great migration

influx to the district centers on the needs and demands for health care as well as other social services;

(4) The lack of developed and stable local economy and the great dependency of these island nations on transferred economy and values which tend to develop societies that are unstable and which have the propensity towards diminution of inherent social values and which often result in social discontent, disorganization and manifesting themselves in many forms of social ills.

GOAL 4.1: TO INTEGRATE INTO HEALTH SERVICE PROGRAMS A THOROUGH UNDERSTANDING OF THE DIFFERENT CULTURES AND SUBCULTURES OF MICRONESIA AND THE WAYS THESE CULTURES AFFECT HEALTH BOTH POSITIVELY AND NEGATIVELY.

Objective 4.1.1: To design health service programs in harmony with social and cultural attitudes in order to increase program acceptability to consumers.

Indicators:

* Some culturally based attitudes and biases inhibit people from being physically examined by health providers of opposite sex or distant relatives and thus inhibit full utilization of health manpower and program implementation (particularly for Maternal and Child Health, family planning and other highly personal services).

* Behaviors based on fears of the culture taboos and local Gods, family magics, etc, often inhibit persons from seeking health care until it is too late.

* Closely-knit family units and extended caring for family members can be used in the provision of continuity of care in the home and in the community.

* Health care providers (both local and expatriate) who have been trained in Western medical settings, sometimes import Western concepts of health care to the TTPI without consideration or adaptation to local cultures.

* In general, programs are less successful when they are not designed to meet the needs of people, as their needs are perceived by the intended recipients of the programs.

Strategies:

1. All health care providers, administrators, and support personnel should receive training in the various cultures of their district/state, includi.. analysis of how these cultures affect health-related behaviours.

2. Every health program and policy should be evaluated prior to implementati in view of cultural traditions to determine the anticipated impact of the program on culture, and to adapt the program to prevailing cultural attitudes in order to facilitate acceptability.

3. The Micronesia Health Coordinating Council and the local Health Boards/Cou should strengthen their evaluation criteria regarding cultural impact of proposed programs.

4. Health Services administrators and Program Planners, working through their local Health Council members, should strive to involve the public and/or community leaders in program and policy formulation and implementation in order to promote harmony between cultural behaviours and health behaviours.

Resource Requirements:

Strategy #1: The resources needed to implement this training recommendation exist in each district/state. The knowledge regarding culture is present in every inhabitant. What is lacking is more extensive discussion of how culture interacts with health and with health service activities. This discussion could be facilitated by the local health board/health coordinating council. The health educators and training coordinators can assist the Board/Council with development of training materials regarding culture and health for incorporation into ongoing training programs, Health Service staff meetings, internal memorandums, local health newsletters, and other mechanisms determined to be appropriate.

Strategy #2: No additional resources required.

Strategy #3: No additional resources required.

Strategy #4: It is difficult to assess the additional resources which would be required to implement this strategy. Anytime you involve the public in policy and program formulation there are certain costs involved: direct (travel, duplication of materials, staff time required to meet with public leaders); and indirect (delay of implementation while the proposal is under discussion, additional staff burdens, etc.). In general, the costs would be minimal, in comparison to the overall health service budget and minimal in comparison to wastage incurred by inadequate program/policy design.

Objective 4.1.2: To study traditional medical practices, procedures, and drugs in an effort to determine, (a) what aspects of traditional medicine are effective and should be incorporate into Western-style medical practice; (b) what aspects of traditional medicine are ineffective and/or dangerous and should be discouraged; (c) how the two systems of medical practice could work together to promote wellness.

Indicators:

* Most Micronesians, providers and consumers alike, agree the practice of traditional medicine is still extensive throughout Micronesia.

* Many health professionals recognize certain traditional practices as effective, e.g. massage for certain condition certain traditional mental health practices, certain pharmaceutical agents used to treat common conditions, etc

* Many medical professionals also cite numerous examples of ineffective and dangerous traditional medical practices the use of which complicates the condition and/or delays seeking of appropriate medical treatment until too late.

* The only concerted attempt to integrate the two types of medical practice has been in the training of traditional midwives in basic sterile technique and recognition of abnormal conditions in order to enhance their practice by discouraging the negative aspects of their procedures.

* During a time when financial resources for health services are decreasing, while need and demand are increasing, it becomes necessary to examine all health resources in order to maximize health and minimize cost.

Strategies:

Because traditional medical practice is a sensitive area and because the practices vary from culture to culture, each district/state needs to develop its own specific strategies for achieving this objective. Strategies which could be considered for incorporation include:

1. Collection of existing studies (anthropological, psychological, medical, e which have been done on local traditional medicines.

2. Further development of the existing studies at the local level in order to develop a comprehensive framework of traditional medical practice in area of the TTPI.

3. Development of an inventory of all traditional medical practitioners.

4. Development of a medical study into the effectiveness of traditional medica practices, procedures, and pharmaceutical agents.

5. Development of a forum where traditional and western medical practitioners can begin to know each other and discuss how the two systems might cooperat

to enhance the health of the community.

6. Some assessment of the general public's acceptance and utilization of traditional medical systems should be made.

7. Once traditional medicine is more clearly understood and inventoried. and once there is a forum for discussion between the Western and traditional medical practitioners, it will be possible to develop specific goals and objectives for integration and cooperation between the two systems.

8. There should also be incorporated into these local studies, information regarding how other nations have approached integration and cooperation between western and traditional medical systems.

Resources Required:

A special task force would need to be appointed from each district/state to coordinate the investigation into traditional medicine. Manpower resources to perform 'staff' functions for this task force could be obtained through universities; the World Health Organization; the South Pacific Commission; and other organizations interested in traditional medicine. The studies could probably be accomplished with little expenditure from the present health budgets although even with outside staffing, the time required of task force members would probably be extensive.

There is no way to determine, at this time, the goals and objectives for action which might be devised at the conclusion of the study stage. Therefore, there is no way to determine the true magnitude of health resources which might have to be incorporated into cooperation and integration of the two medical systems.

Strategies (for objective 4.2.1):

1. To make improved transportation services for the purposes of health a priority of the district/state and political entity governments.

2. For each district/state Bureau of Health Services to document, insofar as possible, the service inequities in the Outer Islands, arising from the present transportation system. In addition, health status documentati should be provided to show how the inequitable health service system in the Outer Islands impacts upon health of Outer Island residents. The health status section of several of the District Health Plans was able to begin this health status documentation. The work should be further developed in the revisions of the District Health Plans.

3. The Bureaus of Health Services, in conjunction with the Bureaus of Transportation, Offices of Planning, Economic Development Offices, etc. should thoroughly study the alternative strategies available to improve Outer Island Health Services through improved transportation. Alternative strategies which have been suggested in the District Health Plan include:

   a. Alteration of existing field trip ship schedules to enable health teams to be left on an island, the ships to complete their scheduled runs, and the teams to be picked up as the ship returns to the district center.

   b. Development of intra-lagoon transportation systems in those outer atolls with two or more inhabited islands so that a field team could be left on an atoll and have the capability of serving all the inhabitants of that atoll before being picked up by the next field trip ship..

   c. Similar to #b above, the Bureau of Health Services would purchase motor boats which could be carried on the field trip ships and left with the field teams on the outer atolls. Teams would then use the Health Services boat to provide services to all atoll residents and both boat and personnel would be picked up by the next field trip ships.

   d. Abandoning the concept that field trip ships must be operated on a commercial basis and devise schedules which meet the health and other social/government service requirements of the inhabitants as well as their commercial needs.

   e. Development of two field trip services: one would be purely commercial and operated for maximum cost-efficiency; the other would be service oriented.

   f. Development of air service to the outer islands. Many of the Outer Islands have air strips, generally left from World War II, which could be revitalized. The problem seems to be insuring adequate utilizatior of air services to make them cost-effective. Another problem is the high cost and unavailability of fuel for plane services given the current energy crisis.

g. Another alternative would be to staff outer island dispensaries with staff qualified to provide comprehensive primary health care and who would not require routine assistance from health service teams. Continuing education for these personnel could be provided by rotation through the hospitals at periodic intervals. (This concept has a number of practical problems which would have to be solved prior to implementation. These issues are discussed in Chapter 6, the Health Service System, Section V, General Medical Services).

Resources Required:

1. No additional resources required. MHCC members can discuss the goals and objectives of the District Health Plans which relate to Outer Island Health Services with their legislators in order to achieve local prioritization of this problem.

2. No additional resources are required to document health service and health status inequalities arising from the logistical problems inherent in the Outer Islands. Local Health Planners, with assistance as needed from Headquarters staff, can develop the analysis indicated by the strategy.

3. Every alternative listed is very expensive and certainly beyond the present capabilities of any Bureau of Health Service budget. No one alternative can solve all the problems for any district/state; a combination of strategies will have to be developed based on the characteristics of each individual outer island/atoll.

   Each district/state, in considering alternatives, must be mindful of the effect of any transportation strategy on other health services and health services budgets. The more services provided, the higher the level of expectation. The better the transportation system, the more people will desire and/or demand to be referred to the district hospital for non-emergency and non-lifethreatening conditions. Every alternative to be considered has a number of ramifications in areas not related to primary health care services; these ramifications must be taken into consideration as alternatives are studied.

4. Costs associated with improvement in lifestyle of nondistrict center residen (including but not limited to health services) should be identified and included in the status negotiation process.

5. The Bureau of Health Services should consider various strategies to enable Outer Island health services, as well as other health services, to be supported, at least in part, by local residents who will and do make use of the services. These issues are discussed in greater detail in Chapter 6, the Health Services System; Chapter 9, Health Manpower; and Chapter 12, Health Care Finance.

GOAL 4.2: TO DEVELOP TRANSPORTATION AND COMMUNICATIONS SYSTEMS WHICH WILL ENABLE THE PROVISION OF EFFECTIVE AND CONTINUOUS HEALTH SERVICES TO EVERY RESIDENT OF THE TTPI.

Objective 4.2.1: To develop appropriate transportation systems between the outer islands and the district centers which will enable public health teams, sanitation teams, dispensary supervisors and other medical personnel to provide regular services to outer island residents and to have reasonable amounts of time to perform their services.

Indicators:

* Most outer islands can only be reached via field trip service.

* Field trip ships service the various outer islands infrequently, seldom more frequently than once per month and for some of the smaller, more inaccessible islands, as infrequently as once per calendar quarter.

* Field trip ships are operated on a commercial basis with their schedules determined by cargo requirements. Ships are seldom in port on an outer island more than one day. During that time, residents are very busy with commercial activities and it is difficult for health teams to provide comprehensive services.

* Field trips are scheduled so that should a health team decide to remain on an inland or an atoll after the departure of the ship, it will be a matter of weeks before the ships will return to pick the team up. Often the population of the island does not justify this length of service.

* Because of the problems mentioned above, outer island residents in general, do not have access to the comprehensive range of health services (and particularly preventive health services) available to residents of district center and intermediate areas.

* 21% of the TTPI population reside in the Outer Islands. Of these Outer Island residents, 45% can be considered "high ri in terms of health care requirements. These people include infants, children, women of childbearing age, and the elderl

* At least one political entity has determined that lack of infrastructure in the outer islands (including transportatio services) and unequal access to public services (including health services) are partially accountable for the migration of people into the district center. This entity (the Marshal Islands) has determined that improved health services in the outer islands accomplished in part by improved transportatio services, will facilitate economic development through encour people to remain on the outer islands in agricultural produc

Objective 4.2.2: To develop emergency evacuation systems appropriate for each area of the TTPI.

Indicators:

* Few areas of the TTPI are accessible to standard ambulance vehicles. Ambulance service is available only to residents in the district center areas where road systems exist.

* Very few intermediate areas have organized emergency evacuation plans. In an emergency, the health assistant may bring the patient to the hospital in his/her own boat (very occasionally do health assistants have access to hospital owned boats). In other cases, the patient's family, relatives, neighbors, will use or borrow boats to transport the emergency patient. In all intermediate areas low tides, stormy weather and other uncontrollable conditions can delay emergency evacuation of patients for extended periods of time.

* Emergency patients on the Outer Islands (excepting those few outer islands with air service) must be evacuated to the hospital by diversion of field trip ships.

Strategies:

1. Each village, municipality or other recognized subarea of the intermediate areas should take steps to organize their own individual emergency evacuation plans so that in an emergency, all residents are aware of the steps to be taken to achieve immediate transport. Each area should devise their own plan for compensating persons who agree to assist in emergency evacuations whether this be from patient or family payment, a local emergency fund or other measures.

2. Strategies for improving emergency evacuations from the Outer Islands are limited. Diversion of field trip ships as is presently done; development of air services; or upgrading of field personnel to eliminate the need for many emergency evacuations are the three basic alternatives.

3. Local health planners should develop a data base on intra-district/state referrals from the Outer Islands to the District Center in order to analyze the most cost-effective mix of field personnel in view of referral costs and emergency evacuation costs. (I.E. local health planners should identify those persons referred from the outer island dispensaries to the hospital and those persons evacuated for medical emergencies from the outer islands and then determine which of those persons could have been handled on their island had a higher level of health worker been stationed there. Following this analysis, planners can determine if the cost of referral/evacuation is generally greater than the additional cost of service provision were more skilled personnel deployed to the outlying regions).

Objective 4.2.3: To develop a communication system which will ensure each health service worker stationed in outlying areas has continuous, reliable communication with the district/state hospitals.

Indicators:

* An essential element in the health assistant/medex system of primary health care provision is the ability to receive direction in complicated cases from more skilled personnel based in the hospitals.

* Communications between dispensary personnel in the intermediate areas and the hospitals is poor in most TTPI districts/states. Yap Proper dispenary personnel have no communications sytem at all available to them nor do dispensary personnel in Ponape Proper, or on Majuro. Dispensary personnel in the Truk Lagoon area depend on 3 VHF radios and 7 citizen band radios which can communicate to the communications center on Moen.

* Communications between the outer islands and the centers vary from state to state but in general, the system is inadequate to meet health care needs. Problems include location of radio units on only a limited number of the inhabited islands in the individual atolls; limited number of frequencies; frequent equipment failure; generator failure; etc.

Strategies:

1. Each District Health Plan has a detailed description of the communication needs in that district/state. Efforts should be made by Health Services leadership to bring those needs to the attention of national and local political leaders, transition committees, and status commissions in order that the capital expenditures required for meeting the communications needs of health services can be included in the transition plans. Clearly the cost involved in ungrading the intra-district/state communications systems is beyond the present capabilities of Health Services budget.

Resource Requirements:

1. Where it was possible to devise estimates of resources required to meet the health communications needs, these estimates were incorporated into the District Health Plans. Revision of these local plans should include revision of these cost estimates in line with inflation and technological advance.

CHAPTER FIVE

TTPI HEALTH STATUS

CHAPTER FIVE
TTPI HEALTH STATUS

I. INTRODUCTION TO HEALTH STATUS:

"Health" is defined by the World Health Organization as "... a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity."

The World Health Organization has further declared "health for all by the year 2000" as a general world goal.

However, specification of what exactly constitutes health and what exactly constitutes well-being is left to individual nations. These precise definitions will necessarily vary from area to area and from nation to nation --- the definition of "health" formulated in African nations will not necessarily be the same as that formulated in the TTPI nor will the definition of the TTPI be the same as that for the United States. Geography, culture, economic resources, expectations of residents, national development priorities, etc. will force each nation to set its own standards and its own goals and objectives Herein lies the importance of Chapter IV, Characteristics of the TTPI; for it is the characteristics described there which set many practical boundaries for the formulation of a definition of "health" in the TTPI. And it is those characteristics which will distinguish the TTPI definition of health from those of other nations.

This chapter of the Territorial Health Plan will attempt to describe the major aspects of health in the TTPI population. The purpose of this description will be to determine which diseases cause death and/or illness

in the population; who it is that gets sick and/or dies; and what characteristics distinguish those who get sick and/or die from those who remain healthy. Once the information is collected to describe health and illness in the TTPI, it becomes possible to determine what a realistic definition of health might be in the TTPI and what changes in the health care system or in the environment in which people live might realistically be expected to yield improved health status. Obviously, there are limited funds available for health activities and these funds should be targeted to the services and to the subpopulations most in need. A well written health status chapter directs the planning effort toward high priority health problems where expenditure of monies can expect to benefit the greatest number of people.

