

AGENCY FOR INTERNATIONAL DEVELOPMENT WASHINGTON, D. C. 20523 <b>BIBLIOGRAPHIC INPUT SHEET</b>	<b>FOR AID USE ONLY</b>
---	-------------------------

<b>1. SUBJECT CLASSIFICATION</b>	<b>A. PRIMARY</b> Health	NA00-0000-G320
	<b>B. SECONDARY</b> General--Dominican Republic	

**2. TITLE AND SUBTITLE**  
 Health Sector Assessment for the Dominican Republic

**3. AUTHOR(S)** (100) Bumpus, E.J.; Daly, J.H.; Emrey, R.C.; Holland, B.J.; MacCorquodale, D.W.; Robinson, J.B.; (101) AID/LA/USAID/Dominican Republic

<b>4. DOCUMENT DATE</b> 1975	<b>5. NUMBER OF PAGES</b> 271p.	<b>6. ARC NUMBER</b> ARC
---------------------------------	------------------------------------	-----------------------------

**7. REFERENCE ORGANIZATION NAME AND ADDRESS**  
 LA/DR

**8. SUPPLEMENTARY NOTES** (*Sponsoring Organization, Publisher, Availability*)  
 (In cooperation with the Dominican Assessment Team)

**9. ABSTRACT**

<b>10. CONTROL NUMBER</b> PN-AAG-514	<b>11. PRICE OF DOCUMENT</b>
<b>12. DESCRIPTORS</b> Health Sector analysis Nutrition Health services	<b>13. PROJECT NUMBER</b>
	<b>14. CONTRACT NUMBER</b> LA/DR
	<b>15. TYPE OF DOCUMENT</b>

UNCLASSIFIED

LA DR-DAEC P-75 19/1  
Edited and updated  
February 19, 1975

HEALTH SECTOR ASSESSMENT

for the

DOMINICAN REPUBLIC

Submitted by

THE USAID MISSION TO THE DOMINICAN REPUBLIC

J. B. Robinson, Mission Director  
D. W. MacCorquodale, M.D., M.S.P.H.  
Chief, Health & Nutrition Development Division

UNCLASSIFIED

AUTHORS

EVA J. BUMPUS  
Staff Nutritionist

JOHN H. DALY  
Public Health Advisor  
Office of International Health, DHEW

ROBERT C. DREY  
Health Administrator  
Consultant

BARBARA J. HOLLAND  
Public Health Analyst  
Office of International Health, DHEW

DONALD W. MACCORQUODALE, M.D., M.S.P.H.  
Staff Population, Health and Nutritional Officer

PATRICK J.H. MARNANE  
Health Planner  
Consultant

MARTHA M. MARK  
Health Planner  
Consultant, Practical Concept Inc.

C. PAUL ROBERTS  
Economist  
Consultant, Practical Concept Inc.

CONTRIBUTORS

RALPH F. HOLBEN, Ph.D.  
Economic Advisor

BENITO A. HENRIQUEZ  
Staff Legal Advisor

JAMES C. SUMA  
Staff Capital Resources  
Development Officer

HENRY J. WELLHOUSE  
Staff Economist

REVIEWING STAFF

JOHN B. ROBINSON  
Director

RICHARD L. HOUGH  
Deputy Director

MICHAEL R. STACK  
Assistant Director

### ACKNOWLEDGMENTS

The authors wish to acknowledge that this assessment draws heavily on that of the Dominican Assessment team and their consultants. The extraction of information and analysis from their work has been so continuous that appropriate citations are not feasible.

Since forty-five persons worked on the Dominican team and were assisted by twelve consultants, we will not identify them individually other than Dr. Amiro Pérez Mera, M.D., the technical coordinator, and Lic. Luis González Fabra, the administrator coordinator. We would also like to acknowledge the extraordinary effort of the secretarial staff in completing the document in a very short time period.

Santo Domingo, D. R.  
December 6, 1974.

## PREFACE

"Man and his species are in perpetual struggle -- with microbes, with incompatible mothers-in-law, with drunken drivers, and with cosmic rays from outer space ... The 'positiveness' of health does not lie in the state, but in the struggle ..." 1/

### A. PURPOSE OF THE HEALTH SECTOR ASSESSMENT

A relatively short time ago, an assessment of the health sector would have been of much less interest to economic planners in developing countries. Theories of economic development which guided country planners, as well as foreign aid donors during much of the 1950's and 1960's, were dominated by the view that the principal key to economic growth was accelerated investment. What the economy could not generate from domestic savings was to be supplemented by foreign investment and capital transfers. Great emphasis was put on high rates of growth. Further, it was generally assumed that the benefits of such growth would eventually be diffused throughout the economy.

The assumption that diffusion of benefits follows economic growth, is not necessarily valid, particularly in the short and intermediate term. While the GNP of developing countries grew at a rate of 5 percent annually during the 1960's, the poorest half of the population often found itself no better off because of increased population, little improvement in nutrition and poor health generally, continued high rates of unemployment and a skewed distribution of income. To a considerable extent, this trend has characterized the situation in the Dominican Republic. The unprecedented growth of the Dominican economy during the past five years has resulted in an average annual increase of the gross national product of 10.2 percent. Yet, unemployment and underemployment continue at high rates -- estimated to be about 40 percent. Inflation has intensified income inequalities somewhat. Recent major policy changes, particularly in the agriculture sector, hold promise of improvement in the situation. But parallel action in the health sector is required if the gains are to be solidified and

1/ I. Gordon, "That Damned Word Health," Lancet, 2 (1958) 638-9.

further improvements made. Population growth continues at an annual rate in excess of three percent. A recent study by international experts suggests that in 1973 the rate of increase in employment was 2.25 percent, about one-half percent less than the rate of increase in the labor force.

In response to the above trends, theories of development have been undergoing gradual change. For example, in the Dominican Republic the President is cognizant of the necessity to improve the well-being of the poorest majority so that the benefits of economic development will be more widely distributed and the poorest majority will be able to contribute more productively to development progress. Over four-fifths of the food consumed in the Dominican Republic is grown by small farmers. Their ability to triple production by the year 2000 will depend on agriculture technical assistance and capital aid, but no less so on their being healthier and more economically and socially productive. The question is "how." Improved health programs and delivery systems can help to bring about more balanced and equitable growth and, at the same time, help improve real income through direct provision of services, particularly if these are directed toward low-income groups, which in the past have not had access to such services. Moreover, the benefits of improved nutrition, health, and well-being can themselves be significant causative factors for increasing the rate of economic development. Reduced demographic pressure as a consequence of successful family planning programs would allow for increased per capita income and allow for the possibility of increased savings and additional investment.

This health sector assessment therefore has several purposes: to assess as accurately as possible the present health situation, to identify the principal problems and inhibiting obstacles to change, to ascertain what can be done to overcome the principal constraints within what time frame and with what expected consequences in terms of slowed population growth and a healthier and more productive population. Thus, the health sector assessment has as a principal objective helping to identify a better basis for Dominican decision-making, and within this context to facilitate U.S. bilateral aid decision-making. There should be consideration of alternative courses of action and costs. There needs to be some basis for judgements as to whether an across-the-board health effort is possible or desirable or whether a more limited and pragmatic building-block approach would need to be followed. Indeed there needs to be some basis for concluding that there should be or should not be a bilateral aid effort in the health sector -- and if not now, under what circumstances and with what additional evaluative efforts. What is abundantly clear is that Dominican governmental capacity to deal successfully with health sector problems is weaker than for the agricultural sector.

In some respects this sector assessment accomplishes these purposes. In other respects further goal-oriented analysis and consideration of action choices need to be undertaken. What is clear in retrospect is that the magnitude of the assessment task has been consistently underestimated. The constraints to adequate improvement of health in the Dominican Republic are severe. Appropriate judgements on the capacity of the Dominican Health Sector to efficiently absorb large external aid inputs should be made only after the most careful consideration.

#### B. INTEREST OF AID IN SECTOR ASSESSMENT

As a major bilateral donor and contributor to international organizations, the United States Government has an interest in assuring that the maximum benefit be obtained from external resources made available at the request of the Dominican Government. AID is particularly concerned that any U.S. bilateral assistance provided is supportive of well-formulated Dominican programs that can realistically be expected to be achieved. The assessment which follows and the more extensive analytical process undertaken by persons assigned to the Secretariat of Health should provide the beginnings of this kind of decision-making framework, recognizing that Dominican goals have not yet been fully defined and that alternative courses of action are somewhat sketchy at this stage. This is not to deprecate a monumental effort in the Dominican Health Sector Assessment, entitled "El Diagnóstico de Salud en la República Dominicana." Rather, given the lack of data and analytical material, coupled with a frequently weak health administrative structure, there have been limits to what can be accomplished within the limited period of time available for preparing the assessment.

The Strategy Section consists of a number of observations which are more programmatic than strategic in character and are yet to be tested through further discussion and subsequently modified to reflect maturing judgements. Thus these observations constitute at this stage more a basis for informed discussion than a definitive blueprint for action.

Furthermore, AID is not the only international donor agency considering help in the health sector. There are the World Bank and the IDB. The Government of the Dominican Republic will want, and indeed should, consider how the combined resources and capabilities of all can be cooperatively employed.

### C. BRIEF SUMMARY OF AVAILABLE ANALYTICAL EFFORTS

Prior to the present effort, studies approaching sector assessments have been made on several occasions. However, most have been project-oriented. They have provided a useful basis for evaluation of project proposals, and to some extent the interrelationship among a number of projects. They have not examined comprehensive sector goals or alternative choices and trade-offs under a variety of assumptions for the sector as a whole.

Similarly, donor agency efforts have generally analyzed only limited portions of the health sector. In 1968, AID prepared a Capital Assistance Paper to determine the most appropriate capital investments in the health sector. Partial sector assessments have been made by the World Bank and PAHO in connection with their own assistance activities (Appendix II). Such partial assessments have had limited utility but do contain useful information and observations which are being used by both the GODR and AID.

The present effort began in February 1974. Under the direction of Dr. Amiro Pérez Mera, Professor of Preventive Medicine of the Autonomous University of Santo Domingo and a former Secretary of Health himself, eight groups of Dominican experts from a variety of disciplines began a comprehensive study of the health of the Dominican Republic population.

This study considers the major problem areas within the health sector and analyzes in considerable detail the complex interrelationship between the various determinants of health and disease. To some extent, it offers alternative solutions to the problems which have been identified. All of the approaches suggested are presently employed in this country to a greater or lesser degree. Some are costly. Some are very inexpensive. None are offered as perfect answers to the intricate composite of forces which adversely affect the health of the Dominican people.

### D. ADMINISTRATIVE FRAMEWORK, MAJOR CONTRIBUTORS, SOURCE OF FINANCING, AND METHODOLOGY

Discussions with the Secretary of Health in 1973 established the existence of a mutual GODR-USAID interest in conducting a health sector assessment. The Secretary of Health is charged with one of the most difficult and complex tasks of the GODR. He has welcomed assistance in this area. A team composed of Dominican professionals identified by the Secretary of Health, consultants proposed by the backstop team in Washington and, to a lesser extent, assistance from

Mission personnel, prepared a scope of work for the assessment in January 1974 and work commenced immediately.

At the suggestion of the Secretary, the program was administratively located in the Consejo Nacional de Población y Familia ("CONAPOFA") with its director, Luis A. González Fabra, taking personal responsibility for program administration. An ad-hoc group of Dominican professionals was formed, drawing personnel from universities, the Secretariat of Health, National Planning Office, and other Dominican agencies. Consultants were also identified to work with these groups, both by AID and PAHO.

The AID role in the assessment stemmed from a request by the Mission Director to AID/W to provide a turn-key assessment since the AID Mission did not then have the technical staff who could guide and undertake the necessary comprehensive analytical effort. AID/W with extraordinarily helpful and able HEW participation and cooperation mobilized extensive talent with a view to contributing to an improved Dominican analytical product. At this stage it has been more conclusion-reaching than decision-making in character. The second phase, i.e., the critiquing phase, again involved a wide variety of consultants. The result, given the severe time constraints under which all have been working, is a product which advances thinking about the Dominican health sector appreciably. In the Mission view, the contribution of the turn-key team, in particular John Daly, has been excellent.

AID consultants were financed through the normal health, nutrition, and population technical assistance grant funds. Dominican personnel were financed by the Dominican Government using host-country owned counterpart funds. Three specific surveys (nutrition behavior, human and physical resources, and population and morbidity) were financed by AID funds and were timed to coincide with the assessment.

The Dominican assessment, originally scheduled to be completed in September, is in the final review and editing stage at this writing (December 7, 1974). Nonetheless, draft documents, amounting to nearly 2,000 pages of text, were in hand by October 27, 1974 and the last major pieces were made available by November 30. This massive quantity of material has formed the principal basis for the present document. The complexity of the task and the lack of previous quantitative studies on the effects of health programs on health status has meant that the analysis is, to some extent at least, subjective. Nevertheless, it is clear that the analysis even at this level has been useful, provocative, and provided new insights of knowledgeable Dominicans. It has also provided a more systematic organization of existing knowledge and data.

The document which follows was written mostly during the month of November 1974, by a team especially convened for this purpose. The methodology used here is also based in part on intuitive reasoning, historical experience and the application of professional judgements. Utilization of available information and data from many sources in a practical and systematic manner has been the fundamental method for arriving at conclusions. Insufficient data was frequently a significant problem and a limiting factor on the use of more sophisticated techniques of analysis.

#### E. THE MODEL BASED APPROACH TO DEVELOPMENT ANALYSIS

In the Dominican Republic where rural subsistence or near subsistence agriculture is the dominant life pattern, where the existing medical care system deals with only a portion of the health problems, and where record-keeping is exiguous, particular difficulties are posed for builders of quantitative health models. In part, the absence of adequate information leads to difficulties in determining the relationship between given levels of input and a measurable output. Moreover, subtleties involved in analyzing a population's decisions with regard to utilization of health services make quantification difficult. While inputs can be measured fairly easily, and outcomes measured, albeit, with somewhat greater difficulty, it is often difficult to measure what happens in between. Yet, it is here that many of the obstacles to improving delivery systems and health behavior of the population lie.

Because of the difficulties posed by thorough quantitative analysis of the health sector in general, and because of the lack of information on the Dominican system in particular, no attempt was made to develop a mathematical model of the health sector. Two points should be made, however. First, an attempt is currently underway in Colombia to develop a methodology for constructing a mathematical model for the health sector in that country, and such a methodology could provide a foundation for future analysis in the Dominican Republic. Second, discussions are in process to develop the framework for a mathematical model of the Dominican agriculture and health sectors.

## TABLE OF CONTENTS

	<u>Page No.</u>
Authors	ii
Acknowledgement	iii
Preface	iv
Table of Contents	x
List of Tables	xiv
List of Illustrations	xvi
I. SUMMARY	1
A. The Interrelationship of Health and Development	2
B. Nutrition	3
C. Constraints	3
D. Potential for Achievement	5
E. Possible Strategy and Program Approach	5
F. Cooperative Program	7
II. DEVELOPMENT, HEALTH, NUTRITION AND POPULATION DYNAMICS IN THE DOMINICAN REPUBLIC	10
A. The General Economic Situation	10
1. Recent Economic Performance	10
2. GODR Development Possibilities	12
3. External Assistance	13
B. The Effects of Population Growth	14
C. Losses Due to Ill Health	20
D. Expenditures in Medical Care	25
E. Other Considerations	34
1. Income Distribution	34
2. Employment	34
3. Import Substitution	35
4. Tourism	35
F. Summary Conclusions	35
III. THE DETERMINANTS OF HEALTH	37
A. General Discussion	37
1. Nutrition	37
2. Potable Water	38
3. Education	39
4. Family Size	40
5. Health and Medical Care	41
B. Interrelationships	43
C. Mortality as a Determinant of Fertility	45
D. Health Status Indicators in the Dominican Republic	49
IV. POPULATION	56
A. Developmental Effects of Population Growth	56

	<u>Page No.</u>
B. Dynamics of Population	60
1. Internal Migration	60
2. Emigration	61
3. Mortality	61
4. Mortality as a Health Indicator	62
5. Fertility	65
6. Composition	66
7. Distribution	69
C. Current Population Program	69
1. Description of Present Program	69
2. Constraints	74
D. Alternative Approaches	76
1. Contraceptive Distribution Through Neighborhood Stores	76
2. Rural Pill Distribution Program	77
3. Postpartum Family Planning	78
4. Increased Information and Education Program	79
5. Increased Clinical Services in Urban Areas	79
6. Female Sterilization	80
7. Male Sterilization	81
8. Incentives for Family Planning	82
9. A Combined Approach to Reduce Fertility	83
10. Summary	86
. NUTRITION	87
A. Introduction	87
B. Food Customs and Consumptions	97
1. Historical Background	97
2. Maternal Infant Feeding Practices	98
3. Food Preparation and Feeding Practices	98
4. Constraints	101
5. The Dominican Strategy	101
C. The Purchase of Food	103
1. Economic Considerations	103
2. The Dominican Assessment	112
D. The Supply of Food	112
1. Agricultural Production	113
2. Summary of Agriculture Sector Assessment Findings	117
E. The Processing and Distribution of Food	121
F. Discussion of Program Possibilities	127
1. Introduction	127
2. Food Distribution	128
3. Development of a Locally Produced Weaning Food	132
4. Fortification	135
5. National Nutrition Coordinating Body	135
Annex I	
SUGGESTED NATIONAL NUTRITIONAL POLICY	144

	<u>Page No.</u>
VI. PERSONAL HEALTH SERVICES	145
A. Use of Health Services	145
B. The System for Service Delivery	150
C. Resources for Personal Health Services	153
1. Financial Resources	153
2. Human Resources	156
3. Facilities and Equipment	161
4. Medical Supplies	162
D. Institutional Constraints	162
1. General	162
2. SESPAS	164
3. IBSS	166
4. SNEM	166
5. CEA	168
6. Armed Forces	168
E. Alternatives	169
1. Outreach Services	169
2. Strengthening of Public Health	172
3. Financing Programs for Other Populations	175
VII. ENVIRONMENTAL SANITATION	176
A. Health Problems Due to Lack of Environmental Sanitation	176
B. Organization of the Sector	177
C. Present Coverage, Plans and Expenditures	179
1. Water System Problems	179
2. Santo Domingo and Santiago	181
3. Intermediate and Small Cities	181
4. Rural Areas	184
5. Sewage Disposal Systems	188
D. Alternatives for Environmental Sanitation	190
1. Urban Water Systems and Waste Disposal Projects	191
2. Operation of Systems	193
3. Construction of Systems	195
E. Conclusions	197
VIII. ANALYSIS OF THE DOMINICAN ASSESSMENT	198
A. Analysis of the Dominican Assessment as Viewed By the AID Assessment Team	198
B. Assumptions	201
1. A Crisis Exists	202

	<u>Page No.</u>
2. Appropriate Interventions Can Improve Health	202
3. Priorities Must be Focused on the Poor of this Society	202
4. Services Must be Taken to The People	203
C. Establishment of Goals	203
1. The Potential for Reform	203
2. Assets Available to Improve Health and Reduce Population Growth	204
D. Goals	204
1. Health Services	206
2. Population	208
3. Nutrition	209
4. Environmental Sanitation	210
5. Immediate Impact Programs	211
E. Justification of the Strategy	213
F. Potential for Cooperative Programs	214
APPENDIX I. ANALYSIS OF PREVIOUS AID HEALTH RELATED PROGRAMS	215
APPENDIX II. ANALYSIS OF OTHER DONOR ACTIVITIES	221
APPENDIX III. SUPPLEMENTARY FEEDING PROGRAM	229
APPENDIX IV. ANALYSIS OF HEALTH SECTOR LEGISLATION	241
LIST OF ABBREVIATIONS	249
GLOSSARY	252

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
1.	Capital loans of International Institutions to the Public Sector.....	15
2.	Assumptions for Population Growth Model.....	16
3.	GNP and Investment Schedules by Public and Private Sector	18
4.	Population, Labor Force Employed by Sex and Region 1975-90.....	19
5.	Estimations of Excess Mortality in Adults.....	22
6.	Incidence of Perceived Illness.....	23
7.	Incidence of Illness and Resulting Days in Bed of Hospitalization.....	
8.	Expenditures for Medical Care.....	
9.	Family Health Care Expenditures According to Goods and Services Purchased.....	28
10.	Distribution of Patients Physicians Said They Had Seen or Their Last Full Day of Practice.....	31
11.	Equipment Functions.....	33
12.	Ten Leading Causes of Death, Dominican Republic 1970.....	51
13.	Average Number of Reported Cases of Notifiable Diseases..	52
14.	Number of Hospitalizations for Five Leading Causes by Age.....	55
15.	Estimated Values for Crude Death Rate, Expectancy of Life at Birth, and Infant Mortality Rate for 1950, 1960 and 1965-70.....	57
16.	Age - Specific Mortality Rates, Dominican Republic 1974..	63
17.	Child-Woman Ratios 1950, 1960 and 1970.....	67
17-A	Number of IUD Acceptors Necessary to Reduce the Crude Birth Rate by 20 Percent in 1979.....	84
17-B	Calculation of the Number of IUD's to be Inserted Annually.....	85
18.	Gomez Classification of the State of Malnutrition of Pre-School Children.....	89
19.	Comparative Average Intake of Calories and Nutrients.....	94
20.	Regional, Rural, Urban and National Averages of Daily Per-Capita Food Consumption.....	96
21.	Principal Foods Introduced before Weaning by Frequency...	100
22.	Foods Not Consumed by Mothers during Lactating Period....	102
23.	Average Per Capita Daily Food Consumption by Income Groups.....	104
24.	Gross Domestic Product Per Capita.....	106
25.	Distribution of Land.....	106
26.	Monthly Per Capita Expenditures on Food by Income Group..	108

<u>Table</u>	<u>Title</u>	<u>Page No.</u>
27.	Income Elasticities of Demand.....	110
28.	Comparison of 1969 and 1974 Costs of Monthly Food Purchases in 1980.....	111
29.	Production of Selected Agricultural Commodities.....	115
30.	Changes in Production of Various Crops.....	116
31.	Agricultural Production for Selected Crops.....	118
32.	Potential Increase in Supply of Selected Foods.....	119
33.	Farm Uses of Production of Various Crops.....	122
34.	Gross Margins of Commercialization of Principal Agricultural Producers.....	123
35.	Prices for Food Items by Regions.....	125
36.	Food Processing Companies in the D.R.....	126
37.	Quantity and Cost of Dietary Supplement.....	129
38.	Budget for Market Research.....	130
39.	Comparative USA and GDR Funding for Alternative Supplementary Feeding Programs.....	131
40.	Per Capita Daily Consumption of Staple Foods by Selected Income Group.....	134
41.	Program for Vitamin and Mineral Fortification of Selected Food Staples.....	136
42.	Proposed Nutrition Division Staffing Pattern.....	137
43.	1973 Estimated Expenditures in Health Care by Institution and Estimated Target Population.....	146
44.	Some Estimated Utilization Data of SESPAS and IDSS.....	148
45.	Some Indirect Costs Perceived by Patients Seeking Medical Care.....	149
46.	Expenditures in Health and Social Assistance by SESPAS and Other Government Institutions, 1969-1973.....	154
47.	Number of Physicians, Dentists, Graduate Nurses, and Nursing Auxiliaries with Locos per 10,000 Population By Country.....	157
48.	Distribution of Medical Facilities in the D.R.....	160
49.	Personnel Proposal for SPMAR.....	171
50.	Personnel Proposal for SPMAR.....	173
51.	Average Number of Diarrhea Cases per Child.....	177
52.	Agencies Responsible for Water System Operation.....	178
53.	Annual Increase in Water System Investment.....	180
54.	Availability of Household Water Connections.....	182
55.	INABA Draft PLANURBE Aqueduct Enlargement Proposal.....	185
56.	Financial Operations of Rural Water Systems, by Zone.....	186
57.	PLANAR Proposal Work.....	188
58.	Cities Served by Sanitary Sewers.....	189
59.	Dominican Republic Pl. 480 Title II Program FY 1970-1974..	232
60.	Indicators of Coverage and Cost of PL 480 Title II Food Distribution.....	233
61.	Percentage of RDA of Calories and Protein in Food Distributed by Voluntary Agencies to Children.....	237
62.	Program Effectiveness.....	238

List of Illustrations

<u>Figure</u>	<u>Title</u>	<u>Page No.</u>
1.	Elements of Strategy.....	6
2.	Proposed Calendar for Extension of Basic Family Planning and Other Medical Services to D.R. Population...	8
3.	Relationship Between Increased Income and Health Care Expenditures.....	29
4.	The Malnutrition, High Mortality, High Fertility Cycle...	44
4.-A	Infant Mortality, General Fertility and Natural Increase Rates in Leinasgut Health District, Turkey, 1967-1971.....	48
5.	Dominican Republic Population Growth Curves for Actual Historical Population Size and Three Projections 1950-1990.....	58
5.-A	Age-Specific Mortality Rates: Barbados, 1968; United States, 1968; Dominican Republic, 1974.....	64
6.	Numerical Percentage Distribution of the Population by Sex and Age Groups 1970.....	68
7.	Crude Birth Rate Projection.....	73
8.	Weight of Pre-School Girls Compared to the Stuart- Stevenson Standards.....	90
9.	Weight of Girls and Boys Compared to ICWA and INCAP Standards from Age 6 Through 16 years.....	91
10.	Height of Boys and Girls Aged 6 Through 16 years Compared to the ICWA and INCAP Standards.....	92
11.	Average Daily Per Capita Nutrient Intake as Percent of Recommended Allowance.....	93
12.	Dominican Republic Nutrient Intake Distribution.....	95
13.	Age of Weaning.....	99
14.	Distribution of Population by Monthly Per Capita Income, Santo Domingo, 1969.....	107
15.	Nutrient Efficiency of Purchase of Different Foods.....	114
16.	Annual Rates of Growth of the Budget Executed by SESPAS, the National Budget, National Income and Population 1967-73.....	155
17.	Percentage Distribution by Activities, of Expenditures of the "Provision of Health" Program of SESPAS.....	158
17.-A	Organization of the Secretariat for Public Health and Social Assistance.....	165
17.-B	National Service for the Eradication of Malaria.....	167
18.	Availability of Water: Urban Areas.....	183
19.	Availability of Water: Rural Areas.....	187

## I. SUMMARY

The rate of population growth in the Dominican Republic was approximately three percent per year over the last decade. This not only seriously interferes with economic development, but also threatens continuous deterioration of the quality of life for the majority of Dominicans. Urban growth alone has been double that of the nation as a whole in the last ten years, and particularly in the case of the capital, Santo Domingo, has increased problems of overcrowding.