There are some practical limitations to describing the TTPI health status. One, it was necessary to decide how detailed the health status description should be for the Territorial Health Plan. In general, the smaller the geographic unit of analysis, the more useful the health status data becomes. Ideally the health of each municipality or outer island should be described but data is unavailable for this detailed analysis; what data which does exist is incorporated into the District Health Plans. In addition, the smaller the unit of analysis the larger the plan becomes and the larger the plan becomes the less comprehensible it becomes to those who might be expected to use it. Therefore, in order to make the Plan as concise as possible and in view of the fact that health status for each district/state is described in-detail in the District Health Plans, it was decided to discuss the TTPI as a single geographic unit. This decision limits the specificity of goals and objectives developed both for health status and for health systems. However, as was mentioned in Chapter 1, the Territorial Health Plan is not designed for specificity --- it is a general policy guideline for each state and district to enable further development of local health plans.

A second consideration is the practical limitation of hand manipulation of data. At this time, none of the health services data has been computerized although work is underway to accomplish this (see Chapter 7, Medical Records). Time and staff limitations, therefore, restrict the analysis which can be done for data collected in six distinct political areas. Several times in the Health Status Chapter the point will be made that District/State Health Planners need to further analyze available data on particular topics at the local level in order to develop specific objective levels and specific plan implementation strategies.

A third consideration is the unreliability of the data presented. Logistics and personnel training make the collection of accurate statistics difficult. Further, it should not be assumed reporting errors are randomly distributed. Reporting from the district centers is probably the most complete and the most reliable with accuracy and reliability decreasing in proportion to the accessibility of the area under consideration. The data presented provide the best estimate available of the incidence of various illnesses, but the reader must keep in mind the figures are only estimates.

Finally, it must be understood the process of political decentralization has impacted upon data management. Data through the first half of 1978 appears to be reasonably complete (or at least no more incomplete than previous data). From the second half of 1978 to the present, reporting to Headquarters shows signs of increased unreliability. The Marshall Islands have the greatest drop-off in quantity and completeness of data submitted but data from other areas has also been affected. Because the Marshall Islands generally have higher rates of certain chronic conditions (e.g. diabetes as well as others) and higher rates of intestinal and diarrheal diseases as well as higher infant mortality than other areas of the TTPI, the data presented may show more significan improvements in TTPI health status than is actually the case.

II. VITAL EVENTS - BIRTHS AND DEATHS:

Data relating to TTPI vital events (births, deaths, and infant deaths) for 1970-78 is presented in Table V.1. TTPI birth, death, and infant death rates are presented graphically in Figure V.1. Table V.2. presents comparative data regarding vital events from various other nations.

A. CRUDE BIRTH RATE:

The average TTPI crude birth rate, 1970-78, is 33.0 births per 1,000 population. The graph in Figure V.1. indicates the birth rate is decreasing. However, it must be noted the dramatic decrease in 1978 is probably due to reporting error and not to decreased number of births.

As was noted in Chapter 4, the TTPI population is expected to double prior to the year 2000. The population growth is primarily attritutable to a high rate of natural increase in the TTPI - natural increase is the number of deaths subtracted from the number of births or the total number of people added to the population each year excluding migration into or out of the TTPI. This high rate of population growth has a tremendous impact upon the TTPI economy and social structure, including the demand for health services.

Comparing the TTPI birth rates to those from other nations shows the TTPI rates to be high in comparison to the developed countries but low compared to the underdeveloped (developing) nations.

B. CRUDE DEATH RATE:

The average TTPI crude death rate for 1970-78 was 4.9 deaths per 1,000

POPULATION, BIRTHS, DEATHS, INFANT DEATHS
TRUST TERRITORY OF THE PACIFIC ISLANDS 1/
1970 - 1978

YEAR	TTPI POPULATION (See Note Below)	# BIRTHS	# DEATHS Total	# INFANT DEATHS (Under 1 year)	R A T E S		
					CRUDE BIRTH RATE 2/	CRUDE DEATH RATE 3/	CRUDE INFANT DEATH RATE 4/
1970	89,700	3,224	530	62	35.9	5.9	19.2
1971	92,430	3,197	489	105	34.6	5.3	32.8
1972	95,160	3,470	526	104	36.5	5.5	30.0
1973	97,600	3,482	464	115	35.7	4.7	33.0
1974	100,760	3,494	505	101	34.7	5.0	28.9
1975	103,870	3,605	519	120	34.7	5.0	33.3
1976	107,000	3,402	448	71	31.8	4.2	20.9
1977	109,644	3,415	570	126	31.1	5.2	36.9
1978 5/	113,480	2,534	393	71	22.3	3.5	28.0
1970-78 Average		3,313.7	493.8	97.2	33.0	4.9	29.2

NOTE: Population figures are taken from TTPI Office of Planning and Statistics estimates based on the 1967, 1973, and 1977 census. See Bulletin of Statistics, Volume I, No. I, and Volume II, No. I. Projections are for de facto population for TTPI citizens only.

Similar tables published in the United Nations Reports by the Bureau of Health Services, TTPI, have used population estimates based on the de jure census figures for all TTPI residents (citizens and non-citizens). Therefore, the birth and death rates cited above may vary slightly from those previously published.

1/ Excludes Northern Mariana Islands; includes Palau, the Federated States of Micronesia and the Marshall Islands.

2/ Crude birth rates are per 1,000 population. It is recognized that computing fertility rates (births per 1,000 women aged 15-44) might yield more useful statistics. However, population projections are not available for non-census years of women in the 15-44 age category.

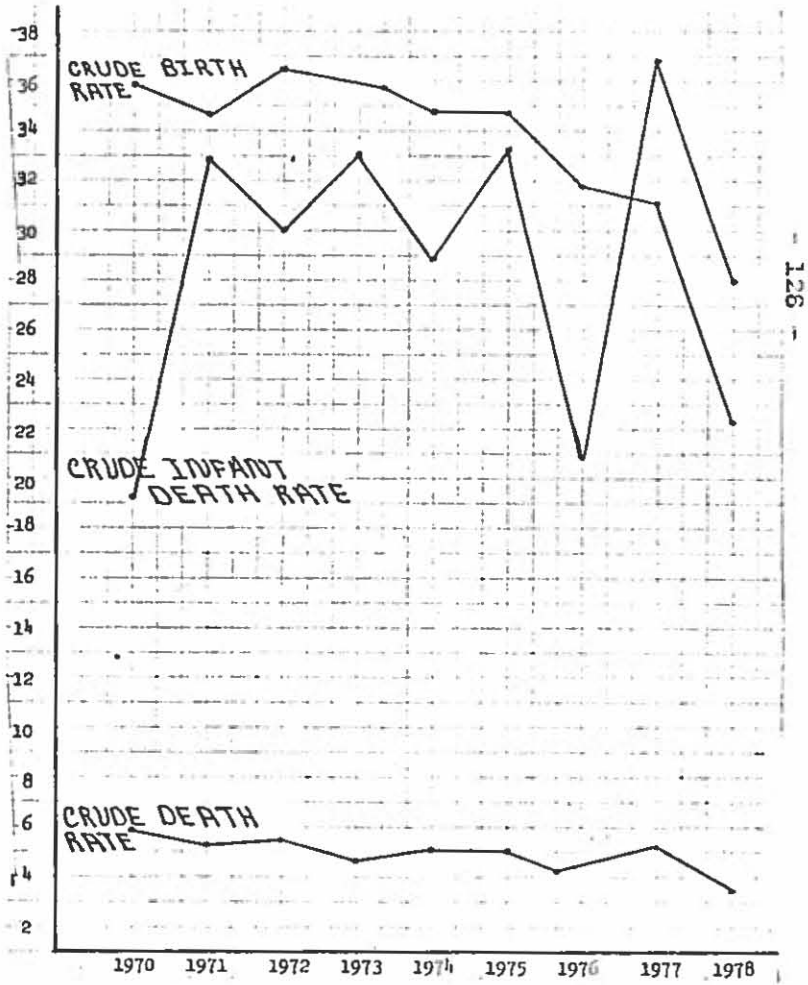
3/ Crude death rates are calculated per 1,000 population.

TABLE V.2.
COMPARISON OF TTPI BIRTH, DEATH AND INFANT DEATH RATES WITH SELECTED OTHER NATIONS

Nation	Population circa 1975	Birth Rate Per 1,000 Population	Death Rate Per 1,000 Population	Infant Death Rate per 1,000 Live Births
American Samoa	30,000	38.1	4.8	19.5
Cook Islands	22,000	---	---	34.0
Fiji	600,000	28.3	4.9	21.5
Guam	85,000	24.0	4.0	15.0
Hawaii	870,000	18.2	5.0	14.0
New Caledonia	101,000	---	10.0	---
New Hebrides	-----	---	20.0	---
Niue	5,000	---	6.0	29.0
Papua- New Guinea	2,500,000	---	17.0	159.0
Solomon Isl.	-----	---	13.0	52.4
Tonga	80,000	---	3.0	----
TTPI	115,000	33.0	4.9	29.2
Australia		18.9	8.7	16.5
Chile		25.0	8.5	78.0
Kenya		50.0	16.0	55.0
New Zealand		20.5	8.5	16.2
United States		15.0	9.1	16.5

Source: Various publications on demography and health status; state and regional health plans, etc. For further information or documentation

FIGURE V.1. TTPI BIRTH, DEATH & INFANT MORTALITY RATES 1970-78



population. The graph in Figure V.1. indicates there is a slight downward trend in the death rate.

Death rate, however, reflects two major characteristics of the population. First, it reflects health status and rates of mortality. Second, it reflects the age structure of the population. Since the TTPI has a very young population, the death rate is not a useful statistical tool because large numbers of deaths in a young population would not be expected. In order to analyze death (mortality statistics, certain other statistics must be examined; these include the age at which death occurs and the cause of death.

1. AGE SPECIFIC DEATH RATES:

Table V.3 shows age specific death rates for four subgroups of the TTPI population. (Age specific death rates are determined by calculating the number of deaths occurring in a given age category by the number of citizens in that category. All rates are per 1,000 population.) The three year average (1976-78) death rate for persons 0-14 years of age is 3.0; for persons 15-64 years of age, 3.1; and for persons aged 65 and over, 32.5.

Table V.3.a. shows age specific death rates for selected other Pacific nations. A comparison of the two tables shows the TTPI death rate for the 0-14 age group is higher than those for Australia, Fiji, and New Zealand, and lower than those for Western and American Samoa. The TTPI death rates for the 15-64 and 65 and over age categories, are far lower than those for all comparative nations.

TABLE V.3.

TTPI AGE SPECIFIC DEATH RATES, 1976 - 1978

	AGE CATEGORIES			
	Under 1 Year	0-14 Years of Age	15-64 Years of Age	65 Years of Age & Over
1978				
# Deaths	71	136	149	108
Population	2,534	51,240	57,550	4,690
Death Rate	28.0	2.6	2.6	23.0
1977				
# Deaths	126	199	198	173
Population	3,415	50,320	55,420	4,440
Death Rate	36.9	3.95	3.6	39.0
1976				
# Deaths	71	120	175	153
Population	3,402	49,400	53,380	4,220
Death Rate	36.9	2.4	3.3	34.1
1976-8 Average Death Rate	28.7	3.0	3.1	32.5

Source: Death certificates filed with the TTPI Bureau of Health Services, Office of Medical Records and Vital Statistics.

Note: It is recognized the age categories used in the table and in the analysis are inadequate for proper analysis of age specific death rates. However, there are no estimates for TTPI population in more specific age categories except for those provided during census years.

TABLE V.3.a.

AGE SPECIFIC DEATH RATES FOR VARIOUS PACIFIC NATIONS

Year of Data *	Country	Death Rates		
		0-14 Years of Age	15-64 Years of Age	65 & Over Years of Age
1973/73	Fiji	2.8	4.1	58.8
1973/74	New Zealand	1.6	4.0	61.1
1973/71	Western Samao	5.6	4.7	62.6
1973/70	American Samoa	3.5	3.7	62.9
1973/73	Australia	1.6	4.2	63.8

Source: Demographic Yearbook, 1975. United Nations Statistical Office. New York, 1976, pp. 188, 322.

* The first year entered refers to the year of the death statistics used for calculation. The second year entered refers to the year of the population statistics used for calculation.

All rates per 1,000 population.

These tables show children in the TTPI to be at greater risk of death than children in some Pacific nations. However, once having survived the childhood years, a TTPI citizen faces less risk of death for the remainder of his/her life than citizens of all Pacific nations for which data is presented.

2. INFANT MORTALITY:

Infant mortality rates are generally accepted indicators of the overall level of health of a nation's children. High infant mortality rates indicate high rates of illness (morbidity) in the child population. Further, since children are most susceptibl to many of the conditions which cause ill-health, infant mortality is often used as an indicator of the general health status of the entire nation, adults as well as children.

Table V.1 shows the average TTPI infant mortality rate, 1970-78, to be 29.2 deaths per 1,000 live births. When this figure is compared to those of Table V.2., it can be seen that the TTPI compares favorably to many other nations, particularly the underdeveloped or developing nations. However, the rate remains high when compared to the Western nations, the American Pacific territories, Fiji, Niue, and others.

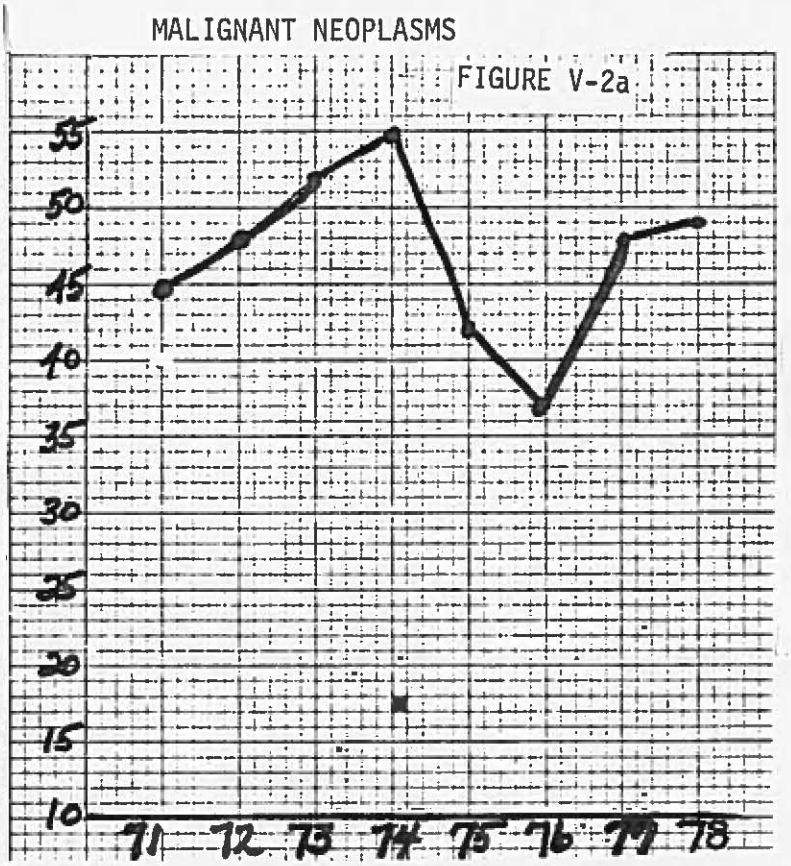
The graph in Figure V.1. indicates no trends in TTPI infant mortality rates. The rate fluctuates widely from year to year and is known to be heavily influenced by epidemics (particularly of gastrointestinal diseases) which sweep across the TTPI from time to time.

3. CAUSES OF DEATH:

Table V.4. shows the leading causes of death in the TTPI from 1972 through 1978. Table V.5. shows the leading causes of infant death (deaths under 1 year of age) for the same years. Twenty percent of all deaths in the TTPI occur in children under the age of one year (Table V.1).

(a) Malignant Neoplasms:

Malignant neoplasms have been the leading cause of death for the seven year period between 1972 and 1978; and have accounted for 9.6% of all registered deaths. For any given year, malignant neoplasms (commonly known as cancer) have ranked among the leading three causes of death. Figure V.2.a. graphically shows the number of cancer deaths in the TTPI in past years; the graph demonstrates no trends.



NOTE: For all of Figures presented under Figure V.2. graphing of rates per

TABLE V.4

CAUSES OF DEATH
TTPI, 1972-8

* Listed in rank order according to 1978 statistics.

CAUSE	1978	1977	1976	1975	1974	1973	1972	TOTAL 1972-8	AVERAGE
Malignant Neoplasms (140-209)	49	48	37	42	55	52	48	331	42.3
Heart Diseases (390-398,402, 410-429)	43	41	29	38	57	50	51	309	44.1
Diarrheal & Intestinal Dis. (004,006,008-009)	42	70	19	33	38	44	24	270	38.6
Influenza & Pneumonia (470-474, 480-486)	30	38	31	29	39	38	70	275	39.2
Bronchitis, Emphysema & Asthma (490-493)	24	26	29	32	13	23	25	172	24.6
Accidents, ALL (E800-E949)	18	30	36	18	39	50	22	213	30.4
Cerebrovascular Dis. (430-438)	16	10	21	20	31	24	22	144	20.6
Prematurity (777)	15	29	14	52	43	33	30	216	30.9
Nutritional Deficiency (260-269)	12	11	1	12	7	7	7	57	8.1
Meningitis (320)	9	7	9	3	13	9	6	56	8
Suicide (E950-E959)	8	16	10	19	15	9	14	91	13
Congenital Anomalies (740-759)	8	9	6	9	6	15	11	64	9.1
Cirrhosis of Liver (571)	8	8	6	4	14	11	8	59	8.4
Certain Causes of Mortality in Early Infancy (769,768,769-771,772,773,775,776,778)	6	18	4	8	17	23	17	93	13.3
Homicide (E960-E969)	5	6	UKN	UKN	6	5	5	27	3.9
Tuberculosis, ALL (010-012,013,019)	5	10	8	5	11	12	15	66	9.4
Diabetes Mellitus (250)	4	7	8	8	17	10	13	67	9.6
Nephritis & Nephrosis (580-583)	4	UKN	UKN	UKN	UKN	6	4	14	2.0
Maternal Diseases (630-639,640-645,650-678)	2	3	3	6	7	5	5	31	4.4
UNKNOWN & ILL DEFINED (780-796)	52	65	117	121	81	67	123	626	89.4

Source: Death certificates registered with the TTPI Bureau of Health Services, Office of Vital Statistics and Medical Records.

TABLE V.5.

CAUSES OF INFANT DEATHS (Under 1 Year of Age)
TTPI, 1972-8

* Listed in rank order according to 1978 statistics.

CAUSE	1978	1977	1976	1975	1974	1973	1972	Total 1972-8	AVERAGE
Diarrheal & Intestinal Diseases (004,006,008,009)	17	23	12	21	15	19	11	118	16.9
Prematurity (777)	15	29	14	54	43	33	30	218	31.1
Influenza & Pneumonia (470-474, 480-486)	9	13	7	10	9	15	20	83	11.9
Certain Causes of Mortality of Early Infancy (760-768,769-771, 772,773-775,776,778)	6	18	4	10	17	23	17	95	13.6
Meningitis (320)	4	3	5	1	4	5	2	24	3.4
Nutritional Deficiencies (260-269)	2	3	-0-	2	-0-	2	3	12	1.7
Causes illdefined and unknown (780-796)	7	18	16	11	10	7	12	81	11.6
Total # of Infant Deaths, All Causes	71	126	120	101	115	104	105	742	106.0

Source: Death certificates registered with the TTPI Bureau of Health Services, Office of Medical Records and Vital Statistics.

Numbers indicated below the cause-of-death refer to ICDA disease coding classifications.

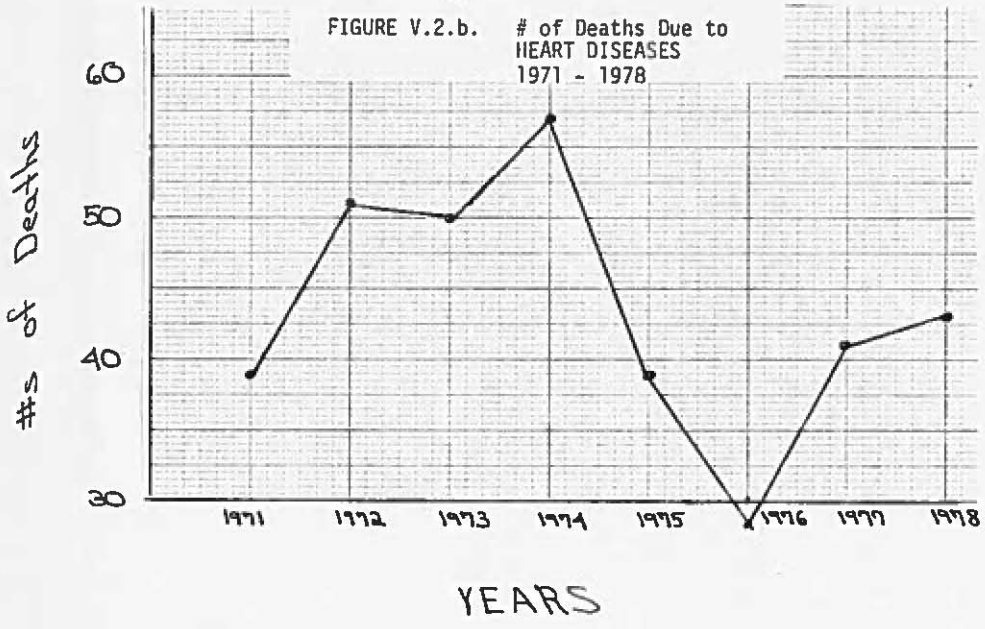
Of the 97 reported deaths attributed to cancers in 1977 and 1978, 22% were due to cancers of the respiratory system (lung or bronchogenic cancers); 18% were due to cancers of the liver system; 12.6% were due to stomach or gastric cancers; 8.4% were due to cervical cancer; and 8.4% were due to various types of leukemia.

Twelve cancer deaths occurred in persons under the age of thirty. The average age of death by cancer was 51 years.

(b) Heart Diseases:

Heart diseases have consistently ranked among the three leading causes of death and in the seven year period of analysis have accounted for 9.0% of all deaths in the TTPI. Figure V.2.b. graphically shows the number of deaths due to heart diseases between 1971 and 1978.

FIGURE V.2.b. # of Deaths Due to HEART DISEASES 1971 - 1978



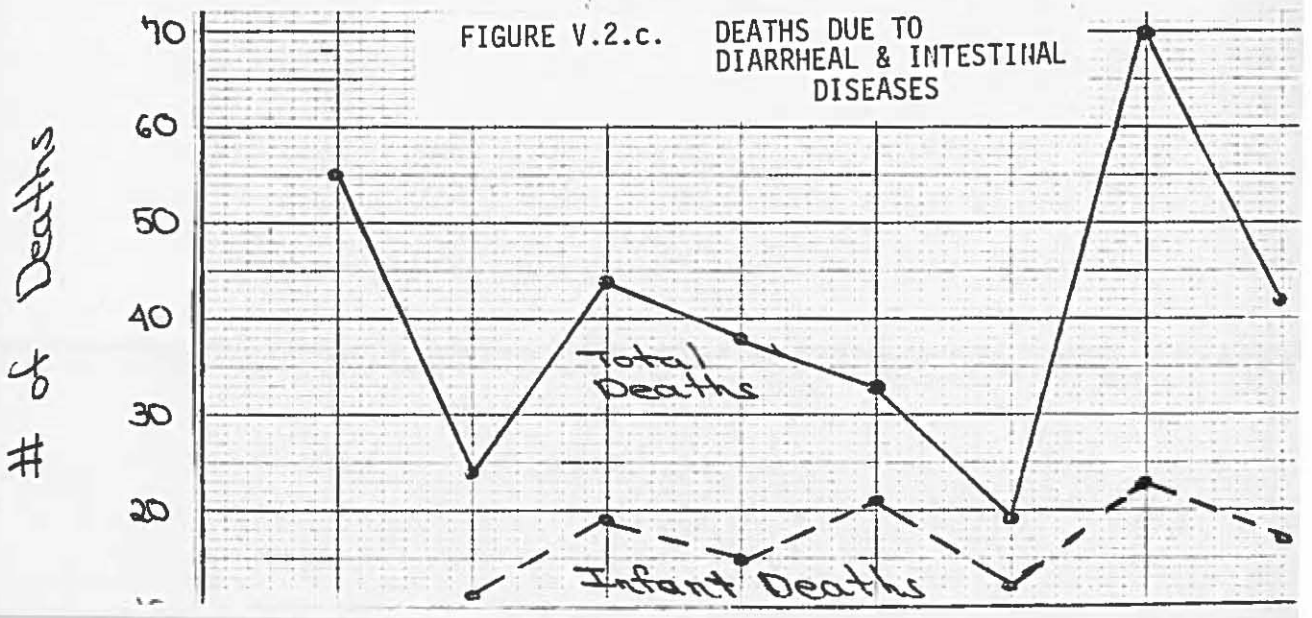
It appears that heart disease deaths, after a sharp decrease in 1975-76, have been rising in 1977 and 1978 although the numbers of deaths are still lower than the 1972-74 years.

Constant surveillance of the incidence of heart disease and death by heart disease must be a concern in Micronesia. Heart diseases are predominantly prevalent in industrialized nations, and while Micronesia is not yet an industrialized nation, it must remain vigilant to health trends in other nations.

(c) Diarrheal and Intestinal Diseases:

Diarrheal and intestinal diseases are among the leading causes of death in the TTPI, and the number one cause of death in infants (children under 1 year of age). 43.7% of the 270 deaths attribute to diarrheal and intestinal diseases occurred in children less than one year old. Of all infants dying in the TTPI, 16% died from this category of disease. Figure V.2.c. graphically shows the total numbers of deaths due to diarrheal and intestinal diseas and the numbers of infant deaths due to these diseases for 1971-78

FIGURE V.2.c. DEATHS DUE TO DIARRHEAL & INTESTINAL DISEASES



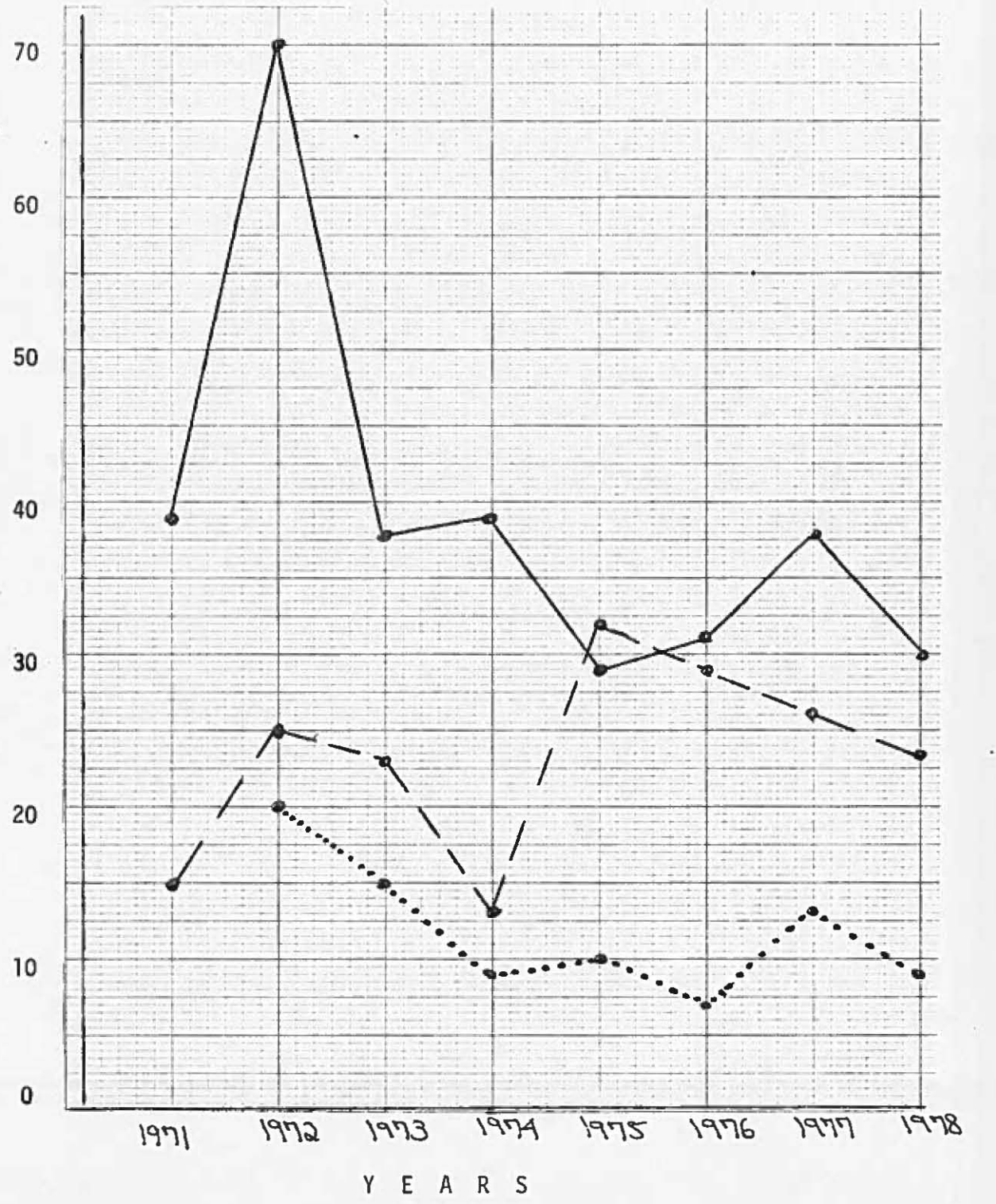
Between 1971 and 1976, there was steady decrease in the numbers of deaths due to diarrheal and intestinal diseases. But in 1977, the number of deaths jumped dramatically due to an epidemic of shigellosis which swept across much of the TTPI. The number of deaths decreased again in 1978 but not to the lows achieved in 1974-76. It appears the TTPI is making progress against these diseases as a cause-of-death but that conditions are still conducive to epidemics which can eradicate the progress of several years in a very short span of time.

(d) Respiratory Diseases:

Two categories of respiratory diseases, one (pneumonia and influenza) being acute illness, and the second (bronchitis, emphysema, and asthma) being chronic illness, together account for 13% of all deaths in the TTPI, 1972-78. Influenza and pneumonia alone, account for 11 percent of all infant deaths in the same time period. The numbers of deaths due to these respiratory conditions are presented graphically in Figure V.2.d.

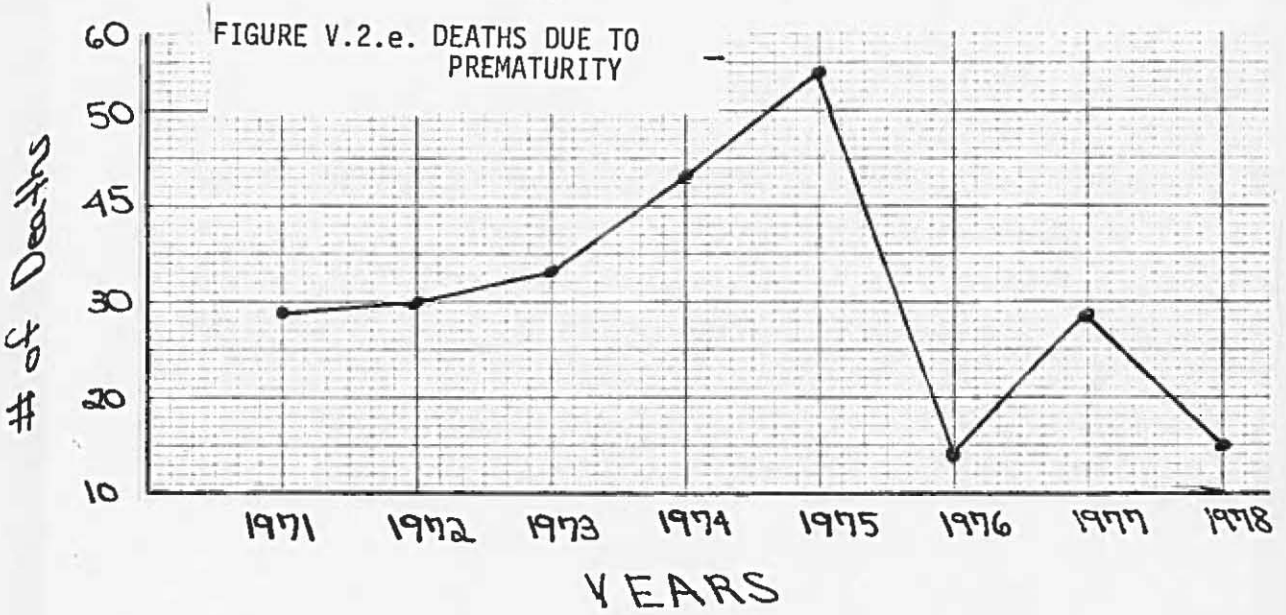
There appears to be a downward trend in the numbers of deaths due to influenza and pneumonia. Deaths due to the chronic respiratory conditions increased sharply in 1975 and, although steadily decreasing in subsequent years, have not yet reached the low numbers experienced prior to 1975.