Mortality is consistently high. Life expectancy at birth is only 52 years. Gross mortality is 14.7 per 1,000 inhabitants. Infant mortality, very high, is 104 per 1,000 live births. Mortality in one to four year olds is 17 times that of U.S. children the same age, and even adult mortality is 2.5 to three times that of the United States. There is significant cause to believe that major reductions in fertility will only be achieved if prior reduction in mortality, particularly mortality of young children can be achieved.

High mortality is, of course, an outcome of poor nutrition and high prevalence of disease. It has been estimated that almost 70 percent of the Dominicans are below nutritional standards in one or more respects, and that more than three-quarters of pre-school children have protein-calorie malnutrition. While mortality statistics are poor in the Republic, and must be interpreted with care, the six principal causes of mortality in 1970 were: (1) senility and poorly defined causes, (2) infectious and parasitic diseases, (3) perinatal mortality, (4) diseases of the circulatory system, (5) respiratory diseases, and (6) accidents, poisoning, suicide, etc. The first category is illustrative of the lack of medical services. Most people die without sufficient medical attention to even determine the cause of death. Nutritional problems are strongly implicated in high mortality from infectious and parasitic diseases, in perinatal mortality, (i.e., prematurity due to poor maternal nutrition), and in respiratory diseases. Inadequate environmental barriers against ill health are implicated in all these, and in accidental death.

In September 1973, the Secretary of Public Health proposed a health policy for the Government. <sup>1/</sup> The document indicated a basic goal of increasing life expectancy. To achieve this, major emphasis

---

<sup>1/</sup> "Política de Salud: Período 1973-1980," Secretaría de Estado de Salud Pública y Asistencia Social, Santo Domingo, September 1973.

was to be given to reduction of illness and death due to "erradicable and reducible diseases, especially the communicable diseases, perinatal disease, and malnutrition." Priority and emphasis was to be given to "the most vulnerable age groups of the population: those younger than 15 years (especially those younger than five years), and mothers involved in the gestational process." The major emphasis of the policy was to extend coverage of health services to satisfy more adequately the needs of the whole population for health services.

The Government of the Dominican Republic also has set out a national population policy, and the President has announced repeatedly the purpose of decreasing the population growth rate. 2/ 3/ The Dominican Health Sector Assessment is a significant but as yet partial step in the process of problem identification, policy refinement, and the development of programs directed to serve these broad policies.

#### A. THE INTERRELATIONSHIP OF HEALTH AND DEVELOPMENT

The most important health benefits to be sought from socio-economic development in the less developed countries are satisfaction of the basic needs of people: adequate food, freedom from disease, freedom from early death, adequate water. Not surprisingly, better nutrition and better environmental sanitation accruing as a consequence of development, result in better health even without the benefits of modern medicine. Similarly, socio-economic development was correlated with reduction of birth rates in the developed countries long before there were campaigns for birth control or family planning.

Economic growth does not necessarily cause general well-being to improve. The extraordinary growth in GNP in the Dominican Republic over the last several years has not been accompanied by appreciably lower rates of unemployment. Health planning in an important sense is social-economic planning to assure that the development process contributes significantly to potential improvements in nutrition and health. Planning for the appropriate and efficient delivery of medical services is an important aspect of health planning. Planning

---

2/ Decree No. 2091, creating the National Council of Population and Family. February 14, 1968.

3/ Regulation No. 4476, of the National Council of Population and Family. December 15, 1969.

those intersectoral activities, however, that deal more directly with the food people eat, the environment they live in, their knowledge and behavior, and their income are probably more important in actually affecting health.

If health is an outcome of socio-economic development, it also contributes to it. Reduced population growth allows more rational and productive investment, and more rapid growth of per capita income. Improved nutrition and health contribute to improved worker productivity. Similarly, improvements in each of the areas of responsible parenthood, nutrition, and health may be expected to lead to improvements in the others.

#### B. NUTRITION

Both the overall growth in gross national product over the last several years and the projected increases in Government revenues, principally from export earnings, in the next few years indicate significant financial potential for development of the Health Sector.

In terms of nutrition, the development of the agricultural sector offers significant opportunities to improve performance throughout the food chain of production, processing, and marketing as well as an opportunity to augment the real income of a large part of the poor population, a necessary condition to solution of the national nutrition problem.

Personal health services are inaccessible to a considerable part of the population. Those that exist are also underutilized. A reallocation of these resources could therefore provide both more and more cost-effective services. Modern water and sewerage systems of the country are few. The Dominican assessment points out that they are poorly managed and maintained. Some management infrastructure does exist and provides opportunity for amplification and improvement.

#### C. CONSTRAINTS

The GODR budget for health services has diminished over the last several years as a proportion of total Government budget. An increased allocation of funds related to the capacity of the sector to efficiently absorb funds would demonstrate a Government commitment to support improved health policies and programs. Modernization of the Health Sector in its various key aspects is a central consideration to addressing the major constraints to positive change in the Sector.

The financing of the various types of health programs which are suggested, as well as the maintenance of already planned expenditures for water and public works, should be less of a difficulty to the GDR in light of the improved Government fiscal situation. Economic constraints will influence the social determinants of health: employment generation, increasing agricultural productivity, and upgrading the role of women in the society, for example, will certainly facilitate the effectiveness of specific health development projects.

The public administrative and organizational capacity to mount a substantial health development effort is a matter for attention. The Secretariat of Health lacks the skilled manpower, the planning capability and the administrative efficiency for any extensive expansion of functions or coverage. In the area of nutrition, recent press coverage has created a temporary interest, but generally there is no consensus as to the nature of the problem, nor has much attention been given to the long range problem of food and nutrition. The Dominican Assessment team notes that there is only limited capacity to plan a national nutrition program. This capability will have to be developed and institutionalized before any comprehensive program can be executed.

In the area of provision of potable water and disposal of waste, a number of potentially useful institutions exist, but responsibility is divided among them. Prior to the establishment of the Santo Domingo Water and Sewerage Corporation (CAASD) this year, the National Institute for Potable Water and Sewerage (INAPA) offered promise of developing into a strong institution. The transfer of many competent technicians from INAPA to CAASD puts in doubt an expanded program for provision of water to secondary cities, at least at the present time. Moreover, the highly technical and capital intensive approach to water supply for the rural areas, promulgated by INAPA, would not seem to take advantage of the possibility for labor-intensive activity where it is most needed and possible. A self-help approach could make rural water a reality for perhaps 50 percent of the rural population by 1980, rather than for 25 percent as now planned, if the administrative structure were created.

The personal health services sector is primarily private, with several relatively small autonomous public institutions (in terms of numbers of persons served) offering relatively modern but costly medical services, as well as health service programs of the Secretariat of Public Health and Social Assistance (SESPAS). The task of administering the Health Secretariat is complex. There is no modern system of management control to assist the Secretary of Health. While formally invested with full legal authority to supervise all health related

activities of the country, it has considerable difficulty in administering a sizeable health infrastructure with the personnel assigned to the Secretariat. There are some exceptions, e.g., the National Service for Malaria Eradication (SNEM) which is subject to external monitoring, is led by capable professionals, attacks serious perceived health needs in an efficient manner, and employs relatively limited financial resources. Thus, a major effort will be required to improve relatively weak administrative organizations and new and expanded services should be organizationally linked to those elements which are now relatively effective and efficient.

#### D. POTENTIAL FOR ACHIEVEMENT

Significant improvements should be made in infant and pre-school mortality over a ten-year period, especially through better nutrition, improved environmental sanitation, reduced prevalence of communicable diseases and greater availability of health care. It is felt that the increased availability of family planning services will prevent the birth rate from climbing for the next five years (as it would otherwise due to changes in age composition of the population), and that a 20 percent reduction of these rates might be achieved in the following five years, given the reduction in child mortality and a continuation of the present level of socio-economic development. Even a modest reduction in birth rates could exceed the reduction in mortality, and could contribute to a reduction in population growth rate by the end of ten years.

#### E. POSSIBLE STRATEGY AND PROGRAM APPROACH

A suggested health program approach and strategy is discussed in terms of socio-economic policy concerns, long term institutional development strategy, and priorities for activities with immediate impact. These are illustrated in Figure 1. Socio-economic policies are considered exogenous to the health sector, in that health officials are not the primary determinants of such policy. The approach should therefore be understood in terms of identification of the key population and nutrition and health effects of policy alternatives so that these may be more adequately weighed by national policy makers. The key effects of income raising measures for the poor, status enhancement of women, and agricultural development are noted.

Longer term institutional development strategy suggestions revolve around strengthening the Secretariat of Health in both its central planning and coordinating role, and its executive role in the provision of public health services. In order to plan, implement,

FIGURE 1

Elements of Dominican Strategy

Program Element	Problem Area	<u>Income Distribution as Determined by Employment and Inflation</u>		
Key Socio-Economic Trends and Programs Influencing Problem	<ol style="list-style-type: none"> <li>1. Role of women in society</li> <li>2. Employment and infrastructure in rural areas</li> </ol>	<ol style="list-style-type: none"> <li>1. Production of food staples</li> <li>2. Price of food staples</li> </ol>	<ol style="list-style-type: none"> <li>1. Promote urban infrastructure</li> </ol>	<ol style="list-style-type: none"> <li>1. Medical education</li> <li>2. Utilize graduates to improve medical services and reduce flow abroad</li> </ol>
Long Term Institutional Strategy	<ol style="list-style-type: none"> <li>1. Strengthen CONAPOFA and increase its operational responsibility</li> </ol>	<u>Develop Strong Intersectoral Links for Population, Health and Nutrition Planning</u>		
		<ol style="list-style-type: none"> <li>1. Encourage SEA to acquire a nutritional capacity as a means for encouraging production of more nutritional crops.</li> <li>2. Consider what further institutionalization may be required.</li> </ol>	<ol style="list-style-type: none"> <li>1. Consider how urban water and sewerage activity may best be designed, planned, constructed, operated and maintained.</li> <li>2. Develop national plan for secondary cities water and sewerage systems.</li> </ol>	<ol style="list-style-type: none"> <li>1. Strengthen the Secretariat of Health and increase its operational authority.</li> <li>2. Develop the Popular Health Service to provide and coordinate outreach services to the medically indigent population</li> </ol>
Immediate Impact Priorities	<u>Provision of Outreach Services to make Basic Family Planning, Nutrition and Health Services accessible to total population</u>			
	<u>Provision of Mass Media and Promotional Education in Family Planning, Nutrition and Health to Total Population</u>			
	<ol style="list-style-type: none"> <li>1. Extend CONAPOFA service availability significantly</li> <li>2. Encourage private agencies (ADBF) to extend family planning and education services.</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop weaning food and maternal diet supplement food</li> <li>2. Develop improved food enrichment program.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase allocation for water to intermediate level cities</li> <li>2. Develop a self-help rural water program for communities of 500 to 1,000 inhabitants.</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop a system for provision of low-cost, effective pharmaceuticals for indigent population</li> <li>2. Develop legal and financial arrangements to make market for health services function better.</li> </ol>

and coordinate key nutrition and environmental sanitation programs (1) nutrition planning and implementing capability should be developed and (2) coordination of water and sewerage administrative capacities should be institutionalized. This approach contemplates the formation of linkages between these institutional elements.

Perhaps the most useful immediate impact programs suggested are "Basic Health Services for Rural Areas" (SANAR) and "Health Services for the Urban Poor" (CURAR), which are low-cost health service delivery systems to be oriented to the rural and urban poor, respectively. SANAR is based upon volunteers and practicantes, and a model of service delivery developed and used by the SNEM. CURAR is to be studied through two experimental projects initially, testing medical students vs. auxiliaries as primary health care providers. Both urban models would use peripheral health centers in the poor barrios as well as direct home contacts. These systems, combined with improved financial systems, are intended to make coverage for the basic health services eventually complete for the population. Figure 2 shows an approximate time scale of how such coverage could be achieved, and what integration of institutions are proposed.

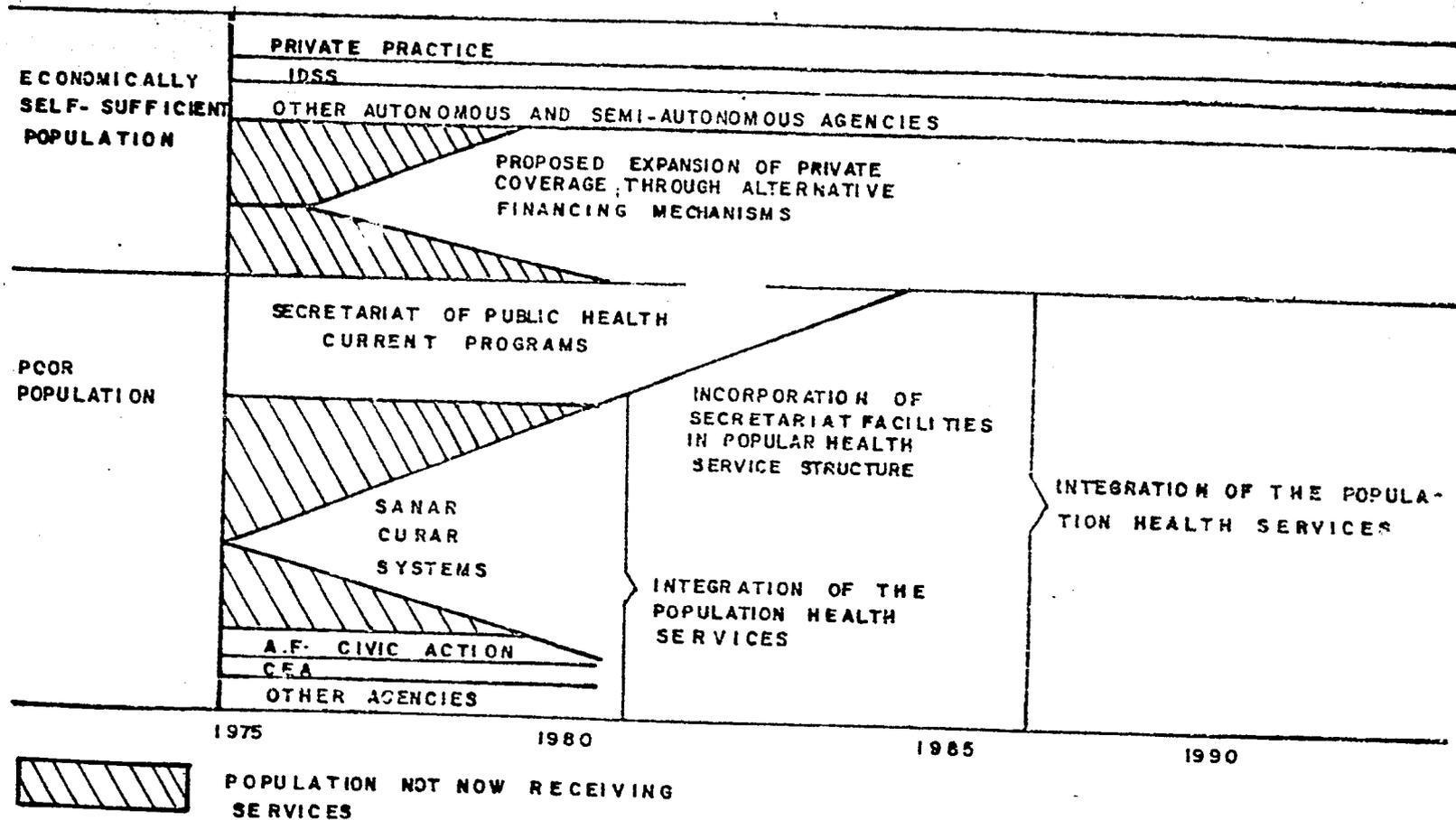
Additional service innovations include the development of a private, non-profit system of family planning centers, the marked expansion of the existing system of governmental (CONAPOFA) family planning centers, the development and distribution of high-protein, low-cost weaning and maternal food supplements and enriched foods, and the development of a low-cost system to make selected drugs available to the financially indigent population. Educational activities are to be channeled through a general increase of use of mass media, and through a much more intensive person-to-person health promotion program as well as program training of school teachers in health and nutrition.

Environmental sanitation innovations include the development of a coordinated and expanded program for intermediate city water supplies, and a self-help program for water for disperse rural populations.

#### F. COOPERATIVE PROGRAM

At this stage, an AID assistance program has not been defined. The GODR needs to consider the Dominican Health Assessment and decide what policies to follow and programs to implement. As they identify their needs for external aid, useful discussions can take place and further program coordination with other donor agencies undertaken. Program initiation would depend on a number of considerations, including (1) desire for AID assistance, (2) willingness to undertake

**FIGURE: 2**  
**PROPOSED CALENDAR FOR EXTENSION OF BASIC FAMILY**  
**PLANNING AND OTHER MEDICAL SERVICES TO**  
**THE DOMINICAN POPULATION**



significant reforms, (3) willingness to allocate additional national resources as may be needed. The focus of Dominican effort would be to develop feasible policies and programs having long-term effect, and stimulate service innovations that would increase the cost-effectiveness of population, nutrition, and health activities in the short term. Areas to be explored in depth in terms of possible AID support include: institutional strengthening; low-cost health delivery systems; capital investment in water systems for intermediate cities; and facilitating the development of food supplements.

## II. DEVELOPMENT, HEALTH, NUTRITION AND POPULATION DYNAMICS IN THE DOMINICAN REPUBLIC

Development, health, nutrition and population dynamics are all intimately interrelated. Modification of one element results in variations of the other until equilibrium is reestablished. In the following pages these factors are discussed. The discussion focuses on economic rather than social development because of the difficulty of measuring the latter, rather than because of priority.

The general economic picture is first established. Effects of further rapid population growth on development are examined. Attention is also directed at the economic effects of ill health, both in terms of lost productivity and of expenditures on medical care. Some final considerations precede the Conclusions and Recommendations.

### A. THE GENERAL ECONOMIC SITUATION

#### A. Recent Economic Performance

The period 1964-68 was one of economic stagnation and deterioration resulting from the severe economic and social dislocation and atrophy of production capacity, caused by civil war and extended drought in 1967-68. There was virtually no increase in GNP during this period.

The economic readjustments following the thirty-year Trujillo dictatorship which ended in 1961 also had its effects during the first half of the 1960s. Under Trujillo, travel and education abroad, except for the favored few, were actively discouraged. Particularly during the later years of the dictatorship, capital flight became extensive, and the ambitious plans for the expansion of foreign private investment and tourism failed to materialize. Public services deteriorated and the economy progressively became a vehicle for the personal gain of the Trujillo family.

The country was faced, at the end of the Civil War in 1965, with a depressed economy dependent on a few agricultural crops, a scarcity of trained and effective civil servants and a distinct lack of self-confidence about the country's prospects.

The Government of President Joaquín Balaguer, elected in 1966 and re-elected in 1970 and 1974, has brought a return to political stability. This has been essential underpinning of the economic upswing that began to be in evidence by 1969. The upswing essentially has been fueled by five economic factors: a doubling of exports from

1970-1973, largely due to sugar and ferronickel; substantial private domestic and foreign investment; sharply rising public sector capital expenditures; and large external resource transfers, mainly in the 1965 to 1969 period and predominantly U.S. bilateral assistance; allocation of U.S. sugar quotas which added about \$250 million in net foreign exchange earnings during this same five-year period.

With respect to sugar, the country, since 1969, has reaped the benefits of good weather, continued guarantee of access to the preferential U.S. sugar market and a rapidly rising world price for sugar. During 1970-72 world sugar prices nearly doubled, rising to 7.3 cents per pound. By the first quarter of 1974 the world price had risen to a monthly average of 19.3 cents and has nearly doubled again in the latter half of 1974. Foreign exchange earnings from sugar and sugar by-products rose from \$115.9 million in 1970 to \$176.4 million in 1972, \$205.8 million in 1973 and \$249.9 million during the first half of 1974. The additional Dominican foreign exchange gained as a direct consequence of the U.S. sugar quota averaged more than \$50.0 million per year from 1966 through 1971. It changed precipitously in 1972. In 1973 and 1974 the country sustained a net loss in attempting to protect their U.S. market.

Economic growth has been spurred by private foreign and domestic investment, e.g., by a \$200 million foreign investment in a large ferronickel facility and an externally financed oil refinery. Ferronickel exports amounted to \$83 million 1973.

The Balaguer Government has placed heavy reliance on public sector capital expenditures, financed in significant amounts from increased public savings in order to expand infrastructure, to stimulate economic growth and to reduce unemployment.