FIGURE V.2.d. # of Deaths Due To RESPIRATORY DISEASE



(e) Prematurity: *

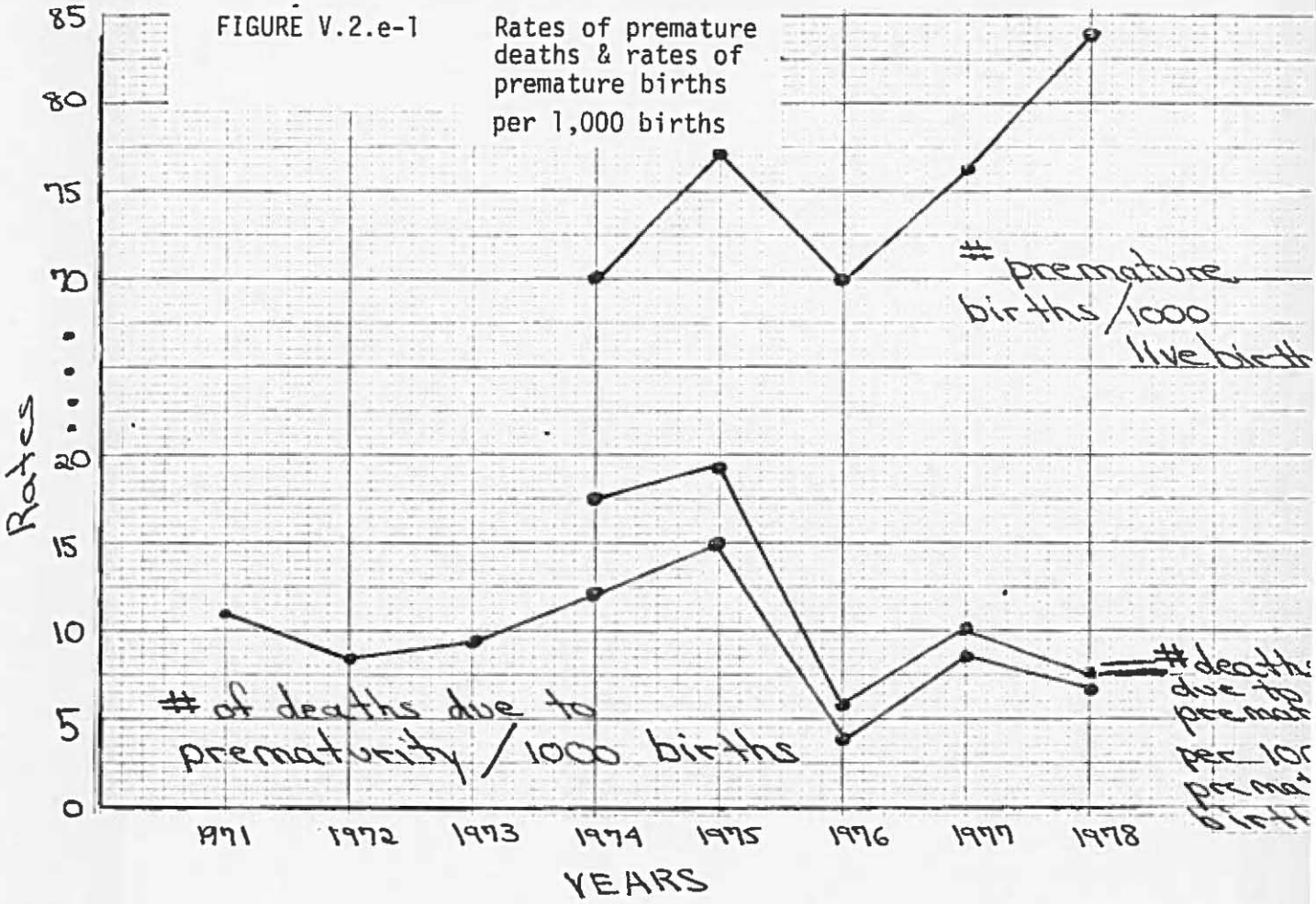
Prematurity is the leading cause of deaths for infants in the TTPI, and over the period, 1972-78, has accounted for 29.4% of all infant deaths. The incidence of death due to prematurity is graphically presented in Figure V.2.e.



It is important to examine two additional statistics relating to prematurity: one, the incidence of premature death per 1,000 live born infants, and two, the proportion of premature births whic result in death due to prematurity. This data is presented in Figure V.2.e-1.

* Prematurity in the TTPI is defined as birthweight of 2500 grams or below (5 pounds, 8 ounces). It must be understood the numbers of premature births are understated as only those infants born in the hospitals have birthweights recorded. A large proportion of TTPI infants are born outside of the hospitals.

FIGURE V.2.e-1 Rates of premature deaths & rates of premature births per 1,000 births



All three curves on Figure V.2.e-1 closely resemble the others through 1977. In 1978, the rate of premature births per 1,000 births continues to increase while the rates of death due to prematurity decrease.

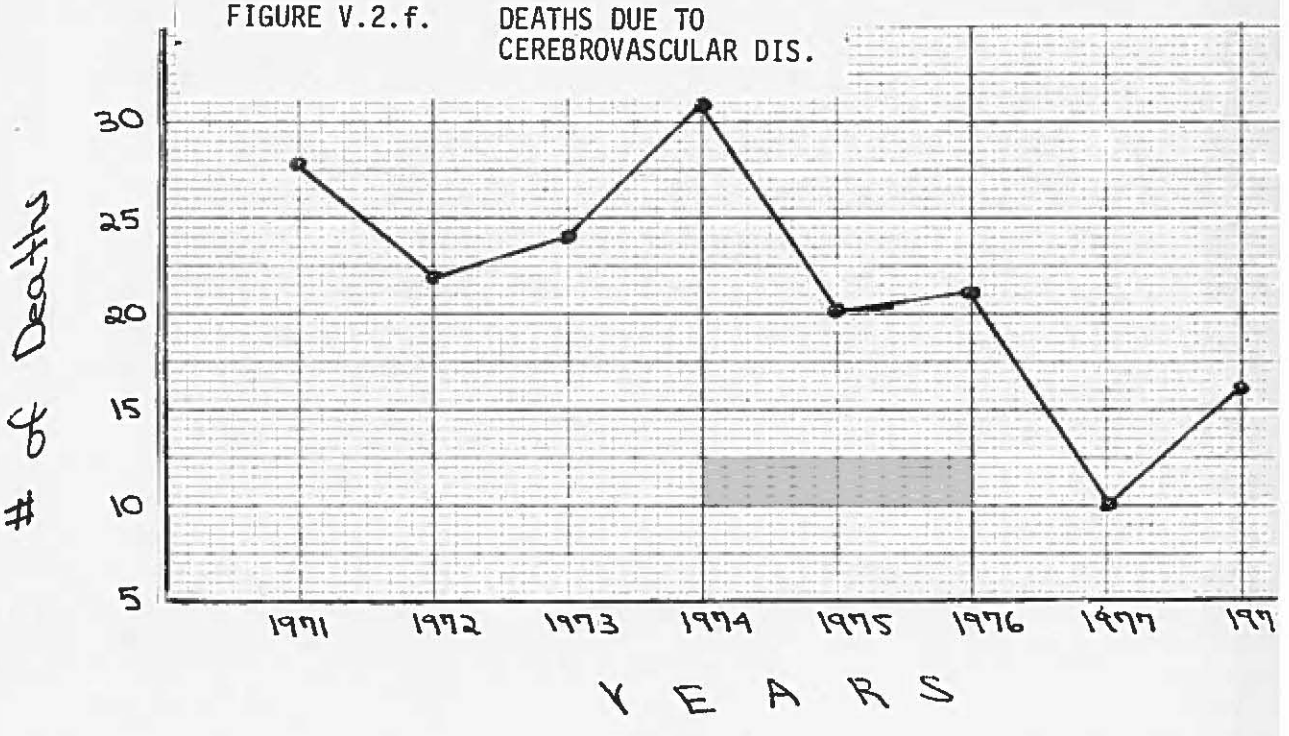
Planners should continue to monitor the trends depicted above for the possibility is suggested by Figure V.2.e-1 that: the chance of any pregnancy resulting in a premature birth is increasing; but the risk of any pregnancy resulting in death due to prematurity is decreasing. Should this prove to be the case in future years, there are a couple of plausible explanations; for example, the average birthweight of premature infants could be increasing and thereby increasing their chances of survival, or more women may be giving birth in hospitals

where facilities and skilled manpower are immediately available to save premature babies.

(f) Cerebrovascular Diseases:

Death by cerebrovascular disease (commonly known as stroke) is primarily a condition of the elderly. Therefore, because of the small proportion of the TTPI population in the older age categories, it would not be expected that the TTPI death rate due to cerebrovascular disease would be high. Figure V.2.f. graphically shows the number of registered deaths attributed to cerebrovascular disease, 1971-78. For the period, cerebrovascular diseases accounted for 4.2% of all recorded deaths.

FIGURE V.2.f. DEATHS DUE TO CEREBROVASCULAR DIS.

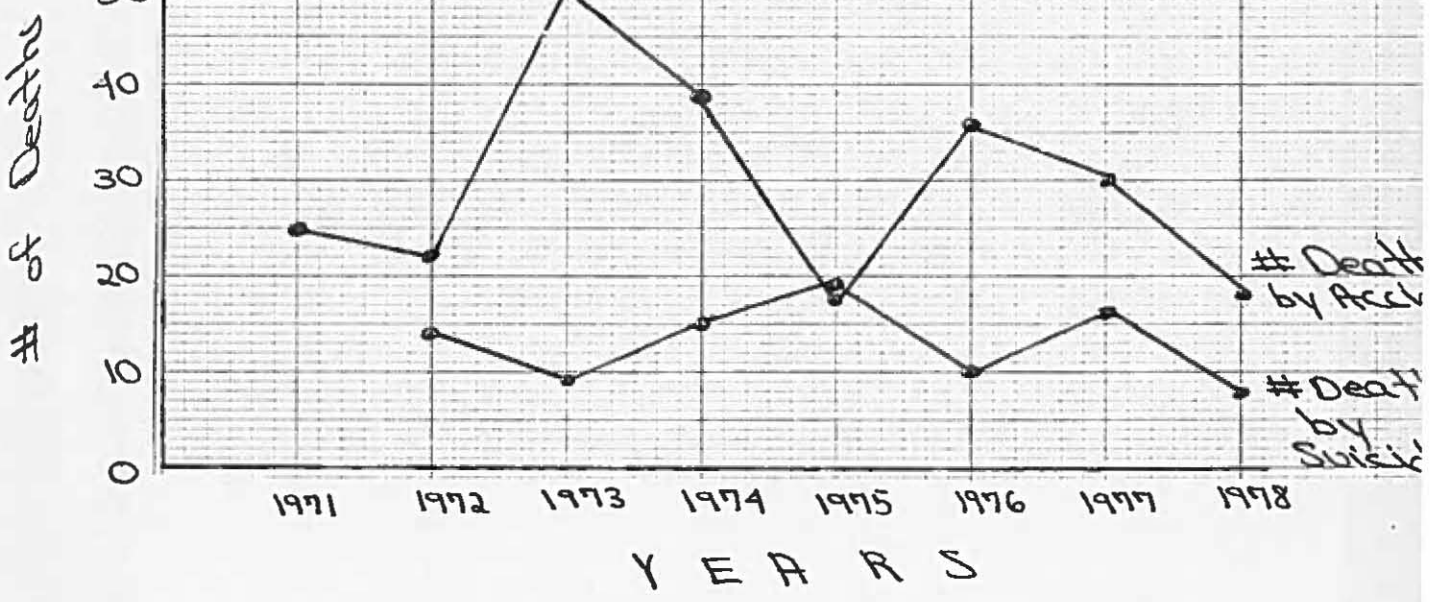


In general, the number of deaths due to cerebrovascular diseases appear to be decreasing.

(g) Accidents and Suicides:

Accidents and suicides are causes of death which generally strike the young adult male population. As can be seen by Figure V.2.g. the number of deaths due to each cause fluctuate from year-to-year, but in general, appear to be decreasing.

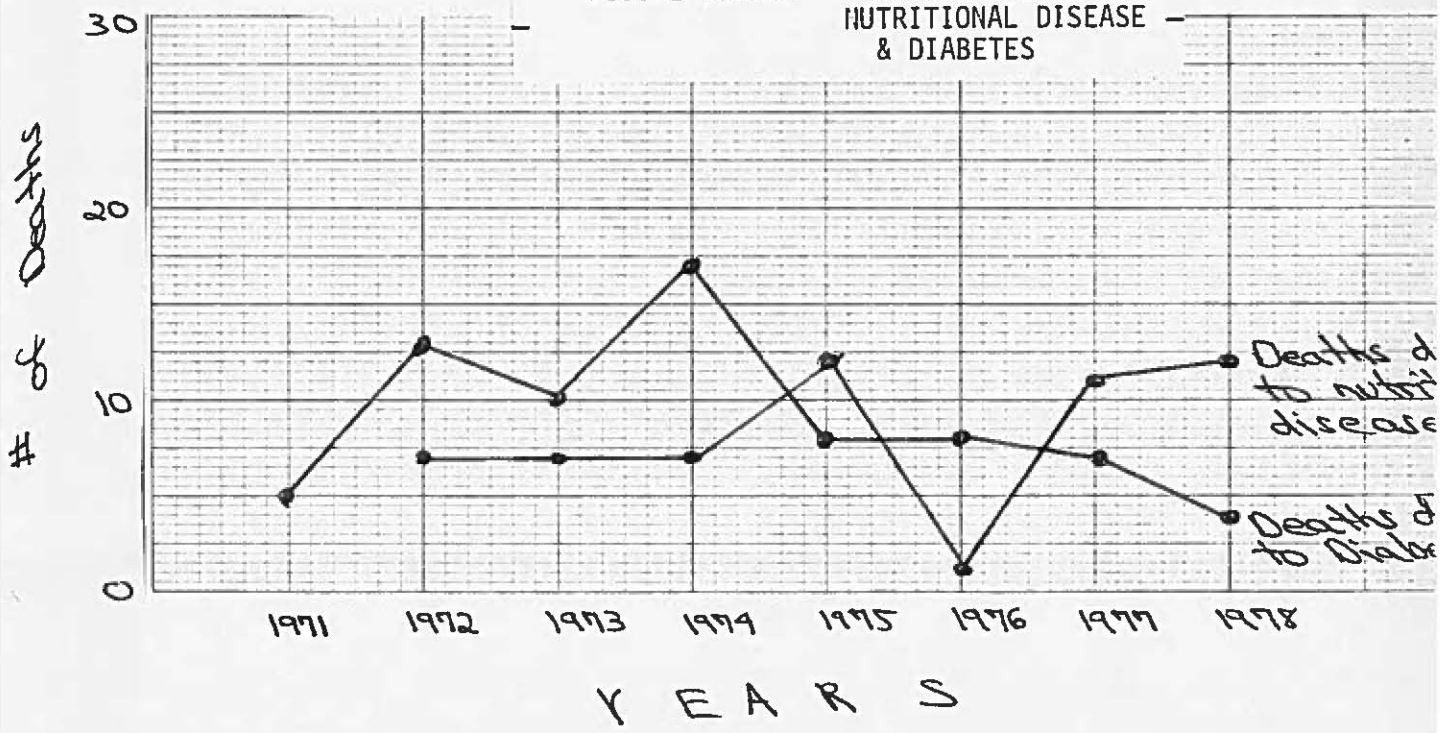
FIGURE V.2.g. DEATHS DUE TO ACCIDENTS & SUICIDES



(h) Nutrition-Related Deaths:

It is not possible to accurately estimate the role of nutrition-related diseases in TTPI mortality. Very few deaths are directly attributed to nutrition inadequacies; generally nutritional disease are underlying causes of death while the recorded cause-of-death may be gastroenteritis, influenza, unknown, etc. Many provider members of the Micronesia Health Coordinating Council have expresse their belief that nutrition-related diseases and nutrition-related deaths are increasing in the TTPI as people turn increasingly from local foods to imported foods. However, there is little data to substantiate these beliefs. Figure V.2.h. graphically shows the numbers of deaths in the TTPI attributable directly to nutritional diseases (malnutrition) and to diabetes (also related in part to nutritional status).

FIGURE V.2.h. DEATHS DUE TO NUTRITIONAL DISEASE & DIABETES



In general many deaths in the TTPI are partially or completely preventable either through prevention of the disease entirely, or proper management of the disease after it has appeared. These preventable deaths include: maternal diseases (1% of the 1972-78 total deaths); diabetes (2% of the 1972-78 total deaths); tuberculosis (2% of the total 1972-78 deaths); cirrhosis of the liver (2% of the total 1972-78 deaths); suicide (2.7% of the total 1972-78 deaths); nutritional deficiencies (1.7% of the total 1972-78 deaths); diarrheal and intestinal diseases (7.9% of the total 1972-78 deaths); and some cancers (9.7%) and some prematurities (6.3%). Thus, 19.3 of all deaths in the TTPI can be considered almost wholely preventable and a large proportion of an additional 16% of deaths are partially preventable. Of the wholly preventable deaths, almost all predominant affect children and youth.

C. OTHER HEALTH STATUS INDICATORS RELATING TO VITAL EVENTS - BIRTHS:

Certain other indicators exist by which the health status of infants and children can be assessed. The TTPI Bureau of Health Services, Division of Maternal and Child Health, has determined that any newborn with the following characteristics, can be considered as "high-risk", i.e. with greater expectation of complications, disease, and early death than the average population of his/her age. 1/

--- Prematurity (less than 37 weeks gestation or less than 2500 grams birthweight
--- Postmaturity (greater than 42 weeks gestation - commonly associatec with diabetic mothers)
--- Very high or very low birth weight for the newborn's gestational ag
--- Apgar score of less than four at delivery
--- Resuscitation required in the delivery room or newborn nursery
--- Malformations (including single umbilical artery)

1/ TTPI Bureau of Health Services. Grant Application for Family Health Planning

--- Birth to a mother with any of the following characteristics:
- a. History of illness or infection during pregnancy
- b. Premature membrane rupture
- c. Toxemia
- d. Metabolic disease (including diabetes)
- e. Severe social problems (drug addiction, absence of mate, or other stressful events during pregnancy)
- f. Teenage pregnancy
- g. Heavy tobacco or alcohol use
- h. Absent or long-delayed prenatal care
- i. Minimal or no weight gain during pregnancy
- j. Prolonged infertility
- k. More than four previous pregnancies
- l. More than 35 years of age
- m. Medications known to have adverse effect of fetus
- n. Multiple pregnancy (twins, triplets, etc.)
- O. Gestation begun within three months of previous pregnancy
- p. Operative delivery
- q. Anemia or blood group incompatability.

The TTPI Bureau of Health Services, MCH Division further estimates that as many as 50% of all deliveries in the TTPI can be classified as "high-risk". 1/

Very few of the above mentioned factors predisposing high-risk newborns can be assessed at the Territorial-level. Hand manipulation of several thousand birth certificates to assess (within the limits of reporting) is not practical. District Health Planners, in future revisi of the local Health Plans may be able to assess many of the above factor by analysis of birth certificates and individual medical records. Some preliminary data were compiled in the original District Health Plans developed in the 1977-78 period.

1. Prematurity:

In 1978, approximately 8.4% of all registered births, with birth weights recorded, could be classified as premature by birthweight less than 2500 grams. In general, only those births occurring in

1/ TTPI Bureau of Health Services, Division of MCH/CCS. Grant Application for Family Health and Planning Program for Palau and Truk - U.S. DHEW, June 19, 1 page 7.

the hospitals have birth weights recorded on the birth certificates. 70% of the TTPI births occurred in the hospitals, so if it is assumed the incidence of premature births outside of the hospitals is equal to that inside, then it can be seen a more accurate estimate of premature births in the TTPI would be 12% or 304 total premature births.

2. Maternal Age:

14% of all births in the TTPI in 1978 were to women under the age of 20. 10.7% of all births in 1978 were to women over the age of 35. This yields a total of 24.7% of all births occurring to women in high-risk age categories. These figures are supported by the data presented in Table V.6.

TABLE V.6.: TTPI Births, 1978 By Age of the Mother

Age Group	Marshall Islands	Federated States of Micronesia				Palau	Tota
		Ponape	Kosrae	Truk	Yap		
Under 15	-	-	-	-	1	-	
15 - 19	67	125	3	77	49	35	35
20 - 24	195	299	17	186	102	107	90
25 - 29	119	201	21	176	70	75	66
30 - 34	58	98	23	105	18	36	33
35 - 39	18	48	10	61	19	17	17
40 - 44	9	24	2	33	12	4	8
45 - 49	-	5	1	4	1	1	1
50 & over	-	1	-	-	1	-	
Age unknown	-	-	-	-	-	-	
Total	466	801	77	642	273	275	2,5

*Provisional

3. Birth Order:

Table V.7. shows TTPI births 1967 - 1978 by birth order (number of previous live births born to mother). Figure V.3. graphically shows the proportion of total births in the TTPI according to birth order.

It can been seen since 1967, there has been a steady and substantial decrease in the number of newborns which are 5th borne or later. The has been a corresponding increase in the number of newborns 1st borne or 2nd, 3rd, or 4th borne.

However, it must be noted despite the trends, in 1978, 33% of all births were 5th borne or later and therefore, classified as high risk infants.

4. Prenatal Care:

In Chapter 6, Section VII, Public Health Services, there is a detailed analysis of Maternal and Child Health Service utilization. On the average, 1977-78, only 20% of the pregnant women in the TTPI received no prenatal care. However, only 18% began prenatal care during the first trimester; 32.4% began prenatal care in their second trimester; and 29.6% waited until their third trimester to begin prenatal care. Although data is difficult to interpret , there are indications that less than one-half of the pregnant women i the TTPI completed all 14 recommended prenatal check-ups.

Data also indicate only 25% of all TTPI women, after giving birth, receive postnatal services. Postnatal services are important to insure the health of the mother and to insure health during future pregnancies.

Births According to Birth Order

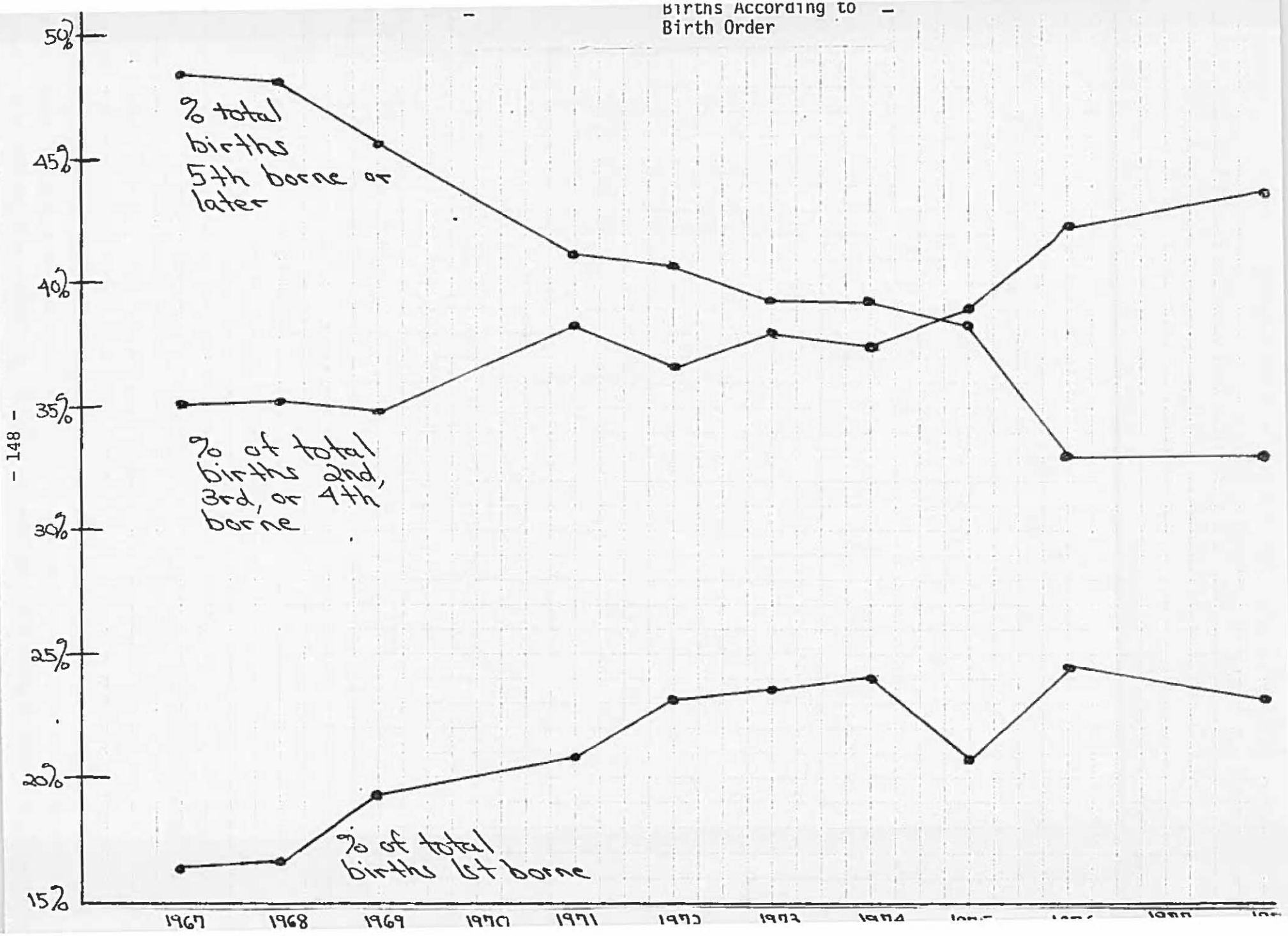
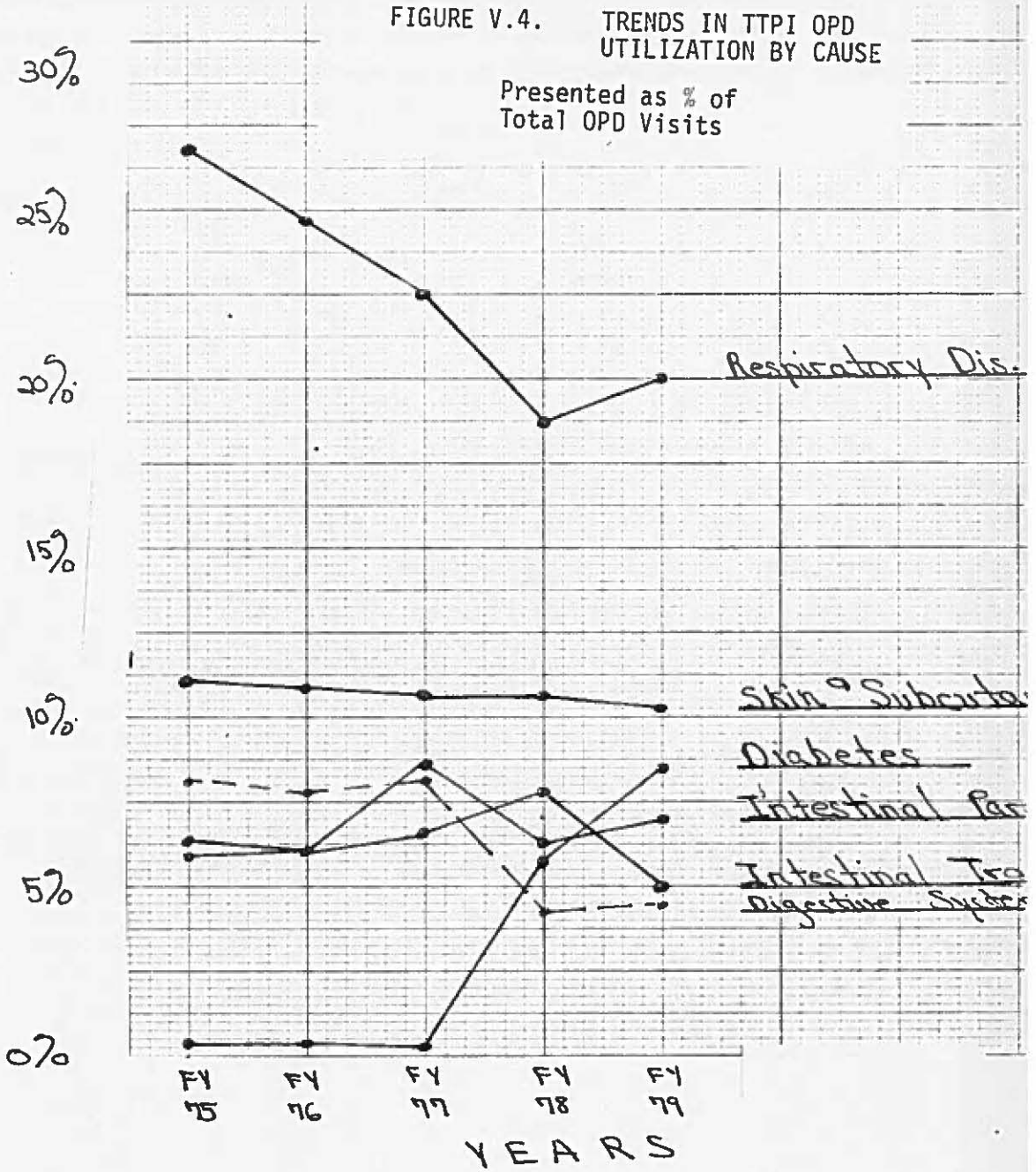


FIGURE V.4. TRENDS IN TTPI OPD UTILIZATION BY CAUSE



2. Inpatient Discharge Statistics:

Table V.9. presents data on TTPI hospital discharges by cause for the years 1975 through 1978. Obstetrical/gynecological conditions were the leading cause of discharge for each year. For the four year total, ob/gyn conditions were followed by:

--- Respiratory diseases
--- Infectious diseases of intestinal tract
--- Injuries
--- Digestive tract diseases
--- Senility and ill-defined symptoms

TABLE V.7.
TTPI Births By Birth Order
1967-78
(Includes Northern Marianas)

YEAR	First Borne Children		2nd, 3rd, 4th Borne Children		5th Borne Children of Later	
	#	% of Total Births - 1st	#	% of Total Births - 2nd,3rd,4th	#	# of Total Births - 5th or later
1978	721	23.3%	1,352	43.7%	1,023	33.0%
1977						
1976	832	24.5%	1,443	42.3%	1,127	33.0%
1975	875	20.7%	1,605	38.0%	1,537	36.4%
1974	907	24.0%	1,417	37.5%	1,452	38.4%
1973	914	23.5%	1,478	38.0%	1,492	38.4%
1972	894	23.3%	1,404	36.6%	1,530	39.9%
1971	747	20.7%	1379	38.2%	1,484	41.1%
1970						
1969	642	19.3%	1159	34.9%	1,519	45.7%
1968	558	16.6%	1,181	35.2%	1,620	48.2%
1967	540	16.4%	1,158	35.1%	1,602	48.5%

III. MORBIDITY (ILLNESS) INDICATORS:

There are no good methods available for estimating the amount or type of illness among the TTPI population. Case registries exist for certain types of chronic conditions, e.g. hypertension, tuberculosis, leprosy, and in some parts of the TTPI, diabetes. However, these registries indicate only the cases of illness which are identified by health services personnel. Certainly many people suffer from undiagnosed chronic conditions. Other types of acute illnesses which are considered highly communicable, and thereby a threat to general public health, are by law, required to be registered with the TTPI Bureau of Health Services. Again, these "Notifiable Disease" reports indicate only diagnosed cases and it is probably there are many cases undiagnosed. Health facility utilization (outpatient department, inpatient discharge, dispensary visits) data again record those illnesses which are treated in the health service facilities of the TTPI and omit significant morbidity which is either treated at home, through traditional medical practitioners, or left untreated. Nevertheless, for planning purposes, there is no choice but to rely on the utilization statistics, case registries, and notifiable disease reports as general indicators of morbidity trends and levels.