U.S. bilateral assistance stimulated and facilitated the growth of the economy, principally through the resources committed in the 1965-69 period, amounting to \$267 million, prior to the upswing, and less so in the later period from 1969 to June 1974 when our resource commitment diminished to \$80.5 million. These large aid flows not only helped to shore-up a precarious balance of payments situation from 1964-70, but also to expand significantly and upgrade the skilled manpower resources of the country through technical assistance and participant grants and specially to enlarge and complement the capital development investments of the Government. For example, AID's support of total Central Government investment averaged 28% for the 1966-69 period with a high of 50% in 1966 and a low of 14% in 1969. In the three years, 1970-72, AID's support diminished to 8.6% as the Government demonstrated increased capacity for self-financing of investment activity. Many useful projects with a high development benefit such as the Tavera Dam, the development of the Superior Institute of Agriculture (ISA), agricultural

credit, to mention several representative activities were carried out with U.S. support. There is no doubt but that U.S. assistance was a major factor in helping to lay a base for the dramatic economic growth of the last five years.

These factors help to explain the average annual real GDP growth of 10.2% for the country during the 1969-73 period. Indications are that this rapid growth is continuing in 1974, although inflation will diminish the rate of real growth somewhat.

#### A.2. CODR Development Priorities

Until late in 1971 much of President Balaguer's public investment priorities were directed toward creating a modern infrastructure and alleviating unemployment. These projects included substantial investments in irrigation projects, roads, dams, and, housing, streets and parks. These investments, particularly the former, gave considerable impetus to the country's economic growth.

By 1972, with a booming economy and rigorous governmental fiscal management, increased resources were available for investment. While maintaining his housing and urban development expenditures, the President directed substantially increased amounts of money into public capital formation such as irrigation and feeder roads as well as services, such as education and health. He has also sought to encourage better performance by agricultural agencies of the Government such as the Secretariat of Agriculture, the Agricultural Bank, and the Agrarian Reform Institute by providing additional new leadership and budget resources. In early 1972, a new set of agrarian reform laws was also enacted. Other proposals are pending Congressional action, e.g., one to limit to 500 tareas (83.3 acres) the amount of first-class land which can be used for cattle production. Further, the Government has directed larger sums of money into food production programs in the agricultural sector. Thus, as governmental institutions demonstrate additional capacity to use funds efficiently, the President has increased budgets through savings and external borrowings to increase and improve governmental services for increased numbers of people.

At the same time the President continues to support large public infrastructure expenditures -- not inappropriate at the present stage of development of the country. And as noted above, there is a new emphasis on borrowing for development on concessional terms. There is also a record of consistent encouragement of both foreign and domestic private investment. There are increasing indications that the President's intention now is to put much more public resources into programs which favor the disadvantaged poor in the country such as programs to help small farmers. He looks with favor on an expansion of health services to the rural poor.

The principal social and economic objectives of the Dominican Government as recorded by CEPCIES<sup>1/</sup> were as follows:

1. Maintain a high GNP growth rate.
2. Reduce unemployment.
3. Promote social development in the country with special attention to areas of extreme poverty.
4. Reduce domestic inflationary pressures.
5. Increase international reserves.

To achieve these goals the Government proposes to put greater emphasis on the agricultural and tourism sectors in the allocation of resources, to maintain an increase in investment, to increase current expenditures for social purposes and to increase or at least maintain public savings by raising the level of budgetary receipts.

Some slowdown in allocation of public savings for investment is likely over the next few years in view of the need to increase the current expenditures of the Government and when export receipts from sugar sales drop.

Last, the markedly improving development climate in a number of GODR institutions is worthy of mention. The level of professional capacity, motivation and willingness to consider development alternatives and take necessary decisions have progressively improved. This trend is particularly notable in the Central Bank and the Secretariat of Agriculture. These institutions, as well as the Export Promotion Office (CEDOPEX), the Electric Corporation, the Price Stabilization Institute and the Housing Bank have been able to attract and retain competent staffs. Attention is now being given as to how to improve institutional structures and staffing in the health agencies.

#### A.3. External Assistance

From 1966 to 1973 net annual foreign assistance disbursements fell from \$50 million to \$18 million while Dominican GNP climbed from RD\$1.1 billion to about RD\$2.4 billion, thus dropping net foreign assistance as a component of GNP from 5% to about .7%. Foreign assistance as a percent of public sector expenditures declined from nearly

---

1/ Comisión Económica Permanente del Consejo Interamericano Económico y Social.

16% to about 3.5%. The proportion of this foreign assistance provided by U.S. bilateral aid (including P.L. 480) declined from close to 100% in 1966 to one-third at the present.

Within the past two years, the loan portfolios of the IDB and IBRD for the Dominican Republic have been undergoing a substantial expansion. Active loans to the Dominican Republic approved between 1970 and to date are shown in Annex A to this section. The prospects of further expansion appear to be very good given the number of proposed loans now in various stages of consultation and review. The recently signed USAID Agricultural Sector Loan also reflects an increase in U.S. bilateral development assistance.

The UNDP and its associated UN agencies have replaced the U.S. as the largest provider of technical assistance. At the present time the UN has 45 technicians in the Dominican Republic providing advisory assistance principally in the fields of agriculture, education, public administration and health.

The Government of the Dominican Republic is vigorously pursuing an expanded role for multilateral assistance in the development programs of the country. For example, the Governor of the Central Bank has stated that "the idea is to have prepared and ready sufficient development projects, as required to maintain the high rate of economic growth, with the purpose of having a three to four year program of continuous investments into the basic priority sectors for the planned development of the domestic economy." The international lending and reviewing agencies have also emphasized that the present level of growth -- currently about 7% -- is not likely to be sustained without an expansion of official aid flows. There is an increasing awareness of these same points by a number of influential Dominicans in both the public and private sectors.

#### B. THE EFFECTS OF POPULATION GROWTH

In order to assess some of the effects of population growth, a simplified model has been constructed. The difficulty with such a model, of course, is that so many social and economic factors interact, that even a simplified model ends up being fairly complex.

In the model, three factors are held exogenous: the population growth rate, the balance of Government investment, and the balance of private investment. These three factors were varied simultaneously as shown in Table 2 under the assumption that the employment generation and improvement in the quality of life for the poor brought about by the investment Alternatives II and III would be required to reduce

**Table 1**  
**CAPITAL LOANS OF INTERNATIONAL INSTITUTIONS TO THE PUBLIC SECTOR\***  
(1970 - October 1974)

Borrower	Purpose	Amount (millions)	Year
<b>1.- IDB</b>			
Madre y Maestra Catholic University.....	Enlargement of University	3.4	1970
INARA.....	Rural Aqueducts	4.1	1971
Dominican Electricity Corp. (CDE).....	Rural electrification	7.4	1972
Dominican Government (ONAPLAN).....	Pre-investment Studies	1.5	1972
Dominican Government (FLDA).....	PIDAGRO	24.8	1972
IDECOOP.....	Fishery Cooperative Project	1.6	1973
Dominican Government (INDHRI).....	Yaque del Norte Irrigation Project	18.8	1973
Dominican Government (CAASD).....	Santo Domingo Potable Water System	18.6	1973
Dominican Electricity Corp. (CDE).....	Bao Dam Irrigation Project	36.7	1974
<b>2.- IBERD</b>			
Secretariat for Education, FIDE.....	Secondary Education	4.0	1971
Cementos Nacionales S.A. (National Cement Co.)... Dominican Government (INDHRI).....	Cattle-Agriculture Development Project	5.0	1971
Cementos Nacionales S.A. (National Cement Co.)... Dominican Government (INDHRI).....	Cement Factory	6.0	1972
Dominican Government (INDHRI).....	Yaque del Norte Irrigation Project	13.0	1973
Dominican Government Central Bank.....	Tourist Development	21.0	1974

\* Authorized loan.

Table -2

## ASSUMPTIONS FOR POPULATION GROWTH MODEL

Assumption	Population Growth & (1) Fertility	Government Investment	Private Investment	GNP Growth Rate	Labor Intensiveness of Investment (2)	Urbanization
I.	Constant, high Age specific fertility	75% urban	55% urban	7 Percent per year	Constant	High
II	5 Percent decrease in gross reproduction rate by 1980, 10% more by 1990.	70% urban (1980) 60% urban (1990)	55% urban	7 Percent per year (1975-1980) 5 Percent per year thereafter.	More labor intensive	Less due to increased rural employment.
III	10% decrease by 1980 and additional 20% decrease by 1990.	70% urban (1980) 60% urban (1990)	50% urban (1980) 70% urban (1990)	7 Percent per year (1975-1980) 5 Percent per year thereafter.	More labor intensive	Least due to greatest rural employment.

(1) Mortality assumed to reduce at the same rate for all three alternatives.

(2) Labor effects lag investment for three years.

population growth rates; furthermore, reduced population pressures resulting from the smaller growth rate would be a necessary precondition to long-term shifts in investment priorities.<sup>2/</sup> It is also assumed that a redirection of investment to rural areas and to labor intensive activities will reduce the GNP growth rate during the first fifteen years due to the lower productivity of these investments. Redirection of investment in urban areas such as low cost housing was required to maintain reasonable urban employment and to emphasize secondary cities. Not surprisingly, an increased concern on the distributional aspects of economic and social welfare normally accompanies a decrease in aggregate economic growth. Such policies indicate a less rapid rate of income growth for the upper classes in the Dominican Republic. Table 3 presents the actual investment schedules used in the model. Increased investment in rural areas, by increasing rural employment and the attractiveness of rural life relative to urban life, is assumed to decrease the rate of urban growth.

The effects of these assumptions, as projected by the model, are shown in Table 4. The beneficial effects of the total program appear to be very great. A population program would be expected to have only the most minuscule effect on population of age 15 to 64 by 1990. Therefore, the potential work force would remain essentially constant under the three alternatives. Employment is estimated at 1,365,000 under alternative III. Even increasing the percentage of the population actively interested in employment ("employable population") unemployment would decrease from 936,000 under assumption I to 739,000 under assumption III. Since this most optimistic projection implies an unemployment rate of 30 percent, the gravity of the problem is apparent. In the case of assumption I, the current rate of 40 percent total unemployment would remain for the rest of the century.

Similarly, the 102 percent increase in the population of urban areas in a fifteen year period foreseen with Alternative III, is indicative of the difficult character of the problem. The present urban infrastructure (housing, schools, public works, etc.) is inadequate for today's population. Yet this infrastructure would have to double in only 15 years just to accommodate the added growth. Alternative I, implies a 136 percent urban growth in the same period. That is, an additional 790,000 persons would live in the urban areas by 1990, beyond those foreseen in Alternative III. The consequences of this growth appear even more ominous.

---

<sup>2/</sup> Population calculations are from Ramírez N., "Proyecciones de la Población de República Dominicana por Sexo y Edad, 1970-1990 (versión preliminar)."

TABLE 3

GNP and Investment Schedules by Public and Private Sector, by Area, 1975-90  
under Assumptions I, II, and III  
(millions of 1970 pesos)

	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>
<u>Assumption I</u>				
GNP	2,033	2,851	4,000	5,609
Total Investment	407	570	800	1,122
Urban	318	445	625	877
Rural	89	125	175	245
Urban Public	6	163	228	320
Rural Public	59	54	76	106
Urban Private	202	282	397	557
Rural Private	50	71	99	139
<u>Assumption II</u>				
GNP	2,033	2,851	3,639	4,644
Total Investment	407	570	728	929
Urban	311	423	577	786
Rural	96	147	196	263
Urban Public	109	141	180	229
Rural Public	46	76	97	124
Urban Private	202	282	397	557
Rural Private	50	71	99	139
<u>Assumption III</u>				
GNP	2,033	2,851	3,639	4,644
Total Investment	407	570	728	929
Urban	298	380	496	632
Rural	109	182	232	297
Urban Public	109	141	180	229
Rural Public	46	76	97	124
Urban Private	89	247	316	403
Rural Private	53	106	135	173

Source: Compiled by DR/USAID Mission. Populations projections based on Nelson Ramirez "Proyecciones de la Población de la República Dominicana por Sexo y Edad 1970-1990"

TABLE 4

Population, Labor Force Employed by Sex and Region, 1975-90  
According to Assumptions I, II, and III

POPULATION (000)	Projections Under Assump. I				Projections Under Assump. II				Projections Under Assump. III			
	1975	1980	1985	1990	1975	1980	1985	1990	1975	1980	1985	1990
Urban	2,226	2,961	3,955	5,260	2,220	2,853	3,710	4,807	2,216	2,814	3,573	4,470
Rural	2,691	2,862	3,062	3,246	2,684	2,934	3,160	3,340	2,679	2,928	3,169	3,372
Total	4,917	5,845	7,017	8,506	4,904	5,787	6,870	8,147	4,895	5,742	6,742	7,843
<b>ECONOMIC POPULATION</b>												
Urban Aged 15-64												
Male	573	756	971	1,226	573	737	944	1,220	573	733	926	1,175
Female	679	881	1,112	1,402	679	833	1,056	1,359	679	817	1,037	1,321
Urban Employable												
Male	483	637	819	1,033	483	605	764	976	483	601	741	937
Female	206	267	248	313	206	260	338	448	206	253	342	462
Urban Employed												
Male	283	373	479	605	295	369	466	595	295	379	474	609
Female	123	160	149	188	148	187	243	323	148	185	257	351
Rural Aged 15-64												
Male	692	740	776	848	692	758	804	848	692	763	821	886
Female	636	691	743	817	636	734	797	851	636	755	815	891
Rural Employable												
Male	626	670	703	767	626	675	707	738	626	679	715	771
Female	155	163	171	187	155	191	215	238	155	196	228	264
Rural Employed												
Male	375	402	422	460	388	432	467	494	388	441	479	532
Female	92	98	103	112	112	139	159	179	117	145	171	203
Total Aged 15-64	2,580	3,068	3,605	4,294	2,580	3,068	3,600	4,278	2,580	3,068	3,600	4,262
Total Employable	1,470	1,737	1,941	2,301	1,470	1,730	2,024	2,400	1,470	1,730	2,026	2,437
Total Employed	873	1,033	1,152	1,365	943	1,127	1,336	1,591	943	1,150	1,381	1,695
Total Unemployed	593	704	789	936	527	603	689	809	527	579	645	739

Source: Compiled by DR/USAID Mission. Populations projections based on Nelson Ramirez "Proyecciones de la Población de la República Dominicana por Sexo y Edad 1970-1990"

Alternative III actually sacrifices average per capita GNP in 1990 as compared with Alternative I. (Alternative III has greater average per capita GNP than Alternative II at that time.) However, the sacrifice of the average is achieved at an improvement of the distribution of income, both in terms of rural and urban incomes, and of income distribution within urban areas. The ratios of total persons to employed persons under the three alternatives are:

	<u>1980</u>	<u>1985</u>	<u>1990</u>
Alternative I	5.66	6.10	6.23
Alternative II	5.13	5.14	5.12
Alternative III	4.99	4.88	4.62

Thus, with employment spread much more equitably in the society, and a greater percentage of families expected to have employed members, the income distribution would also be expected to improve with Alternative III (and to worsen with Alternative I).

The lessons of this model are immediate. The population program, in terms of both urbanization and total population growth is not to be considered in isolation, nor as a problem to be solved by the simple distribution of family planning services. As part of a holistic national program, the population program can yield significant benefits in terms of social development. Moreover, the situation in the Dominican Republic is now extremely serious, and the most ambitious program available will scarcely suffice. If the developments predicted in Alternative I occur, the consequences will be severe. A situation with a large, unemployed urban population and with an increasingly poor rural population will obviously result in poor nutrition, poor health, and in all probability continued high population growth rates to further complicate development programs.

Clearly, the difference between Alternatives are further accentuated as projections are further extended into the future. Moreover, the differences grow at an accelerated rate. By 1990, the last year of the projections presented, the effects on the labor force of Alternative III have barely begun to be noted, but they would become increasingly evident in the following decade.

#### C. LOSSES DUE TO ILL HEALTH

Death and diseases, among other affects, remove people from economically and socially productive activities. The developmental

consequences of this fact are serious but difficult to measure. Accounting for the present and future economic and social loss from the premature death of productive members of the population, obviously is theoretically desirable for cost-benefit analysis but impractical to quantify. Assigning a cost to the death of an employable adult is difficult in a society with 40 percent under/unemployment. The following tentative findings are the result of a relatively simple analysis. The magnitude of the effects are observable, even if detailed cost analysis is not feasible.

Mortality in adults is a serious economic loss. The investment in raising and educating children is so long and expensive that, in poor societies with high discount rates, negative present values are often observed for education and health investments in children. On the other hand, for active adults where these past investments represent sunken costs, mortality has greater economic consequences.

Table 5 presents data related to the mortality in adults in the Dominican Republic. As pointed out earlier, it is surprisingly high. Barbados, another Caribbean country with a similar economic development level, and similar population, has a far lower mortality. Attributing the difference between Barbados and Dominican mortality rates as "excess deaths", it is possible to calculate that over 5,700 of the approximately 60,000 deaths which occur annually are excess deaths. Assuming that the average expected economically productive life is to age 62.5 years for all adults, the number of potentially productive person years lost per year is 165,370. Clearly, peso values associated with this mortality (even at the relatively low yearly income figures for Dominican poor) would be many million of pesos.

Table 6 shows the incidence of perceived illness in a two-week period for three Dominican population groups. Roughly 12 percent reported illness, indicating an average of more than 3 perceived illness episodes per person yearly. As expected, females have somewhat higher disease incidence than males. The tendency toward less perceived illness in urban population than in rural, and in urban middle classes compared to urban lower classes, compares both with the results of survey research in other countries and with our expectation. These data must be interpreted with care, however, since the preliminary tabulations are for a subsample, and since there is some indication that perception of illness varies significantly between social classes. Therefore, additional conclusions as to differential mortality within groups are not drawn.

Another, perhaps more interesting approach, focuses on the days of bed rest (either in the home or hospital) for populations of school age and the economically active. These are shown in Table 7. Overall .405 days per person (891 days/2,198 persons) were lost. Of these.

Table -5

## ESTIMATIONS OF EXCESS MORTALITY IN ADULTS IN THE DOMINICAN REPUBLIC.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age Group	Population 1975	Mortality Rate (Per 1,000)	Mortality Rate Barbadoes (Per 1,000)	"Excess Mortality Rate" (Per 1,000)	Expected "Socio-Economic" Productive Life	"Excess" loss of Person Years Per Year	Excess Mortality
15-19	572,136	2.6	1.7	.9	45	22,172	514.6
20-24	456,139	3.7	1.1	2.6	40	47,436	1140.3
25-29	355,534	4.0	1.5	2.5	35	31,109	866.3
30-34	252,474	4.7	1.6	3.1	30	23,480	762.7
35-39	205,023	4.9	1.8	3.1	25	15,889	635.6
40-44	196,560	5.2	2.7	2.5	20	9,826	491.4
45-49	167,131	7.8	4.6	3.2	15	8,022	534.8
50-54	121,260	10.6	5.9	4.7	10	5,699	569.9
55-59	<u>91,605</u>	<u>15.7</u>	<u>12.1</u>	<u>3.6</u>	<u>5</u>	<u>733</u>	<u>166.6</u>
TOTAL	2,417,862	59.2	35.0	24.2	225	165,370	5705

(4) = (2) - (3);

(1) SOURCE: Ramírez, Nelson, "Proyecciones de la Población de la República Dominicana por Sexo y Edad, 1970-1990."

(2) SOURCE: "Diagnos" Survey

(3) SOURCE: UN population yearbook.

(5) Assuming in all cases that expected "productive" life is 65.5 years.

(7) = (5) X (6)

Table -6

INCIDENCE OF PERCEIVED ILLNESS  
IN THE DOMINICAN REPUBLIC, 1974 <sup>1/</sup>

Population, By Area and Income Class	Males	Females	Total
<u>RURAL</u>			
Sampled Population	356	388	744
Reporting Illness	42	50	92
%	11.8	12.9	12.4
<u>URBAN POOR</u>			
Sampled Population	667	728	1395
Reporting Illness	76	91	165
%		12.5	1.8
<u>URBAN MIDDLE INCOME</u>			
Sampled Population	290	366	656
Reporting Illness	28	48	76
%	9.7	13.1	1.6
<u>TOTAL</u>			
Sampled Population	1313	1482	2795
Reporting Illness	144	189	333
%	11.0	12.8	11.9

SOURCE: Preliminary Tabulations, Encuesta Diagnos, 1974.

<sup>1/</sup> Refers to the persons reporting illness during the preceeding "fifteen days." The term "quince días," translated literally as fifteen days, is used in Spanish to signify a two-week period.

Table -7

INCIDENCE OF ILLNESS AND RESULTING  
OR HOSPITALIZATION PER TWO-WEEK PERIOD  
1974 <sup>1/</sup>

Population By Area, Sex, & Income	Age	Sampled Population	Per Capita/15 Days			Incidence Indicators/15 Days		
			Number Reporting Illness	Days Lost		Reporting Illness <sup>2/</sup>	Percentage Days Lost Per Person <sup>3/</sup>	Percentage Production Days Lost
				Total	Econ.			
RURAL								
Male	5-14	83	8	21	7	9.64	21.3	131.3
	15-54	173	12	57	49	6.94	37.9	86.0
Female	5-14	109	9	38	24	8.26	34.9	63.2
	15-54	184	23	75	34	12.50	40.3	45.3
URBAN POOR								
Male	5-14	190	20	99	59	10.53	57.1	59.6
	15-54	341	30	125	90	8.80	36.7	72.0
Female	5-14	193	12	19	17	6.06	9.6	89.5
	15-54	383	47	262	90	12.27	68.4	34.4
URBAN MIDDLE								
Male	5-14	69	8	13	11	11.59	17.8	84.6
	15-54	169	12	41	31	7.10	24.3	75.6
Female	5-14	73	4	17	17	5.48	22.3	100.0
	15-54	226	32	124	60	14.16	54.9	48.4
TOTAL								
Male	5-14	342	36	133	77	10.53	31.9	57.9
	15-54	683	54	221	120	6.12	21.3	76.2
Female	5-14	380	25	74	58	6.50	15.5	78.4
	15-54	793	102	461	184	12.86	51.1	39.9

SOURCE: Preliminary Tabulations, Encuesta diagnós. 1974.

- <sup>1/</sup> Refers to those reporting illness and, as a consequence, often leading to absence from work or school.
- <sup>2/</sup> Refers to the number of persons reporting illness as a percentage of total number of respondents multiplied by 100.
- <sup>3/</sup> Refers to the number of days lost from work or school as a percentage of total respondents.
- <sup>4/</sup> Refers to the number of days lost, from work or school as a percentage of total days lost.

54.8 percent (489 out of 891) were from persons who were either students or employed. These figures reduce to approximately 10.6 days lost per year per person in these critical age groups. There are estimated to be 3,705,280<sup>3/</sup> persons in the Dominican Republic in these age groups, which implies that the total man years lost because of illness is approximately 106,000 per year. The losses due to excess mortality are greater but any program that reduces productive days lost due to illness would be expected to show great benefits. Since half of these lost man years are in fact in student and worker population, the effect of improvements should be fairly immediate in productivity.

A more difficult problem is involved in discussing the loss of potential related to poor nutrition, or to illness that is not perceived as sufficiently serious to require bed rest. Scattered results from other countries indicate that poor nutritional status reduces productivity for manual laborers. The massive energy requirements for agricultural labor in the Dominican Republic indicate the importance of high protein calorie nutrition levels. Other evidence also demonstrates the reduction in worker efficiency from febrile and other illness. Lacking quantitative data, these problems are merely noted in passing.

#### D. EXPENDITURES IN MEDICAL CARE

Medical care in economic terms is partially a consumer good and partially an investment. Expenditures which reduce losses due to ill health are to that extent investments. On the other hand, people demand medical care to ameliorate sickness and anxiety, and such services are primarily consumer services. Interestingly, it is generally the case that private medical expenditures and good health increase in parallel, not because medical services necessarily bring such good health, but probably because increased social and economic well-being that produces good health also allows people to "consume" more medical services. (In fact, most illness are self-limiting and the patient gets better with or without medical attention.) Consequently, an improvement in health does not automatically lead to a reduction of expenditures on health care. At the same time, however, it is desirable to provide medical services that are more cost-effective in serving consumer needs.