A. UTILIZATION STATISTICS:

1. Outpatient Department Utilization:

Table V.8. presents the available data on reported outpatient departmen visits by cause category for FY 75-79. This data is obtained from monthly reports submitted by each TTPI hospital to the TTPI Bureau of Health Services, Office of Medical Records and Vital Statistics.

TABLE V.8.
OUTPATIENT DEPARTMENT VISITS
BY CAUSE CATEGORY
TTPI HOSPITALS
FY 75-79

CAUSE GROUP	FY 79		FY 78		FY 77		FY 76		FY 75		TOTAL	
	#	% of Total OPD Visits	#	% of Total OPD Visits	#	% of Total OPD Visits	#	% of Total OPD Visits	#	% of Total OPD Visits	#	% of Total
Diseases of Respiratory System (N.E.C.)	32,470	20.0%	35,304	18.8%	26,850	22.5%	37,876	24.7%	35,931	26.8%	168,431	22.2%
Diseases of Skin & Subcutaneous Tissue	16,668	10.3%	19,996	10.7%	12,792	10.7%	16,731	10.9%	14,892	11.1%	81,079	10.7%
Diabetes Mellitus	13,935	8.6%	10,867	5.7%	280	0.2%	396	0.3%	426	0.3%	25,904	3.4%
Intestinal Parasitism	11,295	7.0%	11,644	6.2%	10,293	8.6%	9,243	6.0%	7,752	5.8%	50,227	6.6%
Infectious Diseases of Intestinal Tract	8,097	5.0%	14,473	7.7%	7,890	6.6%	6,336	4.1%	5,709	4.3%	42,505	5.6%
Diseases of Digestive System	7,112	4.4%	7,938	4.2%	9,924	8.3%	11,871	7.7%	10,858	8.1%	47,703	6.3%
Asthma & Other Allergies	6,837	4.2%	7,596	4.0%	3,639	3.0%	4,026	2.6%	3,250	2.4%	25,348	3.3%
Injuries	6,305	3.9%	9,572	5.1%	5,030	4.2%	6,112	4.0%	4,986	3.7%	32,005	4.2%
Diseases of Ear and Mastoid Process	6,293	3.9%	6,707	3.6%	3,902	3.3%	4,944	3.2%	4,452	3.3%	26,298	3.5%
Diseases of the Eye	4,806	3.0%	3,830	2.0%	3,126	2.6%	4,346	2.8%	3,714	2.8%	19,822	2.6%
Diseases of Circulatory System	3,524	2.2%	3,724	2.0%	719	0.6%	1,138	0.7%	1,003	0.7%	10,108	1.3%
Communicable Diseases N.E.C.	1,688	1.0%	3,868	2.1%	1,086	0.9%	2,143	1.4%	1,363	1.0%	10,148	-b-
Fungus Infections	1,667	1.0%	2,136	1.1%	2,452	2.1%	3,375	2.2%	1,748	1.3%	11,378	1.5%
Genital-urinary Diseases	2,908	1.8%	3,393	1.8%	2,280	1.9%	3,803	2.5%	2,916	2.2%	15,300	2.0%
Tuberculosis	872	0.5%	1,481	0.8%	506	0.4%	868	0.6%	797	0.6%	4,524	0.6%
Gonococcal cases & suspects	363	0.2%	320	0.2%	341	0.3%	307	0.2%	376	0.3%	1,707	0.2%
Leprosy cases & suspects	113	0.1%	92	-b-	28	-b-	58	-b-	23	-b-	314	-b-
Filariasis	60	-b-	170	0.1%	176	0.1%	184	0.1%	145	0.1%	735	-b-
Other Diseases & Conditions N.E.C.	37,071	22.9%	44,488	23.7%	28,172	23.6%	39,623	25.8%	33,851	25.2%	183,205	24.2%
TOTAL, ALL DISEASE & INJURY	162,124	100.0%	187,599	100.0%	119,486	100.0%	153,380	100.0%	134,192	100.0%	756,741	100%

Includes all TTPI hospitals; excludes Northern Marianas Islands for FY 76 and FY 75.
In 1976, the fiscal year was changed from July to June to September to October. Therefore data for July, August, and September, 1976 is excluded from the table.
'N.E.C' means not elsewhere classified.

For the five year period, disease of the respiratory system (excluding chronic conditions such as bronchitis, emphysema, and asthma) are the leading causes of OPD visits. These diseases are followed in rank order by:

--- Diseases of the skin and subcutaneous tissues (10.7%)
--- Intestinal parasites (6.6%)
--- Diseases of the digestive system (including gastroenteritis and diarrheal diseases) (6.3%)
--- Infectious diseases of intestinal tract (including dysentery, amebiasis and others) (5.6%)
--- Accidents and injuries (4.2%)
--- Diseases of the ear and mastoid process (3.5%)
--- Diabetes mellitus (3.4%)
--- Asthma and other allergies (3.2%)
--- Diseases of the eye (2.8%)
--- Genital-urinary diseases (2.0).

However, there is evidence of significant trends and changes within the five year period. Respiratory diseases, while still the leading cause of OPD visits, account for far fewer visits in FY 79 than was the cases in FY 75. Digestive system diseases, likewise, are decreasing. There is considerable variation in the proportion of visits attributable to intestinal parasites and intestinal tract diseases but both appear to be on the decline. Diabetes has increased substantially between FY 77 and FY 79. Diabetes is a chronic condition which takes years to develop, so it is unlikely the figures presented represent an increase in incidence of the disease; more likely the figures reflect improved case management.

Other than the diseases mentioned above, all others have remained relatively stable in proportion to total OPD visits across the time span. The possible trends cited above, are graphed in Figure V.4.

INPATIENT DISCHARGES BY CAUSE
TTPI, 1974-78

CAUSE CATEGORY	1978		1977		1976		1975		Total	
	#	% of Total Discharges	#	% of Total Discharges	#	% of Total Discharges	#	% of Total Discharges	#	% of Total Discharges
TOTAL, ALL CAUSES	10,880	100.0%	11,689	100.0%	12,514	100.0%	12,458	100.0%	47,541	100.0%
OB/GYN Conditions	2,906	26.7%	3,225	27.6%	3,486	27.9%	3,300	26.5%	12,917	27.2%
Normal Deliveries	(2,010)	(18.5%)	(2,212)	(18.9%)	(2,438)	(19.5%)	(2,214)	(17.8%)	(8,874)	(18.7%)
Complications	(682)	(7.8%)	(764)	(6.5%)	(814)	(8.3%)	(808)	(8.1%)	(3,068)	(6.4%)
Respiratory Disease	1,770	16.3%	1,982	17.0%	2,084	16.7%	2,119	17.0%	7,955	16.7%
Acute	(900)	(8.3)	(1,060)	(9.1%)	(1,260)	(10.1%)	(1,184)	(9.5%)	(4,404)	(9.3%)
Chronic	(870)	(8.0)	(859)	(7.3%)	(754)	(6.0%)	(849)	(6.8%)	(3,332)	(7.0%)
Infectious Disease of Intestinal Tract	1,484	13.6%	1,551	13.3%	1,374	11.0%	1,084	8.7%	5,493	11.6%
Injuries, All	736	8.4%	776	6.6%	1,077	10.9%	997	10.0%	3,586	7.5%
Disease of Skin & Subcutaneous Tissue	377	3.5%	386	3.3%	399	3.2%	437	4.3%	1,599	3.4%
Disease of Circulatory System	361	3.3%	329	2.8%	320	2.6%	331	2.7%	1,341	2.8%
Hypertensive	(108)	(1.0%)	(94)	(1.0%)	(88)	(0.9%)	(78)	(0.8%)	(368)	(0.8%)
Cerebrovascular	(40)	(0.4%)	(40)	(0.4%)	(49)	(0.5%)	(57)	(0.6%)	(186)	(0.4%)
Neoplasms, All	201	1.8%	178	1.5%	186	1.5%	195	1.6%	760	1.6%
Malignant	(90)	(0.8%)	(70)	(0.6%)	(79)	(0.6)	(100)	(0.8%)	(339)	(0.7%)
Musculoskeletal Arthritis & Rheumatism	175	1.6%	337	2.9%	262	2.1%	277	2.2%	1,051	2.2%
	(119)	(1.1%)	(188)	(1.6%)	(158)	(1.6%)	(158)	(1.6%)	(623)	(1.3%)
Immunizeable Disease	156	1.4%	119	1.0%	32	0.3%	99	0.8%	406	0.8%
Communicable Dis. N.E.C.	107	1.0%	211	1.8%	168	1.3%	226	1.8%	712	1.5%
Tuberculosis	(71)	(0.6%)	(103)	(1.1%)	(121)	(1.2%)	(141)	(1.4%)	(436)	(0.9%)
Leprosy	(11)	(-b-)	(8)	(0.1%)	(12)	(0.1%)	(25)	(0.2%)	(56)	(-b-)
Senility & Ill-defined	503	4.6%	471	5.1%	434	4.4%	591	5.9%	1,999	4.2%
Digestive Tract Dis	579	5.3%	608	5.2%	558	4.5%	677	5.4%	2,422	5.1%
Diabetes	74	0.7%	77	0.7%	126	1.3%	113	1.1%	390	0.8%
Nutritional Dis.	42	0.4%	33	0.4%	40	0.4%	53	0.5%	168	0.3%
Intestinal Parasitism	111	1.0%	187	1.6%	320	2.6%	240	1.9%	858	1.8%

N.E.C. means not elsewhere classified.
-b- means percentage is less than 0.1%.
Source: United Nations Reports for the TTPI Bureau of Health Services
Prepared by the Office of Medical Records & Vital Statistics.

--- Skin and subcutaneous tissue diseases
--- Circulatory system diseases
--- Musculoskeletal diseases
--- Intestinal parasitism
--- Neoplasms (all types)
--- Communicable diseases (N.E.C.)
--- Immunizable diseases
--- Diabetes
--- Nutritional Deficiencies

The proportion of total hospital discharges due to infectious diseases of the intestinal tract and due to immunizable diseases appears to be increasing very slowly. The proportion of discharges attritutable to all other disease categories appears to show either stability or random fluctuation.

It should be noted that 23.2% of all hospital discharges over the four year span are almost wholly preventable. These include complications of delivery, infectious diseases of the intestinal tract, immunizable diseases, communicable diseases, diabetes, nutritional deficiencies, and intestinal parasitism. An additional 18.6% of the hospital discharges are partially preventable. These partially preventable discharges include acute respiratory diseases, skin and subcutaneous tissue diseases, hypertensive conditions, and digestive tract diseases.

3. Dispensary Utilization Statistics:

No data regarding dispensary utilization by cause is collected at the Headquarters level. What data is available on causes of dispensary visits, can be found in the six District Health Plans. In general, the leading cause of visits to dispensaries was found to be gastro-intestinal conditions followed by respiratory diseases, general symptoms, injuries, MCH services, and miscellaneous others. This data was collected by tabulation of daily dispensary worksheets

from a random sample of dispensaries from each district/state (except Truk).

B. NOTIFIABLE DISEASE REPORTS:

Table V.10. presents the number of cases of selected notifiable diseases occurring in the TTPI, 1974-78. (Note, this table does not include all diseases which are "notifiable" under TTPI law; it includes only those with significant numbers of cases or of special interest to health planning.)

TABLE V.10
REPORTED CASES NOTIFIABLE DISEASE
TTPI, 1974-78

Disease	# of Cases Reported					
	1979	1978	1977	1976	1975	1974
CATEGORY "B"						
Dysentary, Amoebic	955	2,238	4,987	3,172	2,792	2,768
Dysentary, Bacillary	29	244	103	32	11	-0-
Measles	10	649	8	1	-0-	5
Meningitis, Meningococcal	2	2	1	1	1	2
Meningitis, Other	15	22	40	35	11	11
Pertussis	126	-0-	-0-	5	58	150
Poliomyelitis	-0-	-0-	-0-	-0-	-0-	-0-
CATEGORY "C"						
Gonorrhea	427	469	442	413	532	629
Infective Hepatitis	43	121	162	39	69	239
Influenza	11,723	8,818	13,278	17,439	16,539	13,661
Leprosy	10	9	9	27	14	14
Syphilis	1	-0-	5	26	-0-	1
Tetanus (neonatal)	1	-0-	-0-	-0-	-0-	-0-
Tuberculosis (all)	42	52	49	52	82	122
CATEGORY "D"						
Chickenpox	260	405	394	784	858	482
Dysesentary, Unspecified	6	251	-0-	-0-	177	23
Filariasis	40	144	193	149	177	114
Fish Poisoning	163	287	324	340	221	281
German Measles	2	3	684	13	5	39
Mumps	32	29	19	170	192	2,173
Strep Throat & Scarlet Fever	188	272	184	322	647	257

The incidence of immunizable diseases (measles, pertussis, german measles, and mumps) indicates the TTPI remains vulnerable to epidemics of these diseases despite an improved immunization status. (See pages 163-164 in which TTPI immunization status is discussed).

Amoebic dysentery cases dropped by more than 50% between 1978 and 1979. This can be attributed to improved training of laboratory technicians; studies by the U.S. Communicable Disease Control Branch of the Public Health Service indicate much of the amoebic dysentery previously reported was incorrectly diagnosed and probably dysentery. Still the 1979 incidence of amoebic dysentery was 8 cases/ 1,000 population.

The major venereal disease in the TTPI is gonorrhea. There were an average of 4.5 cases of gonorrhea /1,000 population reported in 1974-79. This compares to an incidence rate of 1.5 cases / 1,000 population for American Samoa (1972-76) and an incidence of 4.2 cases/1,000 population for the United States (1970-74). The incidence of gonorrhea can be expected to increase as more persons enter the 15-30 year age category. Syphilis is not, at present a major public health concern in the TTPI; however, the TTPI must maintain constant surveillance for prompt identificat of any possible cases; certainly the potential for syphilis exists in the TTPI.

Tuberculosis remains a serious public health problem in the TTPI despite the relatively small numbers of cases in recent years. Improved drugs available for treatment of tuberculosis coupled with public health surveill activities have decreased the incidence of the disease but the incidence can only remain low through vigorous public health control measures.

Tuberculosis rates in the TTPI have decreased from 1.2 cases/1,000 population in 1974 to 0.36 cases/1,000 population in 1979. These figures can be compared to those for American Samoa (0.4 cases /1,000 population in 1975-76) and those for the United States (0.15cases /1,000 population).

There have been only 83 new cases of leprosy reported in the TTPI for 1974-79. The average incidence rate of leprosy is 12.7 cases per 100,000 population (1974-79). This compared to 63.2 cases per 100,000 population (1972-76) in American Samoa.

The incidence rate of filariasis has ranged from a high of 1.8 cases per 1,000 population in 1977 to a low of 0.3 cases per 1,000 population in 1979. In comparison, American Samoa had an incidence of filariasis of 1.6 cases per 1,000 population in 1972; by 1976 filariasis had been almost completely eliminated from the area.

Infective Hepatitis is another public health concern in the TTPI. The average incidence of this disease over the six-year period was 1.1 cases per 1,000 population. This rate is nearly identical to the American Samoa rate for 1972-76 of 1.01 cases per 1,000 population.

C. CHRONIC DISEASES:

Most districts/states maintain case registries for such diseases as tuberculosis, leprosy, filariasis, and venereal disease. All of these conditions have already been mentioned under Notifiable Diseases.