Table 8 illustrates the approximate level of expenditures on medical services per year as 109.8 million pesos. This represents approximately 4.7 percent of the GNP of 1973. This value, however, does not include some of the investments in resources to provide medical services, (e.g., medical education) nor does it include portions of

---

<sup>3/</sup> Ramírez, Op. Cit.

Table -8

EXPENDITURES FOR MEDICAL CARE

(Millions of Pesos)

Direct Payments by Individuals (Projected 1975)		51.5
Pharmaceuticals	28.3	
Physician Service	9.7	
Other	13.5	
General Budget of the Government (1973)		38.3
SESPAS	21.4	
Other	16.9	
Decentralized Government Agencies (1972)		20.0
IDSS	18.8	
Other	1.1	
	TOTAL	\$109.8

SOURCES: "Presupuesto Ejecutado"  
 Roberts, P., "Total Private EXPENDITURES on  
 Health Care Services."

expenses in other sectors attributable to health (e.g., aqueduct and sewerage expenditures). While 4.7 percent of total GNP devoted to medical expenditures appears reasonable for a country at the level of economic development of the Dominican Republic, the fact that less than 20 percent of total public and private health care expenditures are controlled by the Secretariat of Public Health is unusually low for Latin America.

The nature of the largest portion of this expenditure, direct purchase of medical services and drugs, can be appreciated from Table 9.<sup>4/</sup> Over 42 percent of these expenditures were for medicines. Particularly interesting are the very high expenditures for electrolytic solutions (18 percent of total) among the poorest population. This is illustrative of the grave problem created by diarrhea, since serums are used primarily for rehydration of children with diarrhea, see also Chapter VII. It is also safe to say that many of these other medications (liquid tonics, vitamins, pills and tablets) are of little therapeutic value. Physician consultations absorb a fairly uniform 15.4 to 18.8 percent of total medical expenditures among all income groups. Apparently, all urban socio-economic levels do use private physician services to some extent. Approximately 9.6 percent of the medical budget of "middle income" groups (100 to 300 pesos per family per month) is spent on public hospitals services and corroborates a feature previously noted. Public hospitals, which are legally free institutions, in fact have established an "informal" system of fees for admission and discharge of patients.

Figure 3 illustrates that out-of-pocket medical expenditures increase with increased income. It is probable that there is in fact some asymptotic figure close to an average yearly per capita expenditures of RD\$60, or for monthly in excess of RD\$5. Interestingly, the RD\$60/month is approximately the expenditure level maintained by the Social Security Institute per beneficiary, indicating that the level of spending in that institution may in fact approach the maximum level of health care purchases aspired to by the Dominican consumer.<sup>5/</sup>

Evidence suggest that medical services are inefficient in the Dominican Republic, and that considerably more health benefits could

---

<sup>4/</sup> The following data is from Santo Domingo. More complete data from the "Diagnóstico" survey will be available but has not yet been tabulated. Further data will be available in 1975 from a national study of family expenditures.

<sup>5/</sup> Whether this level is appropriate in terms of equity or of efficient use of resources is quite another matter.

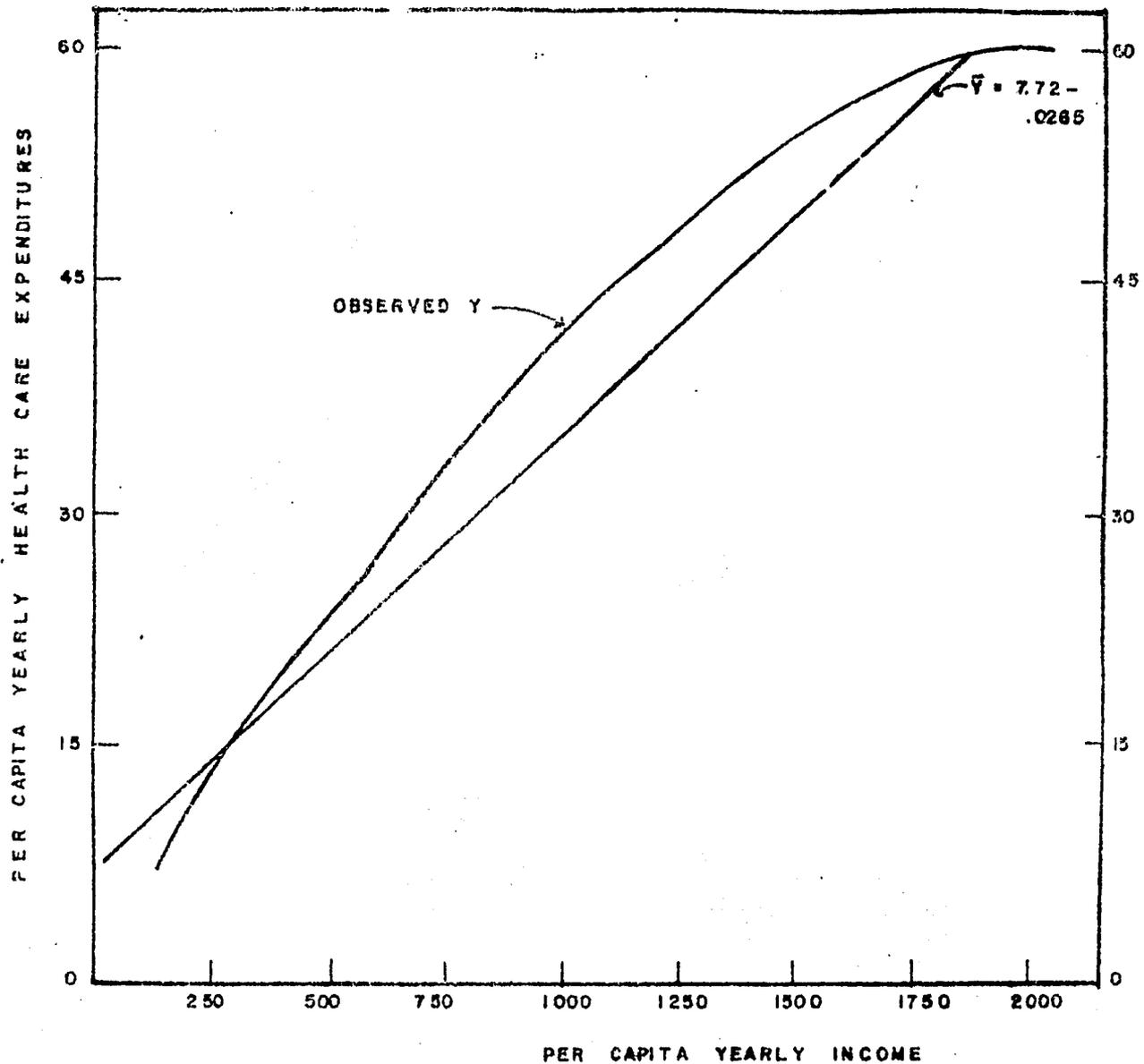
TABLE 9

Family Health Care Expenditures According to Goods and Services Purchased, by Urban Income Groups  
1969

	TOTAL		Less Than \$100		\$100.1 to \$300		\$300.1 to \$600		\$600.1 plus	
	(\$000)	%	(\$000)	%	(\$000)	%	(\$000)	%	(\$000)	%
<b>Distribution of Persons</b>		100.0		19.7		50.0		19.3		11.0
<b>TOTAL EXPENDITURES</b>	376,441.6	-	30,045.7	-	139,778.9	-	100,851.2	-	195,765.8	-
<b>Total Medical Expenditures on Medical as % of Total Expenditures on Medical</b>	14,934.7	100.0	1,597.0	100.0	5,813.0	100.0	4,544.7	100.0	2,070.0	100.0
<b>Physician Consults</b>	2,601.7	17.4	283.7	10.1	896.7	38.9	856.1	30.4	564.0	20.6
<b>Hospitalization</b>	2,178.5	14.6	135.4	9.0	1,253.8	21.6	765.9	16.9	423.4	13.2
Private	1,527.7	10.2	81.6	5.5	293.7	5.1	754.4	16.6	396.0	12.9
Public	650.8	4.4	51.8	3.4	560.1	9.6	11.5	0.3	27.4	0.9
<b>Diagnostic Services</b>	1,585.5	10.6	43.2	2.9	473.7	8.1	702.8	15.5	365.8	11.9
Laboratory	1,264.4	8.5	43.2	2.9	433.4	7.5	530.0	11.7	257.8	8.4
X-Rays	321.1	2.2	-	-	40.3	0.7	172.8	3.8	108.0	3.5
<b>Medicines</b>	6,282.3	42.1	901.8	59.3	2,514.8	43.2	1,606.3	35.3	1,229.1	40.0
Prescriptions & Related	3,626.7	24.3	249.9	16.6	1,539.7	26.5	1,039.3	22.9	797.8	26.0
Injections	777.2	5.2	101.5	6.7	311.2	5.4	231.0	5.1	100.1	3.3
Pills & Tablets	530.3	3.6	81.2	5.4	195.6	3.4	120.0	2.6	133.5	4.3
Vitamins	448.0	3.0	119.1	7.9	192.3	3.3	68.0	1.5	71.7	2.3
Liquid Tonics	372.1	2.5	35.8	2.4	173.4	3.0	84.4	1.9	78.5	2.6
Electrolytic Solutions	287.1	1.9	284.8	18.9	2.3	0.0	-	-	-	-
Antibiotics	240.9	1.6	29.5	2.0	100.3	1.7	53.6	1.4	47.5	1.5
<b>Dental Services</b>	544.3	3.6	10.1	0.7	164.2	2.8	115.2	2.5	254.8	8.3
<b>Optometrist Services</b>	377.2	2.5	-	-	40.3	0.7	244.8	5.4	92.1	3.0
<b>Other</b>	4,991.9	33.4	135.9	9.0	869.5	15.0	253.6	5.6	143.4	4.7

Source: Banco Central. Estudio sobre Presupuestos Familiares. Santo Domingo. July 1972.

FIGURE 3  
RELATIONSHIP BETWEEN INCREASED INCOME AND HEALTH  
CARE EXPENDITURES\*



This linear relationship was derived for the four income groups. The  $R^2$  of 94, when adjusted for a small  $r$  gives  $R^2 = .86$ . Calculations performed with nine income groups led to the formulation of the relationship as estimated yearly health expenditures,  $Y = \$10.12 + .02518$  times yearly income. The adjusted  $R^2$  for this equation was .84. Both indicate the positive relationship is highly significant.

SOURCE: ESTUDIO SOBRE PRESUPUESTO FAMILIARES. BANCO CENTRAL,  
JULY 1972.

be gained from the expenditures made. Perhaps the most serious problem is an accentuation of hospital based curative medicine rather than more cost-effective preventive measures (See Chapter VI).

Table 10 demonstrates that the physician sees an average of 25.95 patients per working day. The high level of non-respondents to this question has been interpreted to suggest that even this figure is high. An average weekly case load of 130 patients is low by international standards. As the Table further illustrates, some Dominican physicians do see more patients. Paradoxically, medical students who observed and analyzed physician/patient contacts noted that the physicians seeing more than 100 patients per day generally provided the highest quality standards of all physicians visited.

While available physician manpower is low, medical schools are producing physicians at a very high rate, and are expanding enrollment even more rapidly. Currently, the Dominican Republic has the second highest ratio in the hemisphere (exceeded only by Argentina) of medical students to population, and the highest ratio of students to graduates-per-year. Not surprisingly, emigration of new medical school graduates is high, and it will probably increase in the future. Assuming that 50 percent of the new graduates continue to emigrate, that 350 doctors graduated in 1974 and 500 will graduate in 1980, and that training costs about \$20,000 per physician,<sup>6/</sup> this represents an export of RD\$3.5 million in human capital in 1974, that will increase to RD\$5 million per year by 1980.

Perhaps a more serious consequence is the effect of employment pressures by these physicians in the Dominican Republic. Due to their professional status and social prestige, their demands are hard to forestall. Consequently, public health institutions tend to cater toward programs filled with health professionals and relegate the demands of the health consumer to lower priority. Under these circumstances, cost-effective programs are difficult to attain or maintain. The emphasis is on employment intensive programs and systems which do provide income for high salaried physicians. Finally, of 1755 physicians surveyed by the Dominican Assessment team, 862 (49 percent) reported post-doctoral specialization. In a country where the largest categories of morbidity are simple diarrhea or respiratory infections, and where most people do not enjoy medical care, such a core of post-graduate trained physicians is indicative of an inequitable allocation of resources.

---

<sup>6/</sup> The source of these figures is the medical school of Universidad Autónoma de Santo Domingo (UASD), by far the largest in the Dominican Republic. All figures are approximate.

Table -10

DISTRIBUTION OF PATIENTS PHYSICIANS STATED THEY HAD SEEN  
ON THEIR LAST FULL DAY OF PRACTICE, BY REGION

Region	NUMBER OF PATIENTS ATTENDED ON PREVIOUS DAY OF PRACTICE											TOTAL	
	Average	Standard Deviation	1-5	6-10	11-15	16-20	21-25	26-35	36-50	51-75	76-100		101 +
I	24.39	23.23	35	34	33	18	23	31	26	13	4	3	220
II	29.44	21.10	6	5	15	8	10	12	9	5	3	-	63
III	28.22	20.63	2	7	5	3	2	6	9	2	1	-	37
IV	33.36	23.85	1	2	2	-	2	1	3	2	1	-	14
V	24.71	16.13	1	4	3	3	2	3	4	1	-	-	21
TOTAL	25.95	21.88	45	52	48	32	39	53	51	23	9	3	355

URCE: Survey of Human Resources for Health in the Dominican Republic.

(a) A sub-sample of every third questionnaire was selected for Region I, but all respondents were included in the other regions.

Similarly, facilities appear to be underutilized. There are 460 facilities offering outpatient services belonging to Government agencies. The vast majority of these offer services no more than four hours per day. Two or more facilities may serve the same village, while other areas of the country have no immediate facilities. The maximum potential accessibility that would be available from this system is limited by institutional eligibility constraints. For example, most facilities in the east -- Región V -- belong to the IDSS and are not available for MCH services. The lack of outreach coupled with the lack of appropriate operating hours aggravate the problem. Much of the investment in outpatient facilities has brought questionable results.

Due to the lack of statistics on hospitals services, an extensive sample of hospital occupancy was carried out. By obtaining a complete census of beds and occupancy in each institution visited, it was possible to develop a picture of some hospital services offered. The 6,742 beds of the SESPAS were observed to have an occupancy of 79 percent, quite high by Latin American standards. The highest averages occurred in the capital city. The number of 234,460 hospitalizations recorded in 1973 would indicate an average length of stay of 8.32 days, also acceptable when compared to other Latin America standards. The situation in the IDSS similarly was 80 percent occupancy for 1,529 beds. However, if their reported number of discharges for 1973 was correct<sup>7/</sup> -- 28,956 -- the average length of stay would be about 15.5 days. This is very long, and a more appropriate stay would imply a use drop of 50 percent, implying low efficiency of facility investments. In the private sector, 40 percent utilization was observed in 3,049 beds -- a strong indication of inefficiency and/or over-investment.

A major portion of the investment in health facilities is in medical equipment such as X-ray machines, laboratories, surgical suites and their equipment, etc. Moreover, this equipment is necessary if physicians are to provide services consonant with their training and with the fees charged. However, Table 11 illustrates the small percentage of public and IDSS facilities that are supplied with even the most basic equipment and services. Not only does this reflect poor efficiency in the use of personnel, but it also indicates poor maintenance and low returns to investment in equipment. Unfortunately, the Dominican team has not completed tabulation of data regarding existence of inoperative equipment, but a cursory examination of the survey instrument (questionnaire) suggests many of these facilities once had operating X-ray and laboratory equipment that are now inoperative.

---

<sup>7/</sup> The previous year more than 40,000 hospitalizations were recorded, and no explanation was offered for the difference.

Table 11 Equipment Functions  
in Health Facilities in the Dominican Republic

Sub Sector	Facilities	XRay	Clinical Lab	Pharmacies	Ambulance Service
SESPAS	202	31	73	75	9
IDSS	90	18	22	54	16
PRIVATE	771	129	167	40	5
OTHER	41	10	10	15	5

Source: Study of Facilities for Health Care

The foregoing data strongly suggests that medical services are less than efficient, and that more efficient utilization of the nearly five percent of the GNP that presently goes into these services would result in considerably greater health benefits to the population.

## E. OTHER CONSIDERATIONS

### E.1. Income Distribution

The consideration of health services as a necessary consumer good calls for analysis of the distribution of these services and their costs. These equity considerations are observed in the estimation of direct consumer expenditures shown in Figure 3. The direct association observed between expenditure and service received can be justified as a relationship. As expected, there is a decreasing percentage of income spent on medical services for the upper classes. Significantly, the decrease is at a fairly constant rate.

Governmental services are divided between the Secretariat of Health which spends approximately \$21.4 million and among other governmental agencies that spend approximately \$16.9 million. These latter expenditures provide services to relatively small segments of the population. The financial burden of IDSS services probably may be regarded as if it were a tax on manufactured goods. Thus IDSS services are probably regressive, charging much of the population a relatively fixed portion of total wages in order to provide services to an urban minority of relatively elite industrial workers. Similarly, the Armed Forces medical budgeting expenditures are probably a relatively inequitable redistribution of income toward a minority population. Even the Secretariat of Health tends to provide services primarily to an urban minority at the expense of the rural population. Thus health services are consonant with other social institutions that are not now serving their potential role of redistribution of real income toward the poor.

### E.2. Employment

Several countries have organized medical services to provide low-cost care to poor majorities through the use of paramedical personnel. Not only does this lead to a real wealth transfer toward lower income groups, it also can generate relatively large amounts of employment. As has been stated, currently health services absorbs nearly five percent of GNP, but this amount is largely for imported medicines, amortizing expensive facilities and (imported) equipment, and paying highly salaried professionals. Services such as SANAR and CURAR (see Chapter VI), by using less expensive medicines, by stressing outreach services, and by

hiring non-professional personnel, would be far more effective in creating employment. Thus for each RD\$500 per month physician in a traditional system, at least four RD\$125 per month paramedicals could be hired. Almost no effort has been made in the Dominican Republic to take advantage of these possibilities. Even the recent ONAPIAN/ILO employment study suggested merely expanding the current systems as increased demands for services are generated. To the extent morbidity and mortality are decreased among the economically productive population, to that extent the nation is saved employment losses.

### E.3. Import Substitution

Principal imports for medical services are drugs and equipment. Little can be done with respect to the latter, other than to improve maintenance, so as to increase the average life of equipment. At the present time the country has a limited capacity for a pharmaceutical industry except the importation of components, final preparation and packaging. Some benefit could be obtained by supplanting drugs of high cost or little benefit by more cost-effective drugs, and making-up in increased volume for a lesser profit per transaction. This would require considerable education and reorientation of the medical fraternity. Increased volume of more cost-effective medicines could be assured if there were to be programs on how to use them. Such programs, backed by strong purchasing controls and procedures, and special packaging and distribution, could conceivably open new markets to importers.

### E.4. Tourism

If tourism is to be developed as a major national industry, improved hygienic conditions in the tourism areas, particular those away from major cities, will be necessary.

## F. SUMMARY CONCLUSIONS

1. The rapid economic growth of the Dominican Republic in recent years has not been proportionately shared by the whole population, and conditions for the majority of poor appear not to have improved much.

2. While the balance of trade situation of the D. R. is delicate due to uncertainties of world markets, it would appear that significant budget surpluses will exist for 1974, 1975, and probably 1976, and large trade surpluses for 1975 and 1976.

3. Basic causes of the present income distribution are decapitalization in the rural sector, serious unemployment generally, and recent inflation.
4. Over the next fifteen years, the problems of unemployment and urban growth can at best be only partially remedied.
5. Among the socio-economic consequences of poor health are excess adult mortality of 5,700 deaths per year (with a calculated loss of 164,000 man years annually), morbidity involving more than 100,000 man years of bed rest per year in the school and working age population, and unmeasured but serious loss of productivity due to other illness.
6. Approximately RD\$110 million per year are spent on medical services, or roughly 4.7 percent of the GNP.
7. While these expenditures are probably not reducible, greater benefits might be achieved from them.
8. Lost investment as a consequence of emigration of physicians is estimated to rise from about RD\$3.5 to about RD\$5 million per year from 1975 to 1980.
9. Health services are not now playing a significant role in redistribution of income to the poor.
10. Cost-effective opportunities for low-income employment generation exist in the health field, and are not being utilized.
11. An effective and low-cost drug purchase program to provide medicines for financially indigent population would be possible, and would help reduce incremental increases in greater future foreign exchange costs for drug imports.

### III. THE DETERMINANTS OF HEALTH

"Modern medicine might be compared to a mighty and glamorous ocean liner with powerful engines and luxurious appointments, but with no compass and an absurdly small rudder. It moves fast but its course has not been charted, its ports of call are uncertain and its destination unknown."

-René Dubos- 1/

#### A. GENERAL DISCUSSION

This section of the assessment does not deal specifically with materials from the Dominican Republic, for there have been few studies in this country on the distribution and determinants of health and disease. What follows is an attempt to place Dominican health problems in a global context and to explain the rationale for a multi-sectoral approach to furthering health in this society.

Laymen and physicians alike are prone to think that the health of the individuals of a given country is largely determined by the availability of doctors, clinics, and hospitals. Indeed, the number of inhabitants per physician and the number of hospital beds per thousand inhabitants are commonly employed measures of the state of health of a given society. Obviously, the services of a competent surgeon and the facilities of a modern hospital are crucial for the welfare of a patient suffering from acute appendicitis, but man's health and his survival are determined to a much greater degree by his ability to adapt to his environment than by the availability of medical services.

#### A.1. Nutrition

The most important single environmental factor related to the health of an individual or a society is the availability of sufficient

---

1/ René Dubos, Man Adapting, Yale University Press (New Haven: 1965), p. 439.

food of appropriate quality. Malnutrition has been identified as the world's number one health problem,<sup>2/</sup> and its lethal effects are certainly striking in the western hemisphere. Of 35,095 deaths in children under five years of age in ten countries of the Americas, 57 percent were due to nutritional deficiency and immaturity (an immature infant is a liveborn infant with a birth weight of 5 1/2 pounds or less) as underlying or associated causes.<sup>3/</sup> Immaturity and low birth weight are believed to be attributable at least in part to the poor nutritional state of the mother, although immaturity may be due to other hazards of birth as well.

The adverse effects of malnutrition are heightened by infections by virtue of the increased needs for protein during febrile states. Diarrhea is particularly devastating for those whose nutritional state is precarious. Not only is it frequently associated with fever, but also with the loss of ingested nutrients as well. A young child suffering from second degree malnutrition can easily be thrown into a state of frank kwashiorkor or marasmus by a severe attack of diarrhea. This combination of events all too often terminates fatally.

A recent study of 1,100 middle and lower class Dominican pre-school children revealed that 75 percent of them suffered from some degree of malnutrition.<sup>4/</sup> Twenty-three percent were classified as having second and third degree malnutrition, i.e., they were seriously malnourished. It is hardly surprising that the death rate among Dominican pre-school children is 17 times higher than that of children of the same age group in the United States.

#### 4.2. Potable Water

The relationship between diarrhea and the ingestion of contaminated water is well known. Similarly, access to potable water has positive effects on reducing infant mortality. Infancy is divided

---

<sup>2/</sup> Abraham Horwitz in Alan Berg, The Nutrition Factor. The Brookings Institution, Washington, D.C.: 1973, p. 2.