In addition, some districts/states maintain case registries on diabetic and hypertensive patients.

1. Diabetes:

Data is not available at the Headquarters level from the case registries maintained on diabetic patients. What is available which will approximate the numbers of persons in each district/state with diagnosed diabetes, is the number of 1st visits to the outpatient departments for diabetes. It would be expected that most diabetic patients would visit the hospital OPD at least once in a year for medical consultation regarding their disease. The way medical records are maintained in the districts/states, each of these persons would be recorded as having only one first visit in a year for diabetes.

The number of 1st visits to the OPD clinics for diabetes are listed below:

FY 1979---------- 394 1st visits
FY 1978---------- 259 1st visits

Based on the assumption that first visits to OPD clinics for diabetes approximates the number of persons known to suffer from the disease, the TTPI has a prevalence rate of 3.4 diabetes/1,000 population.

2. Hypertension:

During FY 1978, a hypertension screening and treatment program was initiated in Ponape, Truk, and Palau with the support of Federal grant monies. During FY 79 the program expanded to Yap and it is hoped for further expansion into the Marshalls and Kosrae during FY 80.

The only data available from this program is for Ponape, Truk, and Palau through May of 1979. This information is presented in Table V.11.

TABLE V.11
HYPERTENSION IN MICRONESIA
FY 78 - May, 1979

	Ponape		Truk		Palau	
	Male	Female	Male	Female	Male	Femal
Normal Tension	1,065	1,068	552	987	1,003	1,31
Hypertension	85	45	126	182	208	22
Total	1,150	1,113	678	1,169	1,211	1,53
Percent Hypertensive	7.4%	4.0%	18.6%	15.6%	17.2%	14

Note: Criteria for determination of hypertension was blood pressure reading of 160/95 or above.

Figures V.5 and V.6 graphically present the percentage of male (V.5) and female (V.6) Micronesians who have been determined to be hypertensive according to age category.

The data gathered through the program is difficult to interpret. Preliminary reports suggest there is a correlation between westernizatio (measured by type of work, place of residence, local food consumption, e and the prevalence of hypertension. Should full analysis of the data confirm these preliminary correlations, then it should be expected that

FIGURE V.5. PERCENT MICRONESIAN MALES WITH HYPERTENSION—

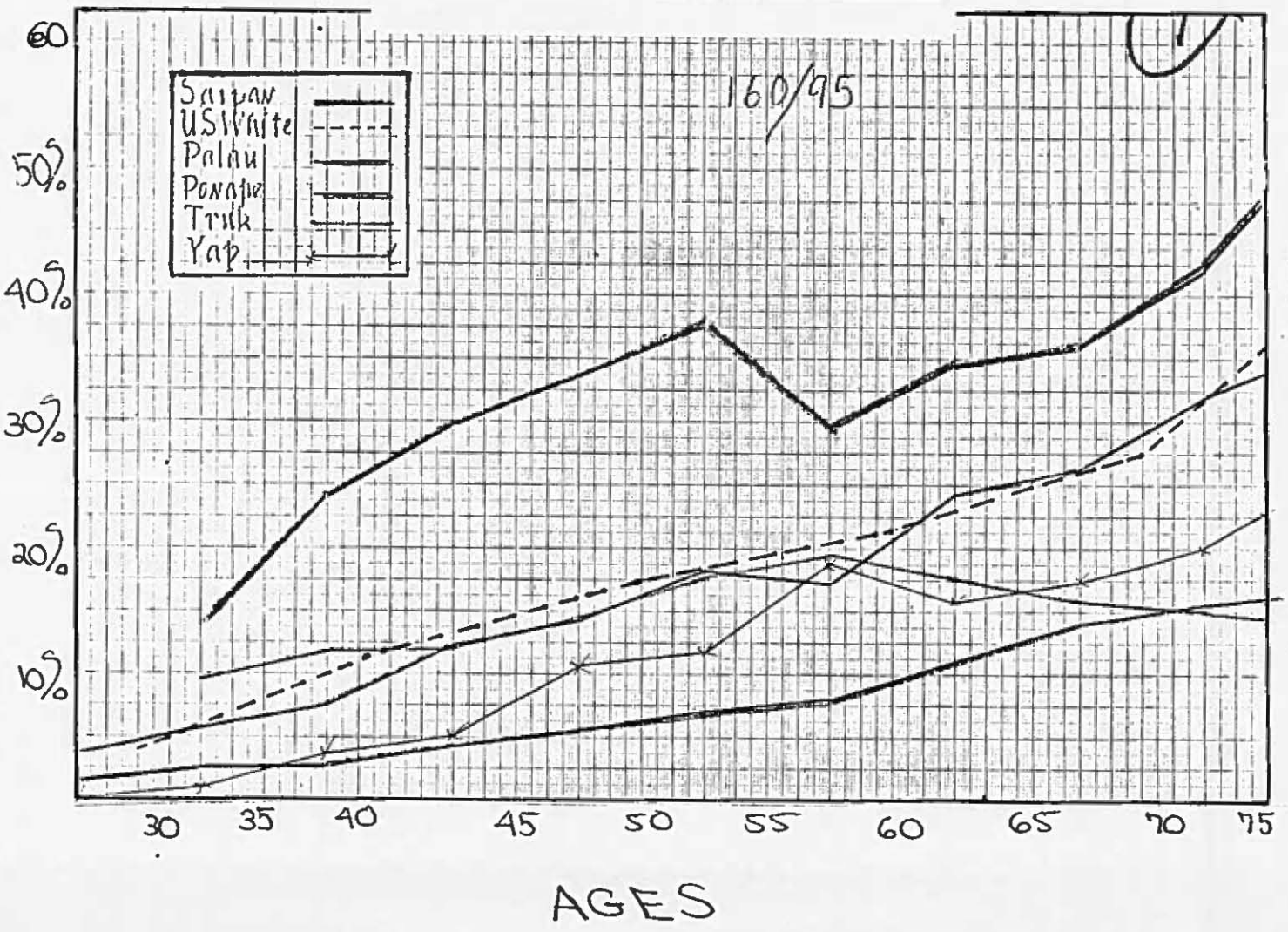
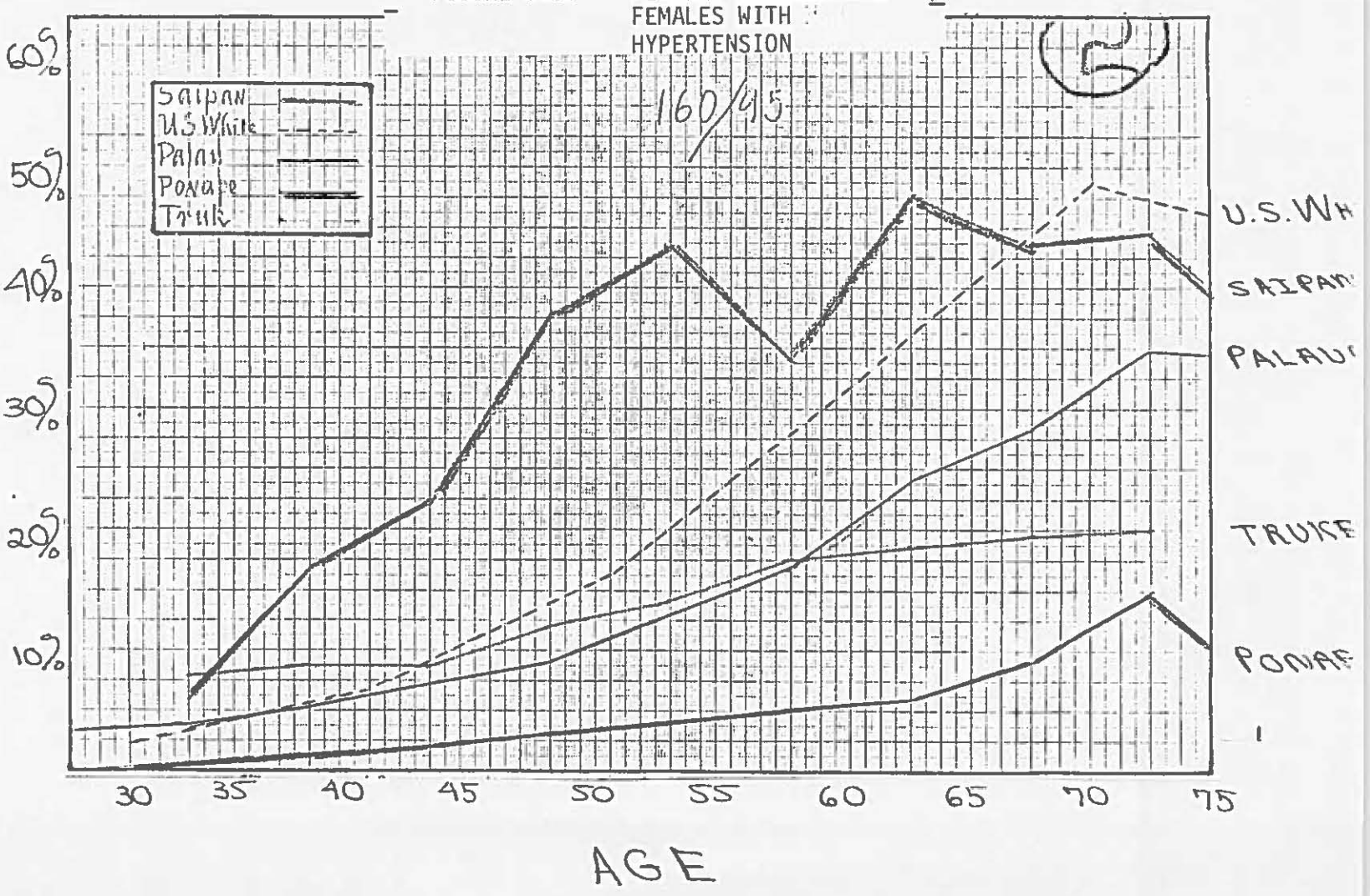


FIGURE V.6. PERCENT MICRONESIAN FEMALES WITH HYPERTENSION



the prevalence of hypertension in Micronesia will increase significantly in coming years.

IV. IMMUNIZATION STATUS:

In 1978, an immunization task force was formed at the TTPI Headquarters under the supervision of the Communicable Disease Control Branch. The purpose of this task force was to develop and implement a Territorial wide mass immunization campaign which would raise the immunization level to 90% in all districts/states. Following implementation of the immunization campaign, the task force audited the medical records (TTPI Form 844 - the basic public health medical record form used in all districts/states) of all two-year old children, all six year-old children and all children enrolled in the 8th grades of school. The results of these immunization audits are summarized in Table V.12.

TABLE V.12.a
RESULTS OF 2-YEAR OLD IMMUNIZATION SURVEY, 1979

August - 1979

Birth Group: August 1, 1976 - July 31, 1977

AREA	HAVE 844's	COMPLETE IMMUNIZATIONS		SERIES COMPLETE					
				DTP		POLIO		MMR	
		#	%	#	%	#	%	#	%
PALAU	343	314	92	332	97	330	96	323	94
YAP	305	207	68	228	75	227	74	240	79
CNMI	445	393	88	405	91	407	92	421	95
KOSRAE	141	141	100	141	100	141	100	141	100
TRUK	1,245	497	40	741	60	542	44	974	78
PONAPE	846	455	54	549	65	538	64	594	70
MARSHALLS	1,291	1,046	81	1,075	83	1,071	83	1,170	91

As shown by the tables, 66% of all TTPI 2-year old children (1979) are estimated to have completed all of their immunizations. This figure varies from state to state with a high of 100% having completed immunization in Kosrae to a low of 40% having completed immunizations in Truk.

The survey shows, 80% of all TTPI 6-year old children (1979) are estimated to have completed their immunizations. This ranges from a high of 98% completed in Kosrae to a low of 67% completed in Truk.

The survey further shows that 69% of all TTPI eight grade students (1979) have completed their immunizations. This ranges from a high of 98% completed in Yap to a low of 29% completed in Truk.

V. HANDICAPPING CONDITIONS:

A complete health status inventory would include information regarding the incidence and prevalence of major handicapping conditions which affect both mental and physical capabilities. Because the priorities of the TTPI are directed toward other health care problems, this inventory of handicapping conditions has never been compiled. Each District/State Health Planner, as they revise their local health plans, will attempt to incorporate baseline data on these conditions in their health status chapters.

VI. OTHER HEALTH STATUS INDICATORS:

Data relating to indicators of mental and dental health status will be presented in the Mental Health Service section and the Dental Health Service section of this Territorial Health Plan. (See Chapter 6).

TABLE V.12.b
RESULTS OF 6-YEAR OLD IMMUNIZATION SURVEY, 1979

August - 1979

Birth Group: August 1, 1972 - July 31, 1973

AREA	HAVE 844's	COMPLETE IMMUNIZATIONS		SERIES COMPLETE					
				DTP/TD		POLIO		MMR/MR	
		#	%	#	%	#	%	#	%
PALAU	362	352	97	355	98	352	97	358	99
YAP	220	217	99	219	100	219	100	217	99
CNMI	440	398	91	412	94	411	93	409	93
KOSRAE	144	141	98	143	99	143	99	141	98
TRUK	1,147	768	67	866	76	821	72	991	86
PONAPE	759	555	73	614	81	621	82	614	81
MARSHALLS	1,149	952	83	983	86	1,000	87	1,065	93
GRAND TOTAL	4,221	3,383	80	3,592	85	3,567	85	3,795	90

TABLE V.12.c.
RESULTS OF IMMUNIZATION SURVEY OF TTPI 8th GRADE STUDENTS, 1979

August - 1979

Birth Group: (School Year 1978-1979) 8th Graders

AREA	HAVE 844's	COMPLETE IMMUNIZATIONS		SERIES COMPLETE					
				DTP/TD		POLIO		MMR/MR	
		#	%	#	%	#	%	#	%
PALAU	368	352	97	355	98	352	97	358	99
YAP	169	165	98	167	99	166	98	167	99
CNMI	450	333	74	376	84	373	83	377	84
KOSRAE	126	111	88	123	98	120	95	112	89
TRUK	919	266	29	490	53	334	36	494	54
PONAPE	310	237	77	261	84	262	85	261	84
MARSHALLS	601	568	95	561	93	593	99	555	92
GRAND TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VI. SUMMARY OF MAJOR TTPI HEALTH STATUS PROBLEMS:

A. Birth Rate:

1. Birth rate is high compared to many developed nations.

2. Given the present birth rate, the population of the TTPI will double before the year 2000.

B. Death Rate:

1. The TTPI has high death rates for infants and children compared to most other Pacific nations.

2. Malignant neoplasms and heart disease are the leading causes of death in the TTPI; they account for 9.6% and 9.0% of all TTPI deaths respectively. These are conditions primarily of the elderly and can be expected to increase as the TTPI population ages.

   The leading causes of death by cancer are: lung, liver, stomach, cervical cancers and the leukemias.

3. Diarrheal diseases are major killers of children and infants. Althou the death rates from these diseases are decreasing, they are far from eradicated.

4. Respiratory diseases account for 13% of all deaths in the TTPI. However, the death rates due to both chronic (emphysema, asthma, bronchitis, etc) and acute (pneumonia, influenza, etc) are decreasing

5. Prematurity is the number one killer of infants in the TTPI. 29.4% of all infant deaths are attritutable to prematurity.

   However, the incidence of premature births appears to be increasing although the deaths from premature births appear to be decreasing. These trends should be carefully monitored in future years.

6. Deaths from cerebrovascular diseases (another category of diseases of aging) account for 4.2% of all TTPI deaths although the incidence appears to be decreasing.

7. Accidents and suicides are significant causes of death because they primarily affect the young adult male population. Incidence of death due to these conditions is decreasing.

8. Incidence of death due to nutritional deficiencies is increasing. Incidence of death due to diabetes is decreasing.

9. 19.3% of all TTPI deaths are wholly preventable and most of these preventable deaths are in the infant and child age categories. An additional 16% of all TTPI deaths are partially preventable.

C. PREGNANCY STATUS:

1. An unacceptable number of TTPI pregnancies can be classified as high risk.

2. 8.4% to 12% of all TTPI births are premature (less than 2500 grams birth weight).