<sup>3/</sup> Ruth Alice Puffer and Carlos V. Serrano, Patterns of Mortality in Childhood, The Pan American Health Organization (Washington, D.C.: 1972), p. 164.

<sup>4/</sup> William Henry Sebrell, et.al., "Nutritional Status of Middle and Low Income Groups in the Dominican Republic." Archivos Latinoamericanos de Nutrición, Número Especial (July 1972).

into the neonatal period (0 to 27 days) and the post-neonatal period (28 days to 11 months). While such elements as the quality of obstetric care, congenital malformations, and immaturity have a profound influence on death rates in the neonatal period, environmental factors predominate during the post-neonatal period. The Inter-American Study of Mortality in Childhood previously cited has shown that in those areas in which piped water inside the house is available to at least 80 percent of the families, the post-neonatal death rate varied from 4.8 per 1,000 to 29.2 per 1,000.<sup>5/</sup> In those areas with less than 30 percent of the families served with piped water, the post-neonatal death rate varied from 42.9 per 1,000 to 83.9 per 1,000.

In the Dominican Republic, about 60 percent of the population of the urban areas has a household connection for water, but in the rural areas, only 10 percent of the families have such facilities. This situation is reflected in the fact that gastro-enteritis is the second most frequently reported of the notifiable diseases in this country.

#### A.3. Education

One factor that seems clearly related to man's ability to adapt to his environment is education. The level of educational attainment of mothers may be one of the important determinants of infant mortality. Sloan examined the relationship between a number of variables and infant and pre-school mortality in Costa Rica, Mexico, Bangladesh (East Pakistan at the time), and Puerto Rico.<sup>6/</sup> While the role of medical care was not clearly established, female literacy and availability of food were positively and significantly correlated with reductions in mortality among children under the age of five years.

The importance of education in relation to infant and pre-school child mortality is also shown by the findings of the Inter-American Investigation of Mortality in Childhood.<sup>7/</sup> For infants born to Latin

---

<sup>5/</sup> Puffer, Op. Cit.

<sup>6/</sup> Frank Sloan, "Survival of Progeny in Developing Countries: An analysis of Evidence from Costa Rica, Mexico, East Pakistan, and Puerto Rico." The Rand Corporation (Santa Monica: July 1973), AID Contract R-733.

<sup>7/</sup> Puffer, Op. Cit.

American mothers with some secondary or university education, mortality declined from 15.4 during the neonatal period to 8.4 in the postneonatal period and to 6.0 in the one to four year group. For women with no education, mortality increased from 19.2 in the neonatal period to 28.8 in the postneonatal period and to 36.7 in the one to four year age group.

Admittedly, the foregoing reflects to an unknown extent the influence of social class; however, there is some evidence from the United States (New York City), which suggests that maternal education exerts a favorable effect on infant mortality that is independent of social class.<sup>8/</sup> A study of 142,017 live births and 3,115 subsequent infant deaths showed that sociodemographic risk, which included a level of educational attainment of eight years or less on the part of the women in the study, adversely affected mortality rates of those infants delivered on private services as well as those delivered on general services.

Parenthetically, it might be added that in Latin America, including the Dominican Republic, educational attainment is negatively and significantly correlated with fertility.<sup>9/</sup> <sup>10/</sup> If the GODR wishes to confront seriously the problems of achieving reductions in infant mortality and fertility, it should continue to invest heavily in public education.

#### A.4. Family Size

There is some evidence to suggest that family size may be implicated in the cause of disease, particularly malnutrition. In a house to house survey of Candelaria, Colombia, Wray and Aguirre found that children from larger families are more likely to be malnourished

<sup>8/</sup> Helen C. Chase. "A Study of Risks, Medical Care, and Infant Mortality." American Journal of Public Health, 63, (September 1973 Supplement), pp. 1-56.

<sup>9/</sup> Carmen Miró and Walter Mertens, "Influences Affecting Fertility in Urban and Rural Latin America." Milbank Memorial Fund Quarterly, 42, (1967), pp. 98-120.

<sup>10/</sup> Nelson Ramírez. "Situación y Tendencias Demográficas Actuales en la República Dominicana," (mimeo), September 1973.

than those from smaller families.<sup>11/</sup> In families with four or fewer children, 39 percent of the children were malnourished. In families with five or more children, 44 percent were malnourished.

This finding is hardly surprising. The same study showed that as laboring men in Candelaria get older, their income rises only a little while family size steadily increases. They attempt to compensate for this disparity by spending a larger proportion of their income for food, but per capita expenditures for food actually fall, and the children become increasingly malnourished.

Families are large in the Dominican Republic. The average number of children born to women who have reached the end of their reproductive span is 6.8. Only a few Latin American countries, including El Salvador and Honduras, have such elevated global fertility rates.

#### A.5. Health and Medical Care

If curative medicine is introduced into a primitive society, one would expect some improvement in health. However, the supporting evidence is not very convincing. Scrimshaw's well known study of three Guatemalan Indian villages is a case in point.<sup>12/</sup> In the "feeding village" no medical or public health services were provided, but the diets of infants and pre-school children were supplemented with milk and a high-protein cereal drink. No measures were taken in the third village, which served as a control.

During the five year period of the study, death rates declined in all three villages. However, the most striking decline occurred in the feeding village. Mortality in the treatment village and the control village declined to a lesser degree.

A more recent experiment was conducted in the Navaho Indian community of Many Farms, Arizona, where modern medical care was made

---

<sup>11/</sup> Joe D. Wray and Alfredo Aguirre, "Protein-Calorie Malnutrition in Candelaria, Colombia: I. Prevalence, Social and Demographic Factors," Journal of Tropical Pediatrics, 15, (1969), pp. 76-98.

<sup>12/</sup> N. S. Scrimshaw, M. A. Guzmán, M. Flores, and J. E. Gordon, "Nutrition and Infection Field Study in Guatemalan Villages, 1959-1964: V. Disease Incidence among Preschool Children Under Natural Village Conditions, with Improved Diet, and with Medical and Public Health Services," Archives of Environmental Health, 160 (1968) pp. 223-254.

available to some 2,000 inhabitants for the first time in history.<sup>13/</sup> Five years later, there was no clear-cut downward trend in infant mortality or the crude death rate. The authors felt that the program of medical care failed to have a greater impact because it ignored significant environmental factors.

There is some evidence that certain kinds of intervention not only influence mortality favorably but do so where it exerts its greatest influence during the first five years of life. Pregnant women who received care through a prepaid, comprehensive, health insurance plan in New York City had a lower incidence of premature delivery than all women in the same area, and their infants had lower perinatal mortality rates than all infants delivered in the city.<sup>14/</sup> The fact that infants born to women included in the health insurance plan fared better than those delivered by private physicians suggests that the differences could not be accounted for by variation in social class.

The findings related to a nurse-midwife program introduced in a poor county in California to alleviate the shortage of medical manpower are equally impressive.<sup>15/</sup> The nurse-midwives offered antepartum care, performed deliveries, and provided care to mother and child following delivery. During the three years the program was operative, the percentage of pregnant women receiving prenatal care increased, and there were marked reductions in the incidence of prematurity and in neonatal mortality. When the program was discontinued for lack of funds, the incidence of prematurity and the neonatal death rate returned to the pre-program level.

Nutrition rehabilitation centers appear to offer special promise. In Haiti, four percent of the children treated in nutrition rehabilitation

---

<sup>13/</sup> Walsh McDermott, Kurt W. Deuschle, and Clifford R. Barnett, "Health Care Experiment at Many Farms: A Technological Misfit of Health Care and Disease Patterns Existed in this Navaho Community." Science, 175 (1972) pp. 23-31.

<sup>14/</sup> S. Shapiro, L. Weiner, and P. N. Densen, "Comparison of Prematurity and Perinatal Mortality in a General Population and in the Population of a Prepaid Group Practice Medical Care Plan," American Journal of Public Health, 48 (1958) pp. 170-187.

<sup>15/</sup> B. S. Levy, F. S. Wilkinson, and W. M. Marine. "Reducing Neonatal Mortality with Nurse-Midwives," American Journal of Obstetrics and Gynecology, 109 (1971) pp. 50-58.

centers died within two years following discharge from the centers while 14 percent of the children in a matched group of controls died within the same period.<sup>16/</sup> One percent of the Guatemalan children in the nutrition rehabilitation group failed to survive the two year period following discharge from the centers while nine percent of the children in the control group died. While these results are not statistically significant due to the small numbers involved, they are impressive and encouraging.

More recently, a study of the nutritional status of the siblings of children who had been treated in Haitian nutrition rehabilitation centers showed that the standard weight for age of untreated, younger siblings at the time of admission, discharge, and follow-up.<sup>17/</sup> This suggests that the effects of educating the mothers of malnourished children are transmitted to younger siblings who have not been malnourished - an important finding.

#### B. INTERRELATIONSHIPS

In the foregoing paragraphs, various elements related to health have been discussed as if they acted independently of each other. In the Dominican Republic as in other developing countries the factors that determine illness and death as well as rapid population growth are multiple and interrelated.

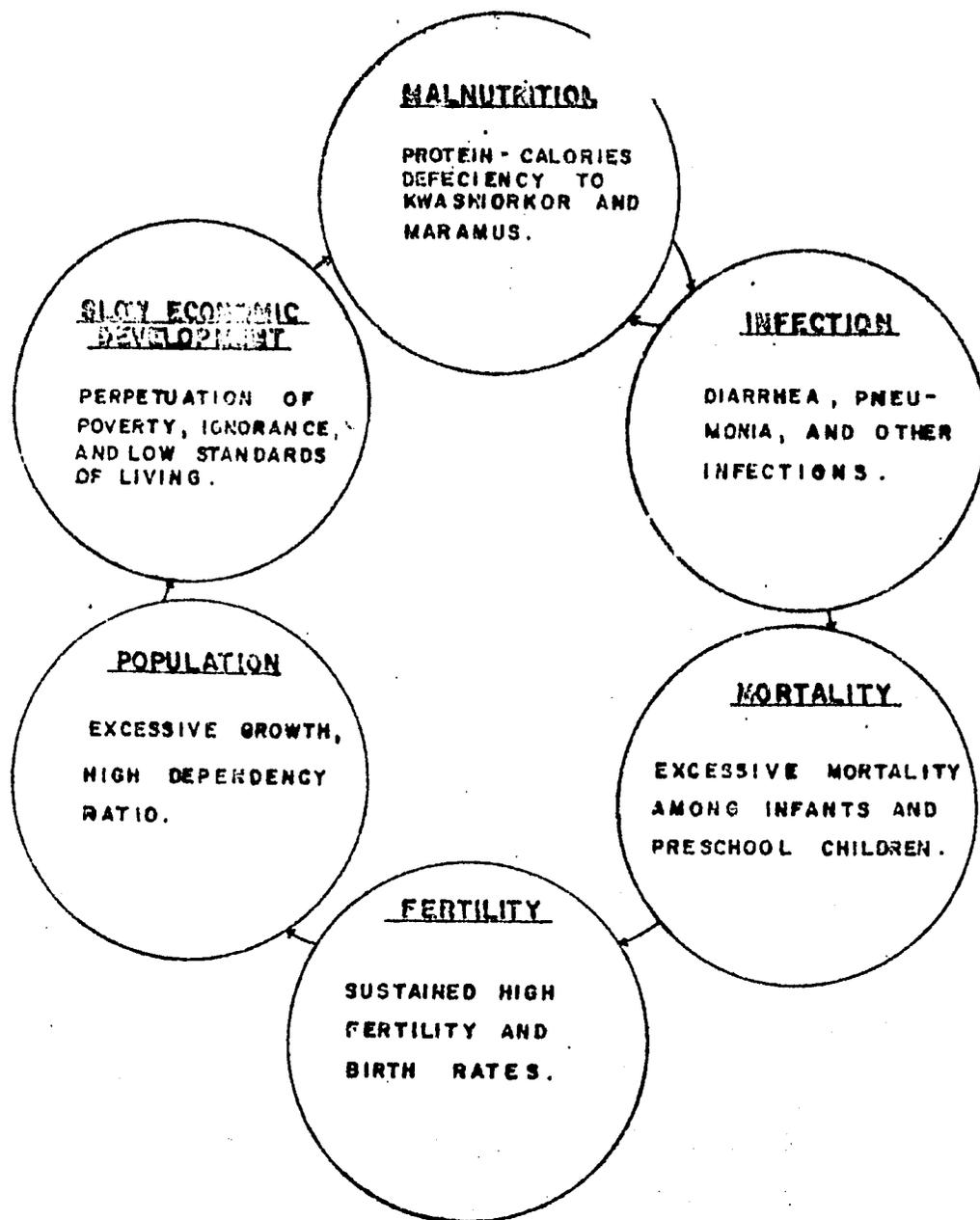
Nutritional deficiencies in the Dominican Republic are widespread, and particularly in children the lack of protein and calories in the diet leads to precarious nutritional states. The interaction of infection, notably diarrhea, and malnutrition in childhood all too frequently ends in death. This excessive mortality among the young leads to sustained high fertility and rapid population growth. The resultant growth slows the process of economic development, perpetuating ignorance and poverty which are causally related to malnutrition. These relationships are shown graphically in Figure 4.

---

<sup>16/</sup> M. Beaudry-Darisme, and M. D. Latham. "Nutrition Rehabilitation Centers - An Evaluation of their Performance," Unpublished report to the FAO/WHO/UNICEF Protein Advisory Group, (December 1971).

<sup>17/</sup> Ryland E. Webb, William Fougere, and Yvette Papillon, "An Evaluation of the Educational Benefits of Nutritional Rehabilitation Centers as Measured by the Nutritional Status of Siblings," Journal of Tropical Pediatrics (forthcoming).

FIGURE 4  
THE MALNUTRITION HIGH MORTALITY  
HIGH FERTILITY CYCLE



SOURCE: ADAPTED FROM JOE D. WRAY. "WILL BETTER NUTRITION DECREASE FERTILITY" INTERNATIONAL CONGRESS OF NUTRITION, MEXICO CITY, (SEPTEMBER, 1972).

Attempts to interrupt this vicious circle at one point are much less likely to succeed than coordinated action which confronts a number of the causal factors previously identified. Hence, the activities which are likely to form a part of the Government's program would include: improved nutrition, the provision of safe water, the prevention of infectious diseases in childhood and treatment to render them less virulent when they do occur, and ready access to family planning services for those women currently denied them by virtue of transportation costs and distance. Obviously, the implementation of such a program would be no easy task, and the AID participation would have to be selective. Nonetheless, this approach offers the best hope for improving the health of the Dominican population as well as for reducing the rate of population growth.

C. MORTALITY AS A DETERMINANT OF FERTILITY

Some authorities in the field of public health are convinced that it is difficult, if not impossible, to reduce fertility in areas where infant and preschool child mortality rates persist at high levels.<sup>18/</sup> Empirical data is not available for the Dominican Republic to test this hypothesis. However, there is considerable evidence to support the view that declines in mortality, particularly among children, favor declines in birth rates.

In a particularly interesting study, Potter and his colleagues pointed out that the duration of postpartum amenorrhea is indirectly affected by infant mortality, since the early death of an infant reduces the length of the period of lactation.<sup>20/</sup> Using data from the Punjab, the authors showed that if the effects of infant mortality were eliminated from 1,042 women, the average period of postpartum amenorrhea for that group of women would be increased by one-half month. In other words, the total period of amenorrhea for that group of women would be increased by 521 months. This result would be the equivalent of having 10 women using contraception successfully for 52

---

<sup>18/</sup> Carl E. Taylor, "Nutrition and Population," Dr. Alan Berg, Nevin S. Scrimshaw, and David L. Call (ed.), Nutrition, National Development and Planning, MIT Press (Cambridge and London: 1973) pp. 74-79.

<sup>19/</sup> Nevin S. Scrimshaw, "Myths and Realities of Public Health Programs," American Journal of Public Health, 64 (August 1974) pp. 792-798.

<sup>20/</sup> R. G. Potter, Wyon M. Parker, and J. E. Gordon, "A Case Study of Birth Interval Dynamics," Population Studies, 19 (1945) pp. 21-94.

months. Since the mean birth interval for these Indian women is 30 months, 17 births would be averted by having 10 women use contraception successfully for 52 months.

Frederickson analyzed the relationship between births and deaths in Ceylon between 1930 and 1960 in 21 districts.<sup>21/</sup> Briefly, he found that in those districts in which mortality declined, fertility declined as well. Later, he analyzed data from various countries and found correlations similar to those in Ceylon.<sup>22/</sup>, <sup>23/</sup> In summarizing his findings, the author stated:

... in a balancing movement, fertility tends toward an approximate equilibrium with mortality, that is, with a net reproductive rate above replacement but approximating unity".

Heer has shown that there was a positive and significant correlation between fertility and infant mortality in 41 countries while controlling four variables, including gross national product per capita.<sup>24/</sup> The correlation between fertility and infant mortality was stronger than that of fertility with any of the other four variables.

Ekane's analysis of data from 32 developing countries, in which he utilized six variables at two distinct points in time, 1950 and 1960, led him to conclude that low illiteracy rates and low mortality rates were optimum conditions for low fertility.<sup>25/</sup> He added that governments committed to reducing birth rates in their respective countries "should invest large amounts of money in health and education".

A study of the intrauterine device in Hong Kong revealed an interesting finding. Almost twice as many women who had had three or

---

<sup>21/</sup> H. Frederickson, "Determinants and Consequences of Mortality Trends in Ceylon," Public Health Reports, 76 (1961) pp. 659-663.

<sup>22/</sup> "Dynamic Equilibrium of Economic and Demographic Transition," Economic Development and Cultural Change, 14 (1966) pp. 315-322.

<sup>23/</sup> "Feedbacks in Economic and Demographic Transition," Science, 166 (1969) pp. 837-847.

<sup>24/</sup> David M. Heer, "Economic Development and Fertility," Demography, 3: 2 (1966) pp. 423-444.

<sup>25/</sup> I. I. Ekane, "A Further Note on the Relation Between Economic Development and Fertility," Demography, 9 (1972) pp. 383-399.

four pregnancies and had lost a child wanted an additional child as those women of the same parity who had not lost a child.<sup>26/</sup> Similar findings were noted by the author in two villages in Nigeria.

In a rural area of Turkey, the infant mortality rate declined rapidly after a program of community medicine, which included family planning, was initiated.<sup>27/</sup> Birth rates remained at the same level for three years. During the fourth and fifth years, the birth rate declined sufficiently to reduce the net rate of population growth to a level slightly below that which prevailed prior to the decline in infant mortality. This is shown graphically in Figure 4A.

Declines in infant mortality in a number of Taiwanese townships were followed by a reduction in birth rates within three years.<sup>28/</sup> A study of 75 Puerto Rican municipalities revealed that changes in regional death rates were associated within a few years by fully compensating birth rates without a significant increase in the rate of population growth.<sup>29/</sup>

Additional examples could be cited from Puerto Rico and Taiwan. Suffice it to say that the available evidence suggests that declines in infant and preschool child mortality are a necessary but not sufficient precondition for declines in birth rates. The possibility that mortality is one of the determinants of fertility in the Dominican Republic has not been investigated as yet. Information from the "Diagnostico" Survey lends itself to such a study, which will be undertaken as soon as the raw data has been processed for computer analysis. It is known that mortality is higher in the rural areas than in the cities, and fertility is higher in the rural areas as well, although the association clearly may be secondary.

---

<sup>26/</sup> Taylor, Op. Cit.

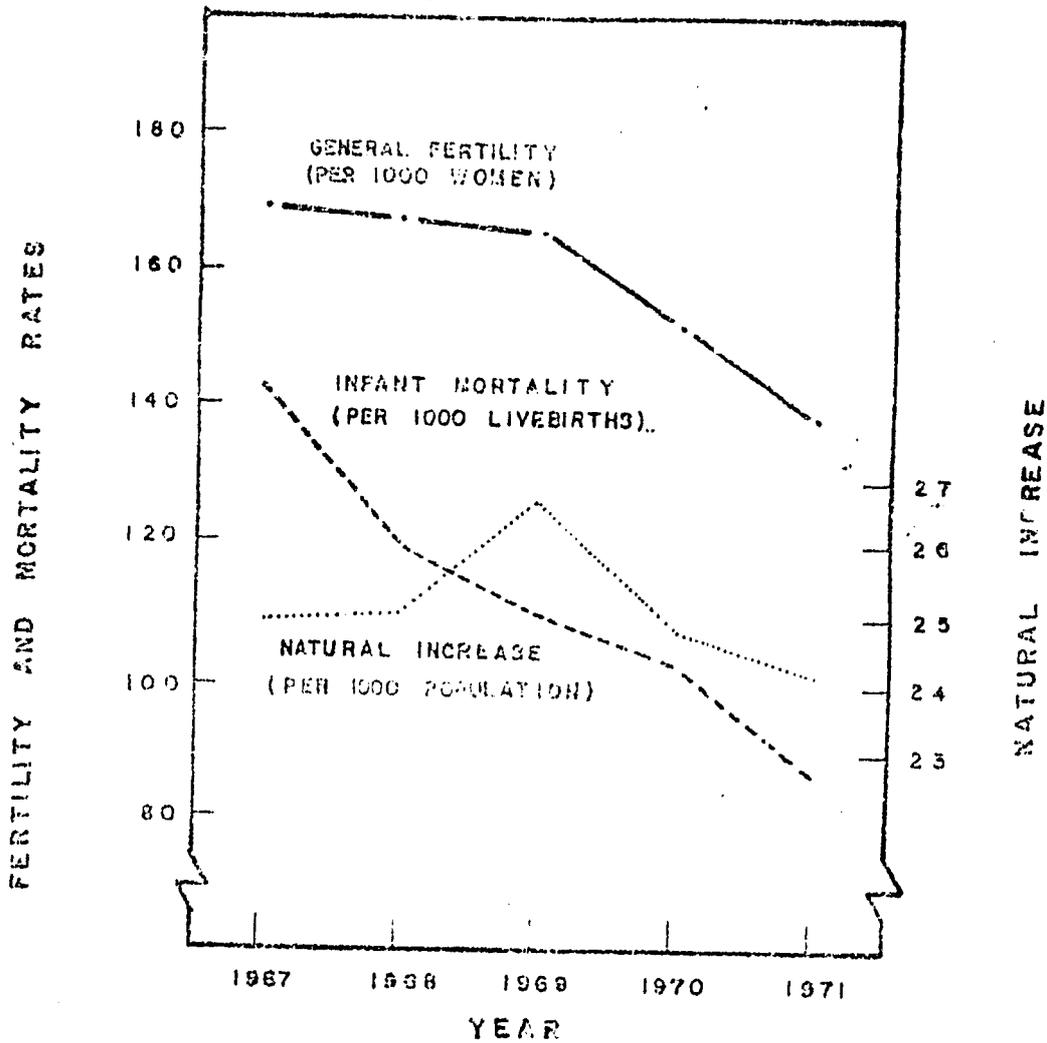
<sup>27/</sup> Joe B. Whay, "Will Better Nutrition Decrease Fertility?" IXth International Congress of Nutrition, Mexico City, (September, 1972).

<sup>28/</sup> T. Paul Schultz, "Effectiveness at Family Planning in Taiwan: A Methodology of Program Evaluation," The Rand Corporation (Santa Monica, 1969).

<sup>29/</sup> "An Economic Model of Family Planning and Fertility," Journal of Political Economy, 77 (1969) pp. 153-180.

FIGURE 4-A

INFANT MORTALITY, GENERAL FERTILITY AND NATURAL INCREASE RATES IN ETTESGUT HEALTH DISTRICT, TURKEY, 1967 - 1971.



SOURCE : WRAY, JOE D. WILL BETTER NUTRITION DECREASE FERTILITY? 12TH INTERNATIONAL CONGRESS ON NUTRITION, MEXICO CITY, SEPTEMBER 1972

## HEALTH STATUS INDICATORS IN THE DOMINICAN REPUBLIC

One need only look at the distribution of the population by age, the levels of educational attainment, and per capita income to predict the predominant health problems of the Dominican people. With 47.5 percent of the population under the age of 15 years, some 1,904,425 persons, it is predictable that infectious diseases, particularly gastroenteritis, and the communicable diseases of childhood, respiratory infections, and perinatal disorders will dominate the picture of morbidity.

Given the extent of malnutrition in the population, much of it being Grade II and Grade III according to the classification of Gomez, it is apparent that this will contribute to a significantly elevated mortality rates from different infectious diseases due to the synergistic effect of malnutrition and infection.

As in any society, one would expect the influence of accidents, trauma, homicide, and suicide to have a more profound effect on mortality among the economically active sector of the population. Similarly, one would anticipate a greater incidence of chronic diseases among the older age group of the population and a higher mortality from such diseases in this age group.

The expectation of life at birth is frequently used as an index of the level of mortality. It represents a summarization of the whole series of mortality rates for all ages combined, and it is strongly affected by the infant mortality rate. It is dependent on accurate census data and complete registration of deaths, including the age of the deceased. Utilizing the 1970 census data, Ramirez estimated life expectancy at birth for both sexes at 52 years for the 1965-1970 period. The corresponding values for men and women during the same period were 50.2 years and 53.5 years respectively.

The conventional infant mortality rate is defined as the number of infant deaths per year per 1,000 live births. In view of the limited extent to which births and deaths are registered in the Dominican Republic, official data are almost useless for calculating this rate. Analysis of the 1974 "Diagnostico" Survey data gave an infant mortality rate of 104. Infant mortality is influenced by medical factors during the first month of life and by environmental factors in particular during the ensuing eleven months. While data are not available for mortality in these two periods, neonatal and postneonatal, it seems safe to assume that the high rate of infant mortality in the Dominican Republic reflects both inadequate obstetric care as well as dietary deficiencies, the lack of sanitation, and other environmental factors.

Mortality among the 1-4 year age group is also commonly used, particularly in the developing world, as an indicator of health. Again, official data are not reliable, and the best estimate is that from the 1974 "Diagnostico" Survey, which estimated the death rate in this age group at 16.8 per thousand. This high rate undoubtedly reflects to a very large degree the influence of malnutrition.

Age-specific mortality rates in the Dominican Republic for the age groups 10-14 to 35-39 are strikingly higher than those of the United States of Barbados. The reasons underlying this difference cannot be determined with any degree of confidence. Accidents and homicide may well account for higher rates in these age groups for males. Maternal mortality may contribute to higher rates for Dominican females. Malnutrition is probably a factor in both sexes.

During 1970, 167 deaths due to complications of pregnancy, delivery, and the postpartum period were reported to the Secretariat of Public Health. While this figure almost assuredly represents considerable under-reporting, it suggests that the maternal mortality rate in the Dominican Republic is very high. In 1967 there were approximately three deaths per 10,000 live births in the United States.<sup>30/</sup> Assuming that the figure of 167 maternal deaths represents complete reporting, there were approximately nine deaths per 10,000 deliveries in 1970 in the Dominican Republic. Such a high maternal mortality rate could reflect widespread induced abortion or delivery by untrained personnel under unsanitary conditions. It seems likely that both factors, particularly the latter, are operative.

Only brief consideration will be given to the causes of death in the Dominican Republic because of lack of reliability of the data. Official sources list the ten leading causes of death as shown in Table 12. In a developing, tropical country one would expect high mortality from disease related to environmental factors, and it is worth noting that infectious and parasitic diseases, deaths related to perinatal causes, and diseases of the respiratory system figure prominently among the ten leading reported causes of death.

The average number of cases of notifiable diseases reported to the Secretariat of Public Health during the period of 1969-1973 are shown in Table 13. Considerable under-reporting unquestionably exists if for no other reason than the fact that about half of the Secretariat's rural clinics do not submit the required monthly reports.

---

<sup>30/</sup> 1968 Demographic Yearbook, The United Nations, (New York: 1969).

Table 12

TEN LEADING CAUSES OF DEATH,  
DOMINICAN REPUBLIC  
1970

<u>DISEASE</u>	<u>RATE PER 100,000</u>
1. Senility and ill-defined causes	243.2
2. Infectious and Parasitic Diseases	95.7
3. Causes related to perinatal mortality	58.4
4. Diseases of the circulatory system	43.0
5. Diseases of the respiratory system	37.8
6. Accidents, poisonings, and violence	35.6
7. Other Diseases	26.3
8. Tumors (neoplasms)	22.2
9. Diseases of the endocrine glands, metabolism, and nutrition	16.4
10. Diseases of the digestive tract	12.8

SOURCE: Statistical Division, Secretariat of Public Health  
and Social Assistance, 1974.

Table 13

AVERAGE NUMBER OF REPORTED CASES OF NOTIFIABLE DISEASES  
DOMINICAN REPUBLIC  
1969-1973

<u>DISEASES</u>	<u>AVERAGE NUMBER OF CASES REPORTED</u>
Influenza	78,915
Gastroenteritis	35,637
Gonorrhoea	9,866
Syphilis	8,343
Measles	3,869
Streptococcal Pharyngities	3,356
Pertussis	3,273
Hepatitis	1,333
Chancroid	1,032
Typhoid Fever	844
Tuberculosis	756
Diphtheria	383
Lymphogranuloma	234
Tetanus	218
Schistosomiasis	159
Poliomyelitis	61

SOURCE: Statistical Division, Secretariat of Public Health and Social Assistance, 1974.

Nonetheless, some findings are of interest. In addition to the enormous numbers of cases of influenza and gastroenteritis, the incidence of venereal disease appears to be very high. The large numbers of cases of measles, pertussis (whooping cough), and typhoid fever are especially noteworthy since these diseases are readily preventable by immunization. Tetanus, which appears to be under-reported to an especially marked degree, is also readily preventable.

Patterns of morbidity as reflected by patients presenting themselves at health care facilities provide additional information. It must be born in mind however that those who do seek medical services represent a select group, which introduced some measure of bias. The Dominican Assessment Group recorded the disease categories reported for 7,639 out-patients who visited a Dominican Social Security Institute clinic in Santo Domingo during the May-July period of 1974, and the five most frequently diagnosed disorders fell into the following groups of diseases:

<u>Diseases</u>	<u>Number of Cases</u>	<u>Percent of Total</u>
Respiratory infections	2,046	26.8
Arthritis, rheumatism, etc.	1,105	14.5
Gastrointestinal infections	868	11.4
Malnutrition, avitaminosis, and anemias	658	8.6
Gynecological disorders	653	7.4
All other disorders	-	38.7

It must be pointed out that these patients are from a socio-economic group considerably favored when compared to the great majority of the Dominican population. Nonetheless, almost half of the illnesses affecting these patients (46.8 percent) are related to environmental factors.

Data on hospitalization offer a slightly different perspective on health status. By far, the most frequent cause for hospitalization is for factors associated with pregnancy (44 percent), with normal pregnancies accounting for 35 percent of all hospitalizations and abortions accounting for 7 percent. The next most frequent cause for hospitalization is as a result of motor vehicle and other accidents which accounts for 3.7 percent. Largely because of the high number of

hospitalizations for these two causes, most people hospitalized fall into the 15 to 44 year old age group (67 percent). A breakdown of leading causes of hospitalization by age is shown in Table 14 . While not necessarily an accurate reflection of the actual morbidity load in the population, the information does reveal the changing patterns of morbidity throughout the life cycle.

In brief, the patterns of morbidity and mortality in the Dominican Republic suggest that preventive health measures should be given the highest priority in health programs. Programs to improve nutrition are of paramount importance for reducing infant mortality and mortality among the one to four age group. Greater coverage of the population with the provision of safe water is essential to reduce the incidence of diarrheal disease, which will particularly favor reduced mortality among infants and preschool children, but will also prove beneficial to all age groups. Massive programs of immunization will be required to reduce the incidence of such diseases as tetanus, measles, pertussis, and diphtheria and their attendant mortality. Improving the quality of obstetric care would appreciably lower perinatal mortality, which undoubtedly contributes substantially to the current high rate of infant mortality. Whether or not this is feasible given available resources and the constraints of tradition is another question, but the possibility must be considered. The problem cannot be confronted without a better understanding of its magnitude and of the distribution of these diseases.

TABLE 14

Number of Hospitalizations for Five Leading Causes by Age  
(Percentage of Total Hospitalizations in Parentheses)

<u>Cause</u>	<u>Number of Hospitalizations</u>
Less than 1 year	<u>6,883</u> ( 3.4)
1. Enteritis and other diarrheal diseases	3,273
2. Poorly defined symptoms	917
3. Meningitis	457
4. Bronchitis	454
5. Avitaminosis and other nutritional disorders	398
1 - 4 years	<u>14,576</u> ( 7.3)
1. Avitaminosis and other nutritional disorders	2,331
2. Enteritis and other diarrheal diseases	2,330
3. Bronchitis	1,293
4. Pneumonia	679
5. Diphtheria	596
5 - 14 years	<u>22,417</u> (11.1)
1. Accidents other than motor vehicle	4,646
2. Motor vehicle accidents	2,121
3. Enteritis and other diarrheal diseases	1,686
4. Other diseases of the genito-urinary system	973
5. " " " " digestive system	934
15 - 44 years	<u>135,435</u> (66.9)
1. Childbirth	70,482
2. Abortion	12,706
3. Other diseases of the genito-urinary system	7,421
4. Accidents other than motor vehicle	6,659
5. Complications of pregnancy	5,563
45 - 64 years	<u>15,791</u> ( 7.8)
1. Accidents other than motor vehicle	1,514
2. Other diseases of the genito-urinary system	1,389
3. Hypertensive disease	1,193
4. Other diseases of the digestive system	815
5. Other infections and parasitic diseases	797
65 and over	<u>7,288</u> ( 3.6)
1. Hypertensive disease	796
2. Other heart disease	517
3. Influenza	356
4. Other diseases of the genito-urinary system	355
5. Intestinal obstruction and hernia	337

Source: Data compiled from a 5 percent sample of public hospitals.

#### IV. POPULATION

##### A. DEVELOPMENTAL EFFECTS OF POPULATION GROWTH

As is true in most Latin American countries, the Dominican census of 1970 was characterized by certain inaccuracies. Underenumeration of females under the age of five years, and discrepancies in age distribution as reflected by clustering at those ages which end in zero or five were particularly apparent. Standard demographic techniques were employed by Ramírez 1/ to compensate for the errors just described, however, unknown sources of error remain. Nonetheless, the data from the 1970 census are one of the best available sources of information with regard to the general characteristics of the Dominican population, size, composition, distribution, etc., and except as noted, the material in this section is based on the 1970 census.

According to Dominican census data, the population of the country increased from 3,047,070 in 1960 to 4,006,405 in 1970, which represents an increase of 31.5 percent during the intercensal period. The increase in the growth of cities of 20,000 or more inhabitants is even more impressive. The population of such cities was 568,700 in 1960 and 1,208,545 in 1970, which represents an increase of 112.5 percent.

The growth of the capital city, Santo Domingo, has been little short of extraordinary. It has grown from 30,943 inhabitants in 1920 to 673,470 in 1970. Santo Domingo's population has increased 22 fold during that 50-year period. In 1920, the population of Santo Domingo represented 3.5 percent of the total population while in 1970 it contained 16.8 percent of the country's inhabitants and 42.3 percent of the nation's urban population.

The implications of such a rapid rate of population growth for economic development are discouraging. Utilizing the population projections of Ramírez 2/, which are shown in Table 15, and the GE TEMPO model, several estimates of per capita GNP were derived for the Dominican Republic. (See also Figure 5).

---

1/ Nelson Ramírez, "Proyecciones de la población de la República Dominicana por Edad y Sexo, 1970-1990." (Mimeo, not dated).

2/ Ibid.

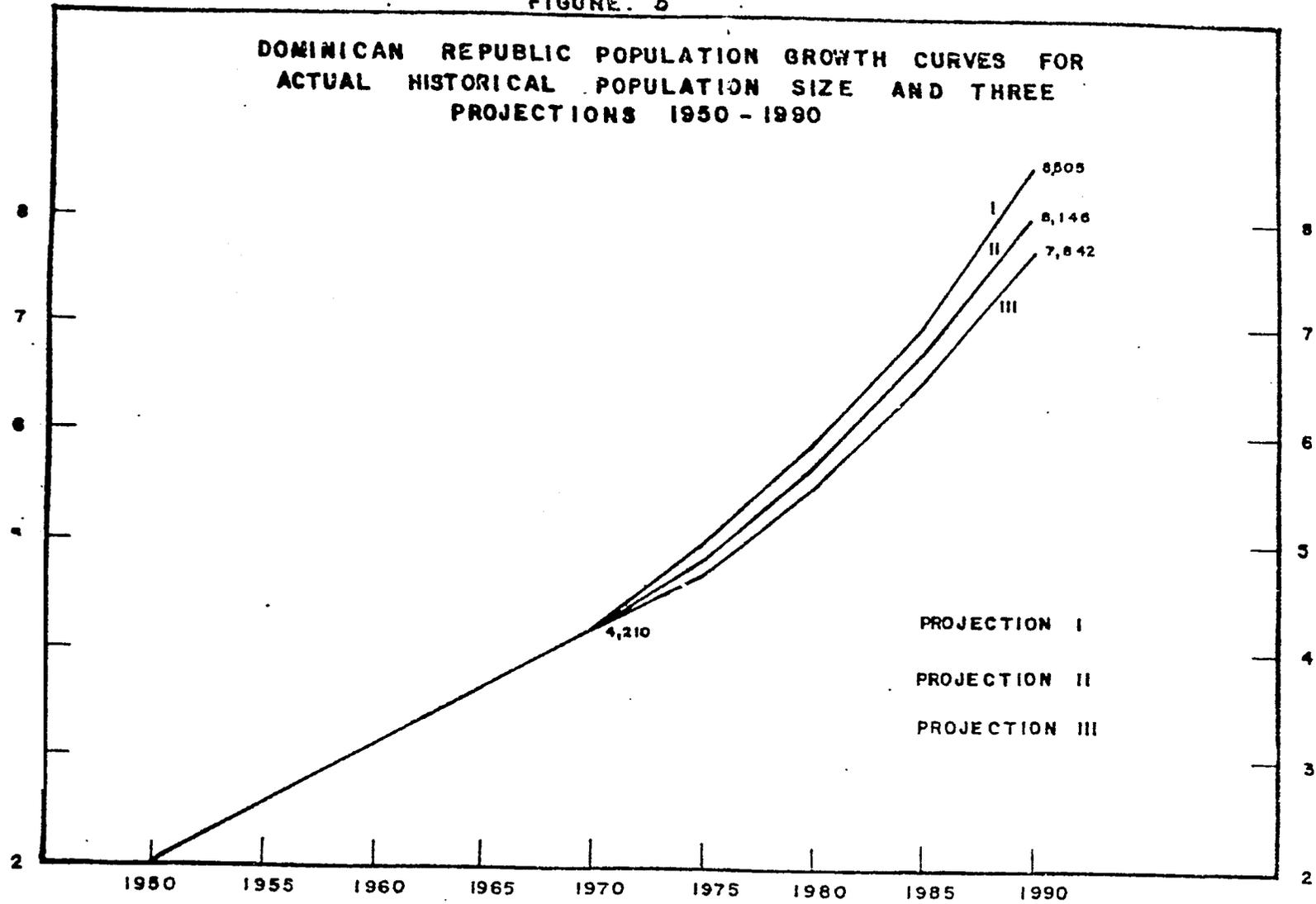
TABLE 15

Estimated Values for the Crude Death Rates, Expectancy of Life at Birth and the Infant Mortality Rate, for 1950, 1960, and the Five-Year Period 1965-1970

	Year or Period		
	<u>1950</u>	<u>1960</u>	<u>1965-197</u>
Crude Death Rate (per thousand)	20.3	16.6	14.7
Life Expectancy at Birth (in years)	43.0	48.4	52.0
Infant Mortality Rate (per thousand)	150.2	142.6	110.0

Source: Nelson Ramírez, Situación y Tendencias Demográficas Actuales en la República Dominicana (mimeo). September 1, 1973.

FIGURE: 5



SOURCE: NELSON RAMIREZ. PROYECCIONES DE LA POBLACION DE REPUBLICA DOMINICANA POR SEXO Y EDAD, 1970-1990 (VERSION PRELIMINAR). (MIMEO) CA. 1974.

Assuming a moderate decline in mortality and constant fertility (Projection I), the per capita GNP for 1985 is estimated at RD\$ 572 as opposed to RD\$ 414 in 1974. Assuming the same decline in mortality and a modest decline in fertility (Projection II), it is estimated that per capita GNP for the same year will be RD\$ 501. Again, assuming the same pattern of mortality and a somewhat more rapid decline in fertility (Projection III), per capita GNP in 1985 is estimated at RD\$ 630, an increase of 10 percent over that which would result under conditions of constant fertility.

The differences in investments in primary education that would be required under conditions of constant fertility (Projection I) and of even modest declines in fertility (Projection II) are striking. These projections are based on the actual enrollment of 55 percent of the school age population in 1970 and a gradual improvement of 3 percent per year so as to achieve a total of 70 percent of the school age population enrolled by 1980.

With Projection I, 5,477 additional urban classrooms and 8,193 additional rural classrooms would be required. With Projection II, 5,183 additional urban classrooms and 7,774 additional rural classrooms would be needed. Based on current cost of \$15,000 per urban classroom and \$4,500 per rural classroom 3 /, the construction costs with Projection I would be \$119 million and those for Projection II would be \$112.7 million. Thus, a modest decline in fertility would result in savings of \$6.3 million. With a somewhat more rapid decline in fertility, the savings in construction costs would be \$14 million.

Of course, additional teachers would be required for any expansion of the educational system. Assuming a cost of \$3,000 per year per teacher 4 / and a student/classroom ratio of 64.6 in 1970 and 60 in 1990, the additional costs for salaries with Projection I would be \$79.5 million, with Projection II, \$58.2 million, and with Projection III, \$55.6 million.

A modest decline in fertility as envisioned with Projection II would reduce the total costs of expanding the educational system as previously described from \$198.5 million to \$168.3 over a ten year period, which would represent a savings of \$30.2 million during that period or a savings of over \$3.0 million annually.

---

3 / Secretariat of Education and Fine Arts.  
4 / Secretariat of Education and Fine Arts.

The effects of rapid population growth are already evident in the Dominican Republic. There is ample evidence that the nation's population has grown faster than the social and economic resources necessary to support it. In the event of continued high fertility, all indications suggest that the future presents a grim prospect for ever increasing numbers of citizens. Malnutrition is widespread among children and adults. Forty-five percent of the labor force is unemployed, and while underemployment is thought to be widely pervasive, its extent has not been estimated. The situation promises to deteriorate even further unless the rate of population growth is reduced.

That rapid population growth is a problem has been formally recognized by the GODR. Until the end of the Trujillo era in 1961, the Government was strongly pronatalist. This position has been attributed to a number of factors, including maintaining a balance between the two countries of Hispaniola. Between 1961 and 1962, private organizations began to offer contraceptive services on a limited scale, but the Government officially remained silent on the issue.

In December 1967, President Joaquín Balaguer signed the Declaration on Population at the meeting of the Chiefs of American States held at Punta del Este. This statement recognized uncontrolled population growth as a deterrent to social and economic development. In February 1968, the GODR established the National Council of Population and Family (CONAPOFA) within the Secretariat of State for Public Health and Social Assistance. Supported by public funds and financial assistance from international donors, the Council currently offers family planning services through 91 clinics and hospitals.

## B. DYNAMICS OF POPULATION

### B.1. Internal Migration

Migration within the country is predominantly toward urban areas. The population of Santo Domingo and of Santiago, the only cities with more than 100,000 inhabitants in 1970, increased by 82 percent between 1960 and 1970. During the same period, the population of the country as a whole increased by 29.5 percent. The annual growth rate during the intercensal period (1960-1970) for cities with more than 20,000 inhabitants was 5.9 percent, exactly double the annual national growth rate during the same period. Since fertility is higher in rural than in urban areas, it is clear that the growth of the cities during the intercensal period is largely due to immigration.

The percentage of migrants to the cities who return to rural areas cannot be estimated from the demographic studies available at this time. Research on migration in other developing Latin American countries suggests that it is probably quite small. Intensive migration to Dominican cities has resulted in high rates of unemployment and underemployment among the poor.

### B.2. Emigration

While precise data are not available with regard to magnitude, there has been substantial migration of Dominicans to Puerto Rico and the mainland of the United States. According to the Visa Office of the U. S. Department of State, over 84,000 Dominicans migrated legally to the United States between 1961 and 1969 5/. During the same period, 210,000 Dominicans were issued non-immigrant visas. It is estimated that between 100,000 and 200,000 Dominicans are presently residing in New York City 6/. During the 1960's, there were approximately 86,000 more Dominican emigrants than immigrants. Nonetheless, it seems most doubtful that migration will significantly alleviate the pressures due to population growth in the Dominican Republic.

### B.3. Mortality

It has been estimated that about 50 percent of all deaths in the Dominican Republic are not registered, and hence, one is forced to use other sources of data for some insight into mortality. A study of a sub-sample of households enumerated during the 1970 census estimated the crude death rate at 14.7 during the previous five-year period. Preliminary findings from the "Diagnos" survey conducted in 1974 also yielded an estimate of 14.7 for the crude death rate 7/.

Utilizing the sources cited above, it is estimated that the crude death rate declined from 20.3 in 1950 to 14.7 during the period of 1965-1970, a decline of 28.7 percent, as shown in Table 15. During the same period, infant mortality declined from 150.2 to 104.0, a decline of 29 percent. The cause for the latter decline is unknown,

- 
- 5/ Nelson Ramírez. "Situación y Tendencias Demográficas en la República Dominicana." (Mimeo, September 1, 1973.)
- 6/ Thomas E. Weil et.al. Area Handbook for the Dominican Republic. U.S. Government Printing Office (Washington, D.C.: 1974), p. 25.
- 7/ The "Diagnos" survey was carried out under the auspices of the Secretariat of Health as part of the Dominican Health Assessment, and the sample consisted of 24,560 randomly selected households or about 176,000 people.

but it probably reflects at least in part an increase in the proportion of women delivering in hospitals. The infant mortality rate of 104 was calculated from the preliminary findings of the "Diagnos" survey, and it is appreciably higher than that estimated for 1973 by the United Nations <sup>8/</sup>. It must be added that both of these estimates are subject to distortion from failure of recall and other sources of human bias as well as sampling variation. In the case of the "Diagnos" survey, the time available to the Dominican Assessment group did not permit the calculation of confidence intervals.

#### B.4. Mortality as a Health Indicator

Traditionally, mortality has been used as a health indicator, and with good reason. With the exception of those deaths due to violence, automobile accidents, homicides, etc., the events which terminate fatally begin with an illness. Since the causes of death vary in different age groups, age-specific mortality rates are particularly useful as health indicators. Age-specific mortality rates for the Dominican Republic, preliminary estimates based on analysis of the data from the "Diagnos" survey are shown in Table 16.

In 1967, the infant mortality rates for Barbados and the United States were 43.7 and 23.1 respectively <sup>9/</sup>. Infant mortality in the Dominican Republic in 1973-1974 was more than twice as high as that in Barbados in 1968 and more than 4 times as high as that in the United States in 1968.

Age-specific mortality rates for the Dominican Republic (1973-1974), Barbados (1968), and the United States (1968) for the age groups of 1-4 years through 55-59 years are shown graphically in Figure 5A. Infant mortality rates were not included to facilitate comparison for the age groups cited previously.