3. 33% of all births are 5th or later in birth order. However, this proportion has dropped dramatically in the last ten years.

4. TTPI women begin prenatal care late in pregnancy (82% begin after their first trimester). Only 25% of TTPI women giving birth seek postnatal services.

D. MORBIDITY (ILLNESS):

1. 34% of all OPD visits are for conditions which are partially or completely preventable. These conditions include skin diseases (10.8%) intestinal parasites (6.9%); digestive system diseases (6.7%); and accidents and injuries (3.9%). In addition, many medical practitio think that a significant proportion of the respiratory conditions treated could be handled at home or at the dispensaries.

2. 23.3% of all inpatient discharges are for preventable conditions includ complications of delivery, infectious diseases of the intestinal tract, immunizable diseases, communicable diseases, diabetes, nutritio deficiencies, and intestinal parasitism. An additional 18.6% of hospital discharges are partially preventable; these conditions include acute respiratory diseases, skin diseases, hypertensive conditions, and digestive tract diseases.

3. The TTPI has a high incidence of amoebic dysentery as well as other types of dysentery.

4. The incidence rate of gonorrhea in the TTPI population is high.

5. Although the rate of syphilis is very low, the potential exists for the introduction and the spread of the disease throughout the TTPI.

6. The incidence rate of tuberculosis is decreasing but remains higher than that of the United States.

7. The incidence rate of leprosy is low but must be continuously monitored in order to insure there is no increase in incidence.

8. Filariasis remains a public health problem in some areas of the TTPI.

9. The incidence and prevalence of diabetes is thought to be high in the TTPI although there is no good case-finding and recording mechanism in operation.

10. The prevalence of hypertension in the populations surveyed to date is high when compared to the United States.

11. The immunization status of the TTPI has improved but still needs

GOALS, OBJECTIVES AND STRATEGIES FOR IMPROVING TTPI HEALTH STATUS:

GOAL 5.1: ALL RESIDENTS OF THE TTPI SHOULD HAVE THE OPPORTUNITY TO LIVE HEALTHFUL LIVES FREE OF PREVENTABLE DISEASE AND DEATH.

Objective 5.1.1: To reduce the TTPI infant mortality rate to no more than 16 deaths per 1,000 live births by 1986.

Indicators:

* Average TTPI infant mortality rate (1970-1978) is 29.2 deaths per 1,000 live births.
* 16% of TTPI infant deaths (1972-78) were caused by diarrheal and intestinal diseases.
* 29% of TTPI infant deaths (1972-78) were caused by prematurity.
* 1.6% of TTPI infant deaths (1972-78) were caused by nutritional deficiencies.
* 11% of TTPI infant deaths (1972-78) were caused by pneumonia and influenza.
* 57.6% of all TTPI infant deaths (1972-78) were caused by conditions which are partially or completely preventable.

Strategies:

To decrease the incidence of infant death due to diarrheal disease, prematurity, nutritional deficiencies, and influenza/pneumonia.

Subobjective 5.1.1.(a): To eliminate diarrheal and intestinal diseases as a significant cause of infant death in the TTPI by 1986.

Indicators:

* Diarrheal and intestinal diseases accounted for 16% of all infant deaths in the TTPI for the years 1972-78.

* Elimination of diarrheal and intestinal diseases alone would reduce the TTPI infant death rate from 29.2 deaths per 1,000 live births to 24.5 deaths per 1,000 live births.

* In addition to being a major killer of infants in the TTPI, diarrheal and intestinal diseases account for 7.9% of total deaths in the TTPI.

* Diarrheal and intestinal diseases account for significant mortality among TTPI children in the 2-5 year age category.

* Diarrheal and intestinal diseases account for approximately 12% of all TTPI OPD visits and approximately 14% of all TTPI inpatient discharges.

Subobjective 5.1.1.(b): To reduce the rate of infant death due to prematurit by at least 50% by 1986. (To reduce the death rate by prematurity from approximately 8.6 deaths per 1,000 live births to 4.3 deaths per 1,000 live births).

Indicators:

* 8-12% of all TTPI infants are born premature (less than 2500 grams birthweight)

* 50% of all TTPI infants can be considered "high-risk by virture of the condition of the infant at birth; the condition of the mother during pregnancy; or both.

* Many of the conditions which render an infant "high risk" in general, also make the infant high risk for premature birth.

Subobjective 5.1.1.(c): To eliminate nutritional deficiencies as a cause of infant death by 1984.

Indicators

* Nutritional deficiencies accounted for 1.6% of the infant deaths in the TTPI, 1972-78.
* Nutritional deficiencies accounted for 1.7% of total deaths in the TTPI during 1972-78.
* Incidences of death due to nutritional deficiency appear to be increasing.
* It is known that nutritional deficiencies seldom lead to death directly; nutritional deficiencies are generally underlying causes of death due to other conditions including gastroenteritis, dysentery, pneumonia, and other acute conditions.
* Physicians in the TTPI generally agree that improper nutrition as a disease or a contributing factor in disease is an increasing problem.

Subobjective 5.1.1.(d): To reduce infant deaths due to influenza and pneumonia from an average of 3.3 deaths per 1,000 live births to an average of 2.0 deaths per 1,000 live births.

Indicators:

* Pneumonia and influenza accounted for 11% of all TTPI infant deaths, (1972-78).
* Pneumonia and influenza accounted for 8.0% of all deaths reported in the TTPI (1972-78).
* Pneumonia and influenza account for a large proportion of OPD visits in the TTPI
* Pneumonia and influenza account for almost 9% of all inpatient discharges in the TTPI.

Strategies (for implementation of Objective 5.1.1.(a-d):

1. To implement objectives for Environmental Health Services relating to provision of clean water and safe sewage disposal systems for all residents of the TTPI.
2. To implement objective for Health Education.
3. To implement objectives for Public Health regarding prenatal, postnatal, and well child services.
4. To implement objectives relating to nutrition services.
5. To implement the oral rehydration program developed by the Headquarters Communicable Disease Control Division of the Bureau of Health Services in conjunction with WHO consultants (proposal developed in 1979 but not implemented as of March, 1980).
6. To promote breast feeding over bottle feeding, particularly in areas where water quality is poor or variable.

Objective 5.1.2: To reduce the mortality rate of children (0-14 years of age) from 3.0 deaths per 1,000 population to no more than 1.6 deaths per 1,000 population by 1986.

Indicators:

* The TTPI age specific death rate for children 0-14 years of age (1976-78) was 3.0 deaths per 1,000 children.
* This rate is high compared to rates from many other Pacific nations.
* The infant population (children under 1 year of age) comprises approximately 6% of the total TTPI population of children.
* The infant deaths account for almost 58% of all TTPI deaths of children under the age of 14.
* Reduction of the infant mortality rate to 16 deaths per 1,000 live births will reduce the child death rate to approximately 1.26 deaths per 1,000 children. The lowest child death rate in the Pacific (about 1975) is 1.6 deaths per 1,000 children (New Zealand and Australia).
* It is known that infants who are classified as "high-risk" at birth, have a greater incidence of illness and death throughout their childhood years than the average child in the population.

Strategies:

1. Achieve the objectives developed for reduction of infant mortality from 29.2 deaths per 1,000 live births to 16 deaths per 1,000 live births.

Subobjective 5.1.2.(a): To reduce the proportion of TTPI infants who are classified as high-risk at birth from approximately 50% of all infants to no more than 40% by 1986.

Indicators:

* The TTPI Bureau of Health Services, Division of Maternal and Child Health Services estimates 50% or more of the infants born in the TTPI can be classified as "high-risk".
* 8-12% of infants born can be classified as high-risk because they are born prematurely (birthweight less than 2500 grams).
* 14% of all infants born in the TTPI can be classified as high risk because they are born to women of less than 20 years of age.
* 10.7% of all infants born in the TTPI can be classifi as high risk because they are born to women of more than 35 years of age.
* 33% of all infants born in the TTPI can be classified as high risk because they are the 5th born or later to their mother.
* 82% of infants can be classified as high risk because their mother began prenatal care after the end of the first trimester of pregnancy.
* Many infant risk factors cannot be evaluated at the Territorial level because hand manipulation of all TTPI birth certificates is not practical.

Strategies:

1. For District/State Health Planners in the revision of each of the local health plans to study the infant risk factors operating in their district/stat in order to develop specific strategies for reduction of risk.
2. To implement objective under Health Education, Nutrition, and Public Health Services in order to reduce the risk factors.
3. To develop a risk management approach in Public Health services so that those pregnant women and infants at particular risk are identified early and given special attention in order to minimize their chances of illness and early deat
4. To develop efficient family planning programs which enable women to space their children in order to maximize their own health and their ability to properly care for each child.
5. To develop effective health education and family planning education in the TTPI school system in order to reduce the numbers of infants born to teenage

Objective 5.1.3. To maintain the TTPI average death rate from cancer, heart disease, and cerebrovascular disease at or below the average rates for 1972-78 (1.1 deaths per 1,000 population).

Indicators:

* Cancer, heart disease, and cerebrovascular disease are primarily diseases which strike an aging population. While at the present, the TTPI has a very young population and therefore has a low death rate for these conditions, it can be expected that the death rate will tend to increase as the population ages.

* Cigarette smoking has been implicated as a causal factor in development of all three types of disease. There is no data available to indicate the prevalence of smoking in the TTPI population but observation would indicate it is high.

* Untreated diabetes and hypertension are causal factors in development of heart and cerebrovascular disease. There are indications that many TTPI citizens suffer from both conditions without adequate treatment.

* All three conditions can be treated and/or managed if they are identified early. However, very few TTPI citizens seek regular physical examinations which would assist in early detection of these and other conditions.

* All of the above indicators imply the TTPI may experience great increases in death due to these conditions without adoption of specific strategies to maintain the present low rates.

Strategies:

1. To assess the prevalence of smoking among TTPI residents for use as a baseline evaluation of anti-smoking educational efforts.

2. To develop health education programs aimed at discouraging cigarette smoking among both school students and the general population. The education program should incorporate the effects of smoking on unborn children by pregnant mothe

3. To study the feasibility of banning smoking inside specified public buildings including schools.

4. To continue cervical cancer screening programs with appropriate followup for women identified with adnormal smears (see goals/objectives for Public Health)

5. To maintain screening and followup of TTPI citizens at risk for hypertension. (See goals and objectives for Public Health).

6. To develop a diabetes screening program to identify TTPI citizens with the disease and to implement appropriate treatment. (See Public Health goals and objectives).

7. To educate the TTPI population on the importance of periodic physical checkups

Objective 5.1-4: To decrease the incidence of death and morbidity (illness) due to chronic respiratory diseases (emphysema, bronchitis, and asthma) by 20% by 1976.

Indicators:

* Chronic respiratory diseases accounted for 5% of all TTPI deaths, 1972-78. This equalled a death rate of 0.25 deaths per 1,000 population.

* Chronic respiratory diseases accounted for 7.0% of all TTPI hospital discharges, 1975-78.

* Asthma alone accounted for over 3% of all TTPI outpatient department visits.

Strategies:

1. Same as strategies #1, #2, #3, and #7 of objective 5.1.3.

2. To study the feasibility of training respiratory therapy technicians in the TTPI. Compare the potential benefits and costs of respiratory therapy technicians to the potential benefits and costs in upgrading existing physicians and nurses in respiratory diseases through continuing education.

GOAL 5.2: TO PREVENT THE OCCURRENCE AND THE SPREAD OF COMMUNICABLE DISEASES IN THE TTPI.

Objective 5.2.1: To achieve and maintain a 90% immunization level among all TTPI children under the age of 18 by 1982.

Indicators:

* The 1979 immunization levels averaged, across the TTPI, 66% for two-year-olds; 80% for six-year-olds; and 69% for all eighth grade students.

* There was considerable variation in immunization levels noted from state to state. Kosrae and Palau had achieved an immunization level above 90% for all three age categories. Yap had achieved a level above 90% for all categories except the two-year-olds. Truk and Ponape consistently had the lowest immunization levels in all three categories.

* Data from 1974 through 1979 indicates the TTPI is still vulnerable to periodic epidemics of "child-hood" communicable diseases.

Strategies:

1. Each TTPI political entity will pass a school entrance immunization law which prohibits any child from attending school until he/she has completed all required immunizations.

2. Continue health education efforts to alert parents to the importance of immunizations.

3. Implement goals and objectives under Public Health regarding the immunization program. These goals and objectives include routine auditing of all clinical records to identify children who have not completed their immunizations; increasing well-baby clinic attendance; increasing home visits to followup on children who are delinquent with their immunizations; increase public health field trips to outer islands; increase the involvement of dispensary personnel in public health programs; etc.

Objective 5.2.2: To reduce the incidence of gonorrhea in the TTPI by 1985.

Indicators:

* The 1974-79 average incidence of reported gonorrhea in the TTPI was 4.5 cases per 1,000 population. This rate is higher than that for American Samoa (1.5 cases per 1,000 population) and for the United States (4.2 cases per 1,000 population).

* As more persons enter the 15-30 age category, it can be expected the incidence of gonorrhea will increase unless strengthened preventive measures are instituted.

* In general, only Palau and the Marshalls report significant incidence of gonorrhea. The extent of the gonorrhea problem cannot be determined in these or other districts/states without extensive case-finding and screening efforts.

Strategies:

1. Each district/state will assess their gonorrhea surveillance and casefinding methods to determine if their reported cases of the disease approximate the true incidence among the population.

2. Based on each district/state's assessment of the gonorrhea problem, local objective levels will be set for reduction of the incidence of the disease.

3. venereal disease education programs will be strengthen in the schools and to the general public.

4. Goals and objectives found in the Public Health section of this Plan relating to venereal disease screening, treatment, and contact followup will be implemented.

Objective 5.2.3: Incidence of syphilis will remain below 1977 incidence levels.

Indicators:

* In 1976, the incidence of syphilis was 24 cases per 100,000 population. This rate declined in 1977 to 4.5 cases per 100,000 population. There were no cases reported in 1978 and only one case reported in 1979.

* The potential for introduction and spread of syphilis in the TTPI exists. For the rates to remain at the present low levels extensive surveillance must be maintained.

Strategies:

Same as for Objective 5.2.2.

Objective 5.2.4: By 1986, the tuberculosis incidence rate in the TTPI shall not exceed 0.20 cases per 1,000 population.

Indicators:

* The 1979 tuberculosis incidence rate for the TTPI was 0.36 cases per 1,000 population.
* The tuberculosis incidence rate in the TTPI has been decreasing steadily since before 1974.
* The tuberculosis incidence rate is still higher than for the United States and for American Samoa.
* Reduction of tuberculosis incidence from 0.36 cases per 1,000 population to 0.20 cases per 1,000 population would mean that the TTPI would have no more than 28 cases of tuberculosis in 1986.

Strategies:

1. Implement goals and objectives for Public Health Services, Communicable Disease Control regarding tuberculosis screening and followup activities.
2. To consider the feasibility of implementing regular tuberculosis screening activities for high-risk populations in districts/states where tuberculosis remains a significant public health problem.
3. To conduct periodic inservice training for all health care providers in recognition of symptoms of tuberculosis.
4. To perform bacteriological examination of all patients with symptoms of tuberculosis.
5. To examine all chest x-rays taken, for whatever reason, for indications of possible tuberculosis lesions and refer patients with evidence of tuberculoid lesions for appropriate bacteriological examination.

Objective 5.2.5.: To reduce the incidence of new leprosy cases to zero by 1990 and maintain.

Indicators:

* The incidence of new cases of leprosy reported in the TTPI has been decreasing in recent years.

* On the average, the incidence rate of new cases of leprosy in the TTPI (1974-79), is 12.7 cases per 100,000 population.

* Leprosy is spread mainly by active, infectious cases who are undiagnosed and/or not following treatment procedures interacting with other people in their home environments.

Strategies:

1. Implement goals and objectives for Public Health Services, Communicable Disease Control regarding leprosy followup and contact surveillance activities

2. Conduct systematic, aggressive casefinding campaigns to diagnose active leprosy cases in populations known or suspected to have significant incidence of the disease.

3. Train health care workers (particularly health assistants, medex, and public health nurses) working in areas of known or suspected leprosy prevalence, in recognition of leprosy symptoms.