---

<sup>8/</sup> "1973 World Population Data Sheet," Population Reference Bureau, Inc.

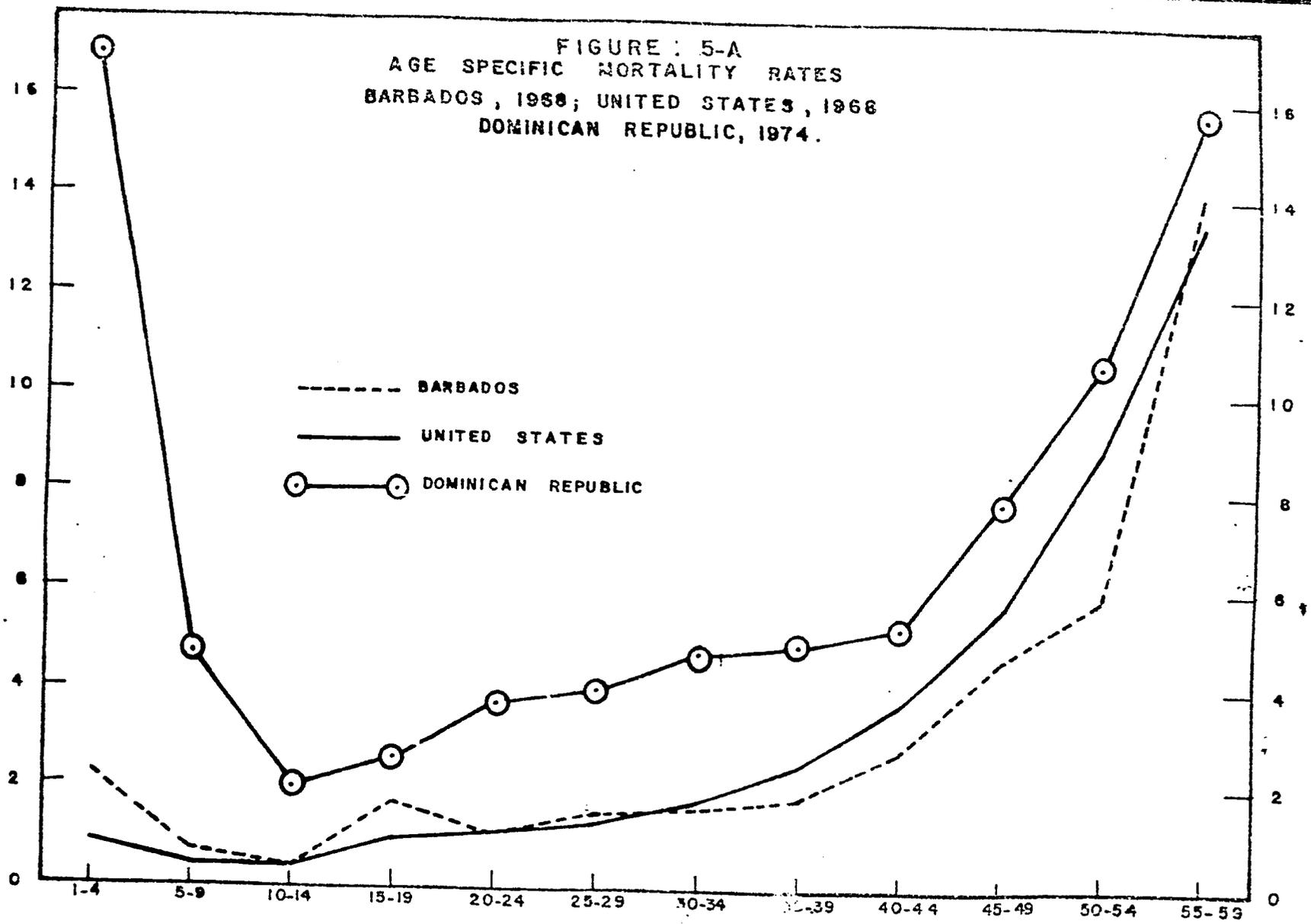
<sup>9/</sup> 1968 Demographic Yearbook. United Nations (New York: 1969).

Table 16

Age-Specific Mortality Rates,  
Dominican Republic, 1974

Age Group	Country As A Whole	Urban Areas	Rural Areas
- 1	103.8	73.9	127.9
1 - 4	16.8	15.0	19.6
5 - 9	4.7	3.6	5.4
10 - 14	2.0	2.0	2.1
15 - 19	2.6	2.3	2.9
20 - 24	3.7	2.4	4.0
25 - 29	4.0	3.7	4.9
30 - 34	4.7	4.5	5.0
35 - 39	4.9	4.6	5.0
40 - 44	5.2	4.5	6.0
45 - 49	7.8	4.9	13.4
50 - 54	10.6	8.5	13.6
55 - 59	15.7	13.7	17.8
60 - 64	13.9	15.3	12.7
65 - 69	44.1	37.3	51.9
70 - 74	65.0	48.3	75.7
75 +	141.2	132.9	148.3

SOURCE: "Diagnos" Survey, Secretariat of Public Health and Social Assistance, July 1974.



SOURCE: SECRETARIAT OF PUBLIC HEALTH AND SOCIAL WELFARE, JULY 1974. 1968 DEMOGRAPHIC YEARBOOK.  
 NEW YORK, UNITED NATIONS, 1969.

Mortality rates in Barbados and in the United States are quite similar for every age group. In contrast, the Dominican rates for almost every age group are appreciably higher than those of the other two countries. It is striking that mortality in the 1-4 age group is eight times higher among Dominican children than those of Barbados and 17 times higher than those of the United States. Also worth noting is that while the causes of mortality in infancy are many and varied, a basic or contributing cause of most deaths in the 1-4 age group in Latin America is malnutrition 10/. In the Dominican Republic, as pointed out in this assessment, malnutrition is widespread among pre-school children.

High levels of mortality continue through young adulthood. The mortality rate for Dominicans in the 15-19 year age group is 2.5 times higher than that for the same age group in the United States, and the rate for the 20-24 year age group is 3 times higher than that in the United States. It must be pointed out that minor changes in the number of deaths registered during the "Diagnos" survey due to such factors as sampling variation could result in marked changes in rates. If it can be demonstrated later that the findings of the survey can be generalized to the universe of Dominicans with reasonable assurance, it will be apparent that the state of health of the Dominican population is precarious indeed.

#### B-5. Fertility.

It must be emphasized that the registration of vital events in the Dominican Republic is woefully inadequate for measuring demographic variables, including fertility. Birth rates in the past have been calculated largely through intercensal estimation procedures. The latter are subject to considerable and unknown error since they depend on assumptions regarding mortality and migration which in turn are subject to similar errors. Estimates of completed fertility are also subject to error stemming from failure of recall as well as the fact that an unknown number of women have died or migrated.

During the past three decades estimates of the crude birth rate have ranged from 45 to 50 per 1,000 inhabitants. Based on a sample of households enumerated during the 1970 census, the crude birth rate was estimated at 47, one of the highest in Latin America. The crude birth rate estimated from the preliminary analysis of the "Diagnos" survey places the crude birth rate at 45. The 1970 census data showed

---

10/ Ruth Rice Puffer and Carlos V. Serrano. Characteristics of Mortality in Childhood. The Pan American Health Organization (Washington, D. C.: 1973).

that completed fertility for women beyond the child bearing age (50 years) was 6.8 children per woman.

A measure of fertility which is much less subject to bias is the child-woman ratio, the number of children of a given age per thousand women in a particular age group. The advantage of this measure is that it can be obtained with relatively little error from census data. It is also a good measure of effective fertility since it automatically takes into account infant and child mortality. Two such measures for 1950, 1960, and 1970 are shown in Table 17.

Comparisons within the first column of Table 17 indicate that effective fertility in the Dominican Republic has been increasing since 1950 and at an increasing rate. Between 1950 and 1960, the rate of increase in the child-woman ratio was 2.6 percent; the 1960-1970 period, it was 8.8 percent, although the increase may reflect in part improved census data.

It is important to note the variation between decades in the differences in the child-woman ratios among the 5-9 year old children as compared to the 0-4 age group. The number of children born between 1960 and 1965 was smaller than would otherwise have been the case because of the depressed fertility associated with the revolutionary period. The foregoing indicates that Dominicans can and do exercise control over their fertility to some degree even in the absence of programs aimed at such a goal. The increase in effective fertility in the post-revolutionary period (1965-1969) suggests that the perceived need to control fertility declined.

#### B-6. Composition.

The age-sex composition of the Dominican population is shown in Figure 6. From the 1970 census data, it was estimated that 48 percent of the Dominican population was under 15 years of age and 3 percent was 65 years of age or older. This yielded a dependency ratio of 1.04. Expressed somewhat differently for every 100 persons in the age range of 15-64 years, there were 104 who were not in the labor productive age group. In the light of the social and economic realities of the Dominican Republic, this indicates an even greater burden than would the same figure for a developed country. The earning capacity of those in the labor force is very low with a per capita income of RD\$ 414 in 1974. Moreover, the unemployment rate of those considered to be in the labor force is estimated at about 45 percent at the present time. Under-employment is also high. These several factors combined mean that the economic burden is actually carried by

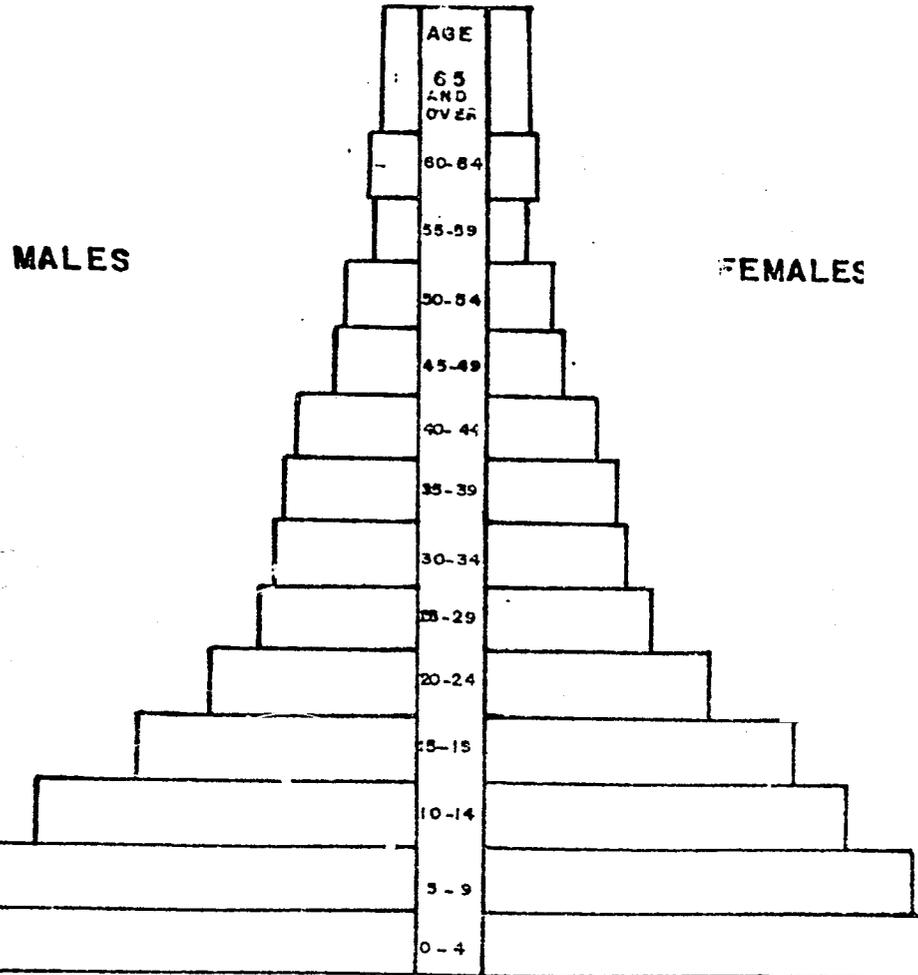
TABLE 17

Child Woman Ratios for the Dominican Republic, 1950, 1960, and 1970  
and the Inter-Decade Changes in Magnitude of Ratios

Year	Children under 5 years of age per 1,000 females, 15-49 in the population	Inter-Decade Change in Magnitude of ratio (percent)	Children age 5-9 years per 1,000 females 20-54, in the Population	Inter-Decade Change in Magnitude of ratio (percent)
1950	749		733	
1960	769	+2.6	877	+19.6
1970	837	+8.8	928	+ 5.8

Source: Henry S. Shyrock, Jacob S. Siegel, et.al. The Methods and Materials of Demography.  
Washington, D. C. U. S. Department of Commerce, Bureau of the Census, 1973, p. 504;  
and Nelson Ramírez, Proyecciones de la Población de la República Dominicana por Sexo  
dad, 1970-1990 (mimeo) not dated.

FIGURE 6  
 NUMERICAL PERCENTAGE DISTRIBUTION OF THE POPULATION  
 BY SEX AND AGE GROUPS 1970



SOURCE: NELSON RAMIREZ. SITUACION Y TENDENCIAS DEMOGRAFICAS ACTUALES EN LA REPUBLICA DOMINICANA, SEPTEMBER 1, 1973.

POPULATION (IN THOUSANDS) 400 350 300 250 200 150 100 50 0 0 50 100 150 200 250 300 350 400 POPULATION (IN THOUSANDS)  
 PERCENT (OF TOTAL) 9 8 7 6 5 4 3 2 0 2 3 4 5 6 7 8 9 PERCENT (OF TOTAL)

only a small portion of the population.

The 48 percent of the population under 15 years of age represents a tremendous drain, not only on the parents who must feed and clothe these children but also on the society in terms of satisfying health and educational needs. Educational needs have clearly not been satisfied. Over 30 percent of the population over 10 years of age is illiterate, and only 64 percent of the 15-19 year age group are attending school. The educational system has fallen far short of that which would be required to fully exploit modern economic possibilities. Assuming constant population growth, future costs of educating greater numbers of the population will be excessively expensive.

#### B.7. Distribution

Population density, 88 inhabitants per square kilometer or 240 per square mile, is one of the highest in Latin America. This is striking for a country with such high unemployment, low industrialization, low per capita income, and great dependence upon subsistence agriculture. The prospect of doubling the population within the next 22 years (assuming an annual increase of 3.2 percent) is discouraging unless capital inputs are high and yield increases substantial.

The implications of continued rapid growth with regard to the quality of life in the cities are severe. The population of the National District, which includes Santo Domingo and the immediate surrounding area, grew from 466,830 in 1960 to 817,645 in 1970, an increase of 75 percent. As noted previously, the population of cities with 20,000 or more inhabitants almost doubled during the intercensal period increasing from 568,700 in 1960 to 1,208,545 in 1970.

There is no reason to expect that the existing rapid rate of migration to the cities, and especially to Santo Domingo, will not continue. The latter meets the needs of its present mass of poor with great difficulty. Water supplies are frequently inadequate for Santo Domingo's poor, and sanitary facilities are almost non-existent. As shown by the Central Bank's study of income in 1969, many of these people do not have enough resources to feed themselves a nutritionally adequate diet. Future migrants may fare little better.

### C. CURRENT POPULATION PROGRAM

#### C.1. Description of Present Program

The National Council of Population and Family (CONAPOFA) was created by Decree 2091 signed by the President of the Republic on February 14, 1968.

It was established within the Secretariat of Public Health, and its principal mandate was given as "the study, research, analysis, and publication of everything related to the growth, mobility, and projection of population in the country." The same decree established CONAPOFA as the "maximum authority" for population and family planning, and a later statute, Regulation 4478, also charged CONAPOFA with the responsibility of advising the Secretariat of Public Health in establishing a population program. In the intervening years CONAPOFA has concentrated on the provision of clinical family planning services.

On June 1, 1973 the GODR and the United Nations Fund for Population Activities (UNFPA) signed an agreement which provided \$1.9 million for the GODR family planning program during the period of 1973-1976. The UNFPA also agreed to provide the services of two advisors from the Population Council, one in the field of administration and one in research and evaluation, and these advisors have since played a very active role in program development and implementation.

From 1968 to mid-1974 the number of clinics offering family planning services in the Dominican Republic increased from 8 to 71. As of this moment there are 94 clinics providing family planning services, and CONAPOFA plans to increase the number to 191 during the next twelve months.

Of these 94 clinics, five are operated by the Armed Forces, one by the National Sugar Council, one by the Dominican Association for Family Welfare, and one by the Dominican Social Security Institute. The remaining 86 clinics are operated by the Secretariat of Public Health, and these clinics provide family planning services in addition to others such as prenatal care, well baby care, etc.

By the end of December 1971, the national family planning program had reached 101,922 acceptors. On June 30, 1974, the number of acceptors had increased to 115,000 women, 11 percent of the women of reproductive age (15 to 44 years).

The clinic records of 45,000 acceptors, more than a third of the total number, were recently analyzed by a United Nations advisor, and it was estimated from this analysis that only 32 percent of all acceptors were continuing to use contraception. About 3.5 percent of the target group are practicing family planning. Under the circumstances, it seems very likely that the program has had little or no demographic impact thus far.

In a study of the national family planning program carried out in 1973 by Mundigo and Stykos, the authors noted that the total number

of acceptors increased rapidly from the first year of the program (1968) until the end of 1973 11/. When the authors examined the data for ten individual clinics, however, they found that the number of new acceptors per clinic had consistently declined after they had been in operation for one year. The increase in the total number of acceptors merely reflected increases in the number of new family planning clinics accompanied by relatively rapid saturation for the demand for services.

During the first two years of the program a majority of the acceptors chose an IUD, but in recent years the oral pill has been the method of choice. During the second semester of 1973, 23 percent of the acceptors chose the IUD; 51 percent, oral pills; and 26 percent, other methods 12/.

The implications of 26 percent of acceptors using "other methods," generally condoms and foam, as far as the effect on birth rates is concerned, are not encouraging. While data on continuation rates for such methods are not available for the Dominican Republic, studies in other countries show they have a low level of use effectiveness in mass programs. Most recently, Laing has shown that 32 percent of all acceptors of "other methods" in the Philippines became pregnant within 12 months after acceptance as compared to 10 percent of all IUD acceptors during a comparable period of time 13/.

There is some evidence that the IUD is more effective than the pill in the Dominican Republic, although not strikingly so. Mundigo and Stycos found that first method continuation rates for the IUD were 70 percent at 12 months and those for the pill were 60 percent for the same period 14/.

---

11/ Axel I. Mundigo and J. Mayone Stycos. "Information and Education in Perspective: An Overview of the Dominican Family Planning Program." In J. Mayone Stycos (ed.), The Clinic and Information Flow. Lexington Books, P.C. Health and Company (Lexington, Mass.: in press). Permission to use material granted by the author and publisher.

12/ Consejo Nacional de Poblacion y Familia. "Informe General del secretario Ejecutivo del Consejo Nacional de Población y Familia, Período Enero-Junio." (Mimeo, 1975)

13/ John E. Laing, "Differentials in Contraceptive Use Effectiveness in the Philippines." Studies in Family Planning, 5 (October 1974) pp.302-313.

14/ Mundigo and Stycos, Op. Cit.

Some program administrators would be concerned that only one-fourth of all acceptors in the Dominican Republic receive IUD's. It might be said that the present distribution of methods employed in the Dominican program reflects the preferences of acceptors, but there is some evidence to suggest that physicians exert appreciable influence on acceptors' selection of methods, particularly the IUD 15/.

CONAPOFA has recently provided nurses with special training in order that they may prescribe the pill and insert IUD's. At the same time, it authorized auxiliary nurses to prescribe the pill after interviewing potential acceptors and utilizing a check list to identify those women with contraindications to use the pill. Medical supervisors for the national family planning program have also been trained recently. All of these measures will undoubtedly contribute to improved program implementation.

The critical question is whether or not the present family planning program, including the future expansion as envisioned, will substantially reduce the birth rate. Mundigo and Stycos in collaboration with Cornell University's Center for Environmental Quality Management, prepared a mathematical model for estimating the demographic impact of alternative programs, a model which utilized demographic data from the United Nations and the 1970 census, program effectiveness data gathered locally, and program resources consumption data 16 /.. The findings which follow are shown graphically in Figure 7.

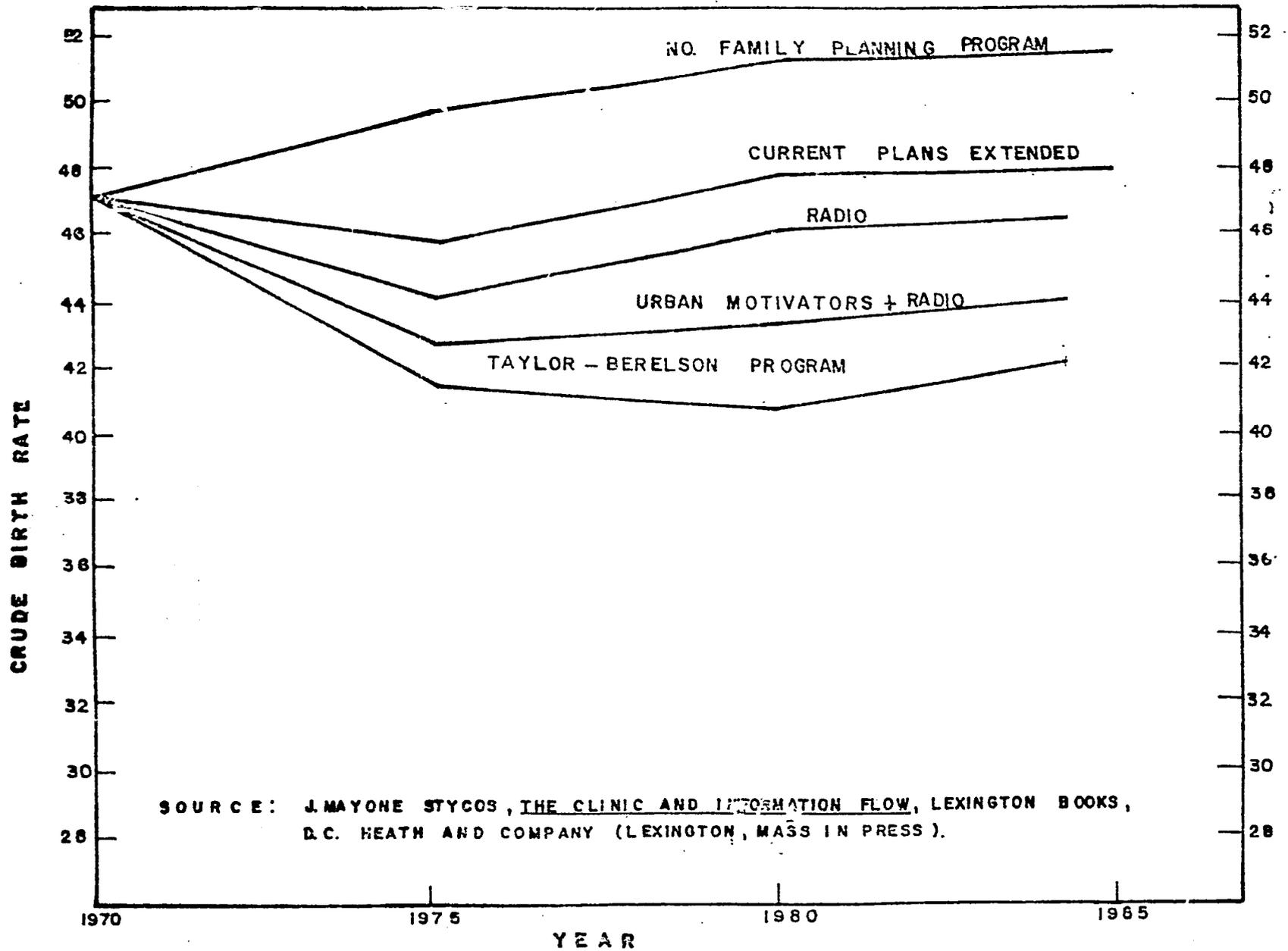
The authors utilized the model to test the effects of the following on fertility: extending the existing program for ten years, reaching 20 percent of the women in the reproductive ages in five years, adding a nation wide radio program to the existing program of services, and implementing a Taylor-Berelson program. The latter is a maternity based family program which would essentially provide every pregnant woman six visits by a trained medical person and would offer each woman family planning services after delivery. As shown in Figure 7, only the latter program had an appreciable effect on the birth rate.

---

15/ Donald W. MacCorquodale. "Philippine Physicians Influence on Acceptors' Selection of the IUD." Studies in Family Planning, 5 (April 1974) pp. 140-143.

16 / Mundigo and Stycos, Op. Cit.

FIGURE 7.- CRUDE BIRTH RATE PROJECTION



## C.2. Constraints

There are powerful constraints on programs designed to reduce birth rates in the Dominican Republic. While the determinants of fertility are imperfectly understood, a number of elements favor low birth rates. Among others, they include: urbanization, industrialization, high mean levels of educational attainment particularly for women, low infant mortality rates, and late age at first marriage or consensual union.

The Dominican Republic is not yet an urban society in the sense that Colombia is, with more than half of its population residing in cities of over 100,000 inhabitants, but one-half of the population will be living in urbanized areas by the end of the decade. Nevertheless, this country is predominantly agricultural rather than industrial. The mean level of educational attainment of Dominican women is low. Infant mortality is high in comparison with many Latin American countries, and the high fertility of women in the 15-19 year age group shows that marriages and consensual unions are established early in life.

In addition, there are serious constraints within the delivery system of family planning services. Most Dominican women live in towns of less than 2,000 people, and hence, they do not have ready access to services. The Dominican Assessment pointed out that in those communities with clinics, physicians come to work late and leave early. Moreover, women must wait long periods for services in most clinics. Physicians are not available in the great majority of family planning clinics in the afternoons. Choice of method is restricted since all methods (notably sterilization) are not available. Middle and upper class women can purchase contraceptive pills over the counter in drugstores, but poor women are denied this convenience since they cannot pay the high cost for these items as available in pharmacies.

Even if the foregoing constraints did not exist, considerably more effort would have to be made in the area of family planning in the Dominican Republic in order to achieve an appreciable reduction in birth rates. Quite obviously, more resources would have to be allocated to family planning as will be shown.

According to the National Council of Population and Family (CONAPOFA), \$666,720 was spent on family planning in 1972. The sources of funding are shown below:

GODR	\$397,980
IPPF	180,840
Population Council	72,300
Funds generated by PL 480	
Sales	15,600
Total	<u>\$666,720</u>

This figure is grossly inflated. The contribution from the GODR includes \$80,000 for the operating expenses of CONAPOFA, and the balance represents half of the salaries of the physicians who work in clinics of the Secretariat of Health, which offer family planning services. This reflects the assumption that half of these physicians' time is spent on family planning. Assuming that one-tenth of their time is spent on family planning is a generous estimate. Nonetheless, the latter assumption will be used to offer a somewhat more realistic presentation of resource allocation to family planning in 1972 which follows:

IPPF	\$180,840
GODR (CONAPOFA)	80,000
GODR (physicians' salaries)	63,600
Population Council	72,300
Funds generated by PL 480	
Sales	<u>15,600</u>
Total	\$412,340

Since the national family planning program according to CONAPOFA reached 20,271 acceptors in 1972, the cost per acceptor equals \$20.34 for 1972.

The USAID has calculated that it would be necessary to reach a minimum of 84,000 new acceptors annually from 1975 through 1979 to reduce the crude birth rate by 20 percent in the Dominican Republic by 1980. The methodology employed was based on the concept of the birth interval as related to the length of time a woman must practice contraception to avert a birth, and it was assumed that all acceptors would use an IUD. Assuming a cost of \$20.34 per new acceptor, \$1,708,560 would have to be expended each year to reach 84,000 women during that period. Since most women accept methods which are less effective than the IUD, a larger number of new acceptors would have to be reached annually to have the same demographic impact. As a result, cost would be greater. Nonetheless, the figure given above is generally illustrative of the order of magnitude of the resources that would be required to reduce fertility by 20 percent within a period of five years.

The foregoing should not be interpreted as meaning that if the GODR were willing to invest a given amount of money in family planning, a decline in the birth rate would assuredly follow. No matter how great the investment in family planning in this country, birth rates will not decline unless Dominican women are determined to have fewer children.

Nonetheless, there is in all likelihood an unmet demand for family planning services in this country if for no other reason that the

present delivery system is so inefficient. Unhappily, the extent of this demand cannot be estimated from available data, but the importance of attempting to meet the needs of these women is self-evident. Evidence from other countries suggests that much more can be done in this regard. No single additional program is likely to have a marked demographic impact, but action in a number of areas well might do so.

#### D. ALTERNATIVE APPROACHES

Before considering additional activities that might be undertaken in a further attempt to reduce fertility in the Dominican Republic, it is worth pointing out that no single measure would favor declines in births as powerfully as widespread improvement in the general standard of living of the great mass of the Dominican population. Programs that result in more equitable distribution of income and the creation of employment will have favorable effects on fertility. Those nations so frequently cited as having successful family planning programs, Taiwan, South Korea, Hong Kong, and Singapore, are also states which have undergone remarkable economic and social development.

##### D-1. Contraceptive Distribution Through Neighborhood Stores.

In late 1972 an interesting experiment was conducted in Colombia 17/. For four months 60 drugstores kept a daily record of the sales of condoms, suppositories, and oral pills. After the first two months, 30 drugstores were given pamphlets which described in simple Spanish how each method worked, how to use the method, and its relative efficiency in preventing pregnancy, and these pamphlets were given to customers who purchased contraceptives. The use of the pamphlets was associated with a significant increase in condom and suppository sales and a slight increase in oral contraceptive sales.

It is worth noting that declines in fertility in Costa Rica between 1965 and 1969 were largely due to a declining proportion of men and women entering into sexual unions and to increased use of contraception and sterilization with commercial sources contributing about 60 percent of the contraceptives 18/.

---

17/ Jerald Bailey and Maria Cristina de Zambrano. "Contraceptive Pamphlets in Colombian Drugstores." Studies in Family Planning, 5 June 1974, pp. 178-181.

18/ Jack Reynolds, "Evaluation of Family Planning Program Performance: A Critical Review." Demography, 9 February 1972, pp. 67-87.

While most Dominican couples do not have ready access to a drugstore, particularly for reasons of cost, they do have a neighborhood store or colmado nearby. Moreover, distribution systems already exist to provide these stores with supplies of canned goods, soft drinks, etc. If prices were subsidized, condoms and suppositories would be readily available to the mass of the population. If the national family planning program were to obtain conventional contraceptives at little or no charge from international donors for distribution through colmados, it might evoke some opposition, the extent of which has not been objectively determined. Alternatively, the national family planning program could buy appreciable quantities of conventional contraceptives in large lots through normal commercial channels.

The availability of oral contraceptive pills through colmados would increase their use. If 10,000 women were reached by such a program during the first year, 120,000 cycles of pills would be required. Assuming that 40,000 cycles could be obtained free from international donors and the remaining 80,000 cycles were purchased locally at \$0.40 a cycle, the cost of the program (less transportation costs within the country) would be \$32,000 that year. The number of users of family planning techniques would thereby be increased by 25 percent and through a method that was more effective than currently picked by the majority. The pills could be sold for \$0.10 per cycle, which would be kept by the owner of the colmado.

#### D.2. Rural Pill Distribution Program

In cooperation with the National Coffee Growers Association in Colombia, the Colombian Association for Family Welfare instituted a program for distributing oral pills and conventional contraceptives in rural villages several years ago. Local women were trained to sell pills at about US\$0.20 per cycle using a coupon system. While data are not available regarding the percentage of the target population reached through this program, an unpublished report suggests that all method continuation rates (some condoms and suppositories were sold as well) are among the highest in the world. This report also points out that the cost per new acceptor in this rural program is lower than that in any of the Colombian clinic-based or hospital-based programs, namely, US\$6.00.

Assuming such a program were implemented here at the same cost per acceptor and that 10,000 women entered the program the first year, the cost would be \$60,000. This approach lends itself ideally to

implementation through the SANAR program, which would reduce costs of supervision, transportation, etc. Risk from thrombo-embolic disease can be minimized by the use of a check list to detect women for whom the use of oral contraceptives is medically contraindicated

### D-3 Postpartum Family Planning.

Experience in eleven countries in southeast Asia, west Asia, and Latin America have shown that family planning acceptance is much higher among women in the immediate postpartum period than among women in the general population of women of reproductive age. Most importantly, continuation rates are much higher among women who accept during the immediate postpartum period than among women who have not had a child recently 19/. As pointed out earlier in this paper, 70 percent of all IUD acceptors in the Dominican Republic are still using the IUD one year later. Significantly however, 61 percent of acceptors in the Mexican postpartum program and 71 percent of the acceptors in the Venezuelan postpartum program are still using the IUD three years later.

The Dominican Assessment recommended that the national family planning program should consider making every effort to provide immediate postpartum family planning services to every woman who delivers in the Dominican Republic. The costs of a nation wide postpartum program in public hospitals would be minimal since it would involve little more than that of equipment and training of personnel. A note of caution is in order at this point. There is some evidence that the use of the oral contraceptive pill diminishes milk supply and shortens the period of lactation in postpartum women 20/. In view of the magnitude of the problem of malnutrition in the Dominican Republic and the importance of breast feeding in this regard, the question of whether or not the pill should be offered to postpartum women would have to be considered very carefully. In any event, as

---

19/ Irving Sivin. Contraception and Fertility Change in the International Postpartum Program. The Population Council. (New York: 1973).

20/ S. Koetsawang, S., P. Phiraleus, and T. Chiemprajert. "Effects of Oral Contraceptives on Lactation." Fertility and Sterility, 23, January 1972, pp. 24-28.

shown above, the IUD is an excellent postpartum method.;;

It is somewhat disconcerting to note that family planning services were initially offered solely to postpartum women of high obstetric risk in the largest public maternity hospital in the country. While this rule still prevails officially, it is encouraging to note that services are now being offered to some women who are not in the category of high obstetrical risk. Relatively poor women do seek private medical care occasionally in this country. A study of Dominican attitudes, physicians as well as general populace, regarding the implications of current rates of population growth, the need for family planning programs, and related subjects would be extremely useful, and such a study should be considered in the near future.

#### D.4. Increased Information and Education Program

A study conducted in 1970 to determine the impact of a radio campaign on acceptance rates in the Dominican national family planning program showed that as much as a 50 percent increase was possible under favorable circumstances <sup>21/</sup>. The Dominican Association for Family Welfare (ADBF) currently offers educational family planning programs by radio for one hour five days a week over radio stations in five intermediate sized cities. ADBF also offers similar programs for one-half hour Mondays through Fridays in Santo Domingo and Santiago. These programs are given at prime time, and potentially about 75 percent of the Dominican population can be reached by them. The advantages of providing ADBF with sufficient funds to enable it to provide nation-wide coverage with its educational radio programs seem apparent. An additional \$60,000 a year would enable it to do so as well as provide much needed additional staff for the preparation of these programs.

#### D.5. Increased Clinical Services in Urban Areas

The relative merits of unipurpose and multipurpose family planning delivery systems is a hotly debated issue. The issue is somewhat obscure by virtue of the fact that unipurpose clinics are located in general in urban areas where societal factors favor declines

---

<sup>21/</sup> Mundigo and Stycos, Op. Cit.

in fertility. Although there have been few studies directed toward this question, the available evidence suggests that unipurpose clinics are more effective 22/, 23/.

Distance and transportation costs in Santo Domingo and Santiago unquestionably make access to family planning services difficult for women in the low income groups. Hence, one should consider establishing four additional family planning clinics in Santo Domingo and two in Santiago. These clinics should be established in or near areas densely populated by low income families, and they should be staffed by specially trained nurses, rather than physicians, if possible.

The costs for such a program would be about \$10,800 per clinic for rent and personnel costs, \$4,800 for medical supervision, and an initial cost of \$900 per clinic for equipment. The total cost for the first year would be \$123,600.

#### D.6. Female Sterilization

There is reason to believe that tubal ligation would be widely accepted among low income Dominican women. A survey conducted by the National Statistics Office and the Secretariat of Health revealed that of 6,582 women who were married or living in consensual union, 70 percent had knowledge of the pill, 34 percent of tubal ligation, and 20 percent of the IUD. Among illiterate women, tubal ligation was the most widely known method. It is striking to note that 45 percent of the women in the sample stated that they did not want another child in the future.

Tubal ligation in neighboring Puerto Rico has had remarkable acceptance. A study of an island-wide probability sample of women revealed that 34 percent of all women 20 to 44 years of age who had born a child had been sterilized 24/. Many of these women were

---

22/ William J. Kahley. "Family Planning in Colombia: An Analysis of Cost and Achievement," The Pennsylvania State University, (Unpublished Ph.D. Dissertation: 1972).

23/ Jack Reynolds, "Delivering Family Planning Services: Autonomous vs. Integrated Clinics." Family Planning Perspectives, 2, January 1970.

24/ Harriet B. Presser. Sterilization and Fertility Decline in Puerto Rico. Population Monograph No. 13. University of California Press (Berkeley: 1973).

relatively young and of low parity, and there can be little doubt that tubal ligation in Puerto Rico was a factor in reducing birth rates.

If tubal ligation were easily available to low income Dominican women, it would have special appeal to women over 30 years of age. Nonetheless, fertility is so high among women in the 30-34 and 35-39 age group that tubal ligation would probably have some demographic impact.

Costs could be minimized by offering postpartum tubal ligation in public hospitals. An estimate of costs of a female sterilization program offered to women generally are difficult to estimate because of the lack of information with regard to demand. If one assumes a payment of \$100.00 to a private surgeon and costs of \$300.00 for hospitalization for each patient, it would cost \$80,000 to provide tubal ligations for 200 women during the first year of the program. It should be remembered that the demographic impact of 200 women undergoing tubal ligation would probably be equal to that of 1,000 IUD acceptors in the same age group. At \$20.00 per new acceptor, an IUD program of that size would cost \$20,000. Making tubal ligation available should be considered by Dominican policy makers.

As an alternative to offer tubal ligation in public hospitals, policy makers could consider subsidizing the private family planning organization (ADBF) to undertake a program.

The risks of laparoscopic tubal ligation, i.e., injuries to the bowel and bladder, which occasionally terminate fatally, suggest that this approach should be limited to use by trained obstetrician-gynecologists. This would limit the usefulness of such an approach here due to the lack of manpower. Moreover, this approach would require considerable delay to train personnel and costs would exceed those of a postpartum tubal ligation program.

#### D.7. Male Sterilization

While there is considerable evidence to suggest that female sterilization would find wide acceptance in the Dominican population, there is only limited experience with a program of vasectomy. The method has the advantage of simplicity and low cost, but the likelihood of limited acceptability suggests that vasectomy would have little if any demographic impact here.

#### D.8. Incentives for Family Planning

There are two types of incentives for family planning: those for family planning acceptors and those for workers in family planning. Incentives for family planning workers have contributed to the success of programs in South Korea and Taiwan.

Incentives for acceptors in the tea states of Sri Lanka and in a limited area of Taiwan have played a role in reducing the birth rates of participating women. These programs are not inexpensive, and they do require considerable administrative skill for successful implementation.

A change in the current "contraceptive mix" in the Dominican Republic, i.e., a shift from less effective methods ("other methods") to a more effective method (the IUD) would have a favorable effect on birth rates once enough women in the target group were reached. There was no significant increase in the percentage of fertile women practicing contraception in the Etimesgut District of Turkey between 1967 and 1972 (from 50 percent to 54 percent), but there was a striking decline in fertility 25/. The crude birth rate fell from 35 to 29, and this appears to have been due to increased reliance on the IUD and decreased use of other methods.

The national family planning program could consider offering physicians and graduate nurses financial incentives for IUD insertions. Assuming that the number of new acceptors increases to 30,000 during the next twelve months due to new clinics being opened and that 20 percent of all acceptors continue to get IUD's, there will be 6,000 IUD acceptors during that period. If physicians and nurses were paid \$0.50 per IUD insertion, the percentage of IUD acceptors well might double. The cost of the incentive program would be \$6,000.00 for the year, but a substantial increase in demographic impact would be achieved.

---

25/ Nusret H. Fisek, "An Integrated Health/Family Planning Program in Etimesgut District, Turkey." Studies in Family Planning, 5 (7), July 1974, pp. 210-220.

#### D.9. A Combined Approach to Reduce Fertility

In order to reduce the birth rate by 20 percent in 1979 through the use of IUD's alone, 231,535 women would have to be using IUD's during that year. These calculations are shown in Table 17A. Assuming that all insertions are made at mid-year for ease of calculation (the assumption is not critical) and assuming further that 25 percent of all IUD acceptors will cease using the method each year after insertion, 84,195 IUD's would have to be inserted annually from 1975 to 1979. These calculations are shown in Table 17B. For obvious reasons a program utilizing IUD's alone is not feasible, and other methods must be offered.

As pointed out earlier, there is evidence that tubal ligation would be widely accepted in this country. There will be about 200,000 live births annually between 1975 and 1979, and of these about 40 percent or 80,000 will take place in hospitals. If only 1.0 percent of these women underwent tubal ligation (a deliberately minimal assumption), 8,000 female sterilizations would be performed annually. The Secretariat of Health has 75 hospitals which provide surgical or maternity services. If two female sterilizations were performed weekly, 7,200 could be done annually and 36,000 could be performed during a five-year period. This would reduce the number of women who would have to be utilizing contraception effectively in 1979 from 231,535 to 195,535 and would reduce the number of new acceptors to be reached annually to 71,104 in order to reduce the birth rate by 20 percent.

Assuming that 25 percent of all women continue to use IUD's as is the case now, 17,776 women would have to be inserted annually from 1975 to 1979 to maintain this ratio. The remaining 53,328 women would have to be reached by other methods. If one assumes little or no demographic effect from the use of traditional contraceptives due to their limited use-effectiveness, these women would have to be reached with pills. Since the pill is only about 80 percent as effective as the IUD in the Dominican Republic in terms of continuation rates, the latter number would have to be increased by 20 percent or to 63,994 pill acceptors annually to be assured of a demographic effect approximating that of the IUD.

Reaching that many acceptors should be feasible through the combined efforts of the present clinic-based program (21,331 acceptors annually), distribution of pills through colmados (21,331 acceptors annually) and distribution of pills through the additional low-cost delivery systems (21,331 acceptors annually).

Number of IUD Acceptors Necessary to Reduce  
The Crude Birth Rate By 20 Percent In 1979.

Age Group	Estimated female population in 1979 (1)	Age-specific fertility rates (2)	Birth interval in years (3)=1/(2)	Estimated number of births in 1979 (4)= $\frac{(1) \times (2)}{1,000}$	Number of births to be averted (20%) (5)=(4)x0.2	Number of IUDs to be in place in 1979 (6)=(3)x(5)
15-19	313,243	107	9.3	33,517	6,703	62,333
20-24	267,546	248	4.0	66,351	13,270	53,090
25-29	211,351	275	3.6	58,122	11,624	41,846
30-34	162,323	247	4.0	40,094	8,019	32,076
35-39	116,264	175	5.7	20,300	4,060	23,142
40-44	95,336	92	10.9	8,740	1,748	19,053
TOTAL	1,116,063	-	-	227,123	45,424	231,535

SOURCE: Calculated by USAID/DR.

Table 17B

Calculations of the Number of IUDs  
To Be Inserted Annually  
To Have 231,535 IUDs In Place In 1979

PROPORTION OF IUDs REMAINING EACH YEAR AFTER INSERTION

<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
.95	.75	.55	.35	.15
	.95	.75	.55	.35
		.95	.75	.55
			.95	.75
				<u>.95</u>
				2.75

The number of IUDs to be inserted annually to be able  
to have 231,535 IUDs in place in 1979 =  $\frac{231,535}{2.75} = 84,195$

SOURCE: Calculated by USAID/DR.

In summary, to achieve the goal of fertility reduction there would have to be 7,200 tubal ligations performed, 17,776 IUD's inserted, and 63,994 new pill acceptors recruited annually from 1975 to 1979.

An indirect cost of RD\$100.00 per tubal ligation in a public hospital seems reasonable. The cost per new IUD or pill acceptor is assumed constant at the present level of RD\$20.00 in the existing clinic-based program, and a new pill acceptor in the colmado distribution program or the low-cost delivery systems based on the Colombian experience cited earlier is assumed to be \$6.00. The annual cost of such a program would be as follows:

Tubal ligations	RD\$	72,000
IUD insertions		355,520
Pill acceptors, clinic		426,620
Pill acceptors, other		<u>255,972</u>
	RD\$1,290,952	

Of course, the proportion of women reached by IUD's is important due to their greater use-effectiveness.

Physicians could possibly be encouraged to work in family planning by means of incentives for IUD insertions. RD\$2.00 per IUD insertion seems reasonable since one IUD insertion per day would increase the participating physician's income by 10 percent. This would increase the annual cost by a modest RD\$35,552. The total annual cost would then become RD\$1,326,504, and the cost of the five-year program would be RD\$6,632,520.

#### D.10. Summary

There is a great deal more that can be done in the Dominican Republic in the field of family planning. The distribution of contraceptives through commercial channels, increased postpartum activities, greater reliance on the IUD through incentives for nurses and doctors, and female sterilization hold special promise for reducing birth rates, although tubal ligation on a large scale may not be feasible. The critical question is the extent to which the GODR is determined to confront the problem of rapid population growth.

## V. NUTRITION

### A. INTRODUCTION

The Dominican Assessment group recognized nutrition as a major factor in improved health. It did not submit an independent appraisal of nutrition in the Dominican Republic. An excellent 1969 survey of the nutritional status of middle and low income groups provides ample information about nutritional deficiencies. It is unlikely that there have been significant changes in the past five years. Its observations on nutrition depended heavily on this survey and views of AID consultants and advisors. This section of the present assessment essentially reflects both consultants and resident advisors' analyses of the problem.

While it is not firmly established that improving the health of the populace is a necessary precondition to lower fertility rates, there is a reasonable presumption that this is so, especially reducing infant and child mortality. There is an increasing accumulation of evidence to suggest that in developing societies attitudes about family size relate directly to expectations of child survival. It is assumed in the absence of contrary evidence that this would be true for the Dominican Republic as well. This then would suggest an important, if indirect, relationship between better nutrition and lower fertility.

Malnutrition may even be the major health problem in the Dominican Republic. Signs of malnutrition abound among the urban and rural children, and even among adults. Children are often so small that it is difficult to guess accurately their age. Frequently, malnourished children suffer with swollen stomachs and de-pigmented hair, clearly defined signs of protein-calorie malnutrition. In the poorest areas, people often appear listless and inactive, signs also associated with malnutrition. The relationship of malnutrition to mental retardation exists but is difficult to assess. Poor school performance also is undoubtedly partially the consequence of prolonged malnutrition.

For poor Dominicans, and most Dominicans are poor, the problem is a daily scarcity of food. The typical family usually eats twice a day. In the urban areas there has been a noticeable drop in food consumption during the past five years. An afternoon meal will usually include rice with a watery bean sauce, boiled plantain and coffee. Oil is used in cooking when the family can afford it. Meat is eaten once or twice a week if at all. Fish is usually not available and in some areas actually believed to be dangerous to health. Vegetables are infrequently consumed, and the readily available fruits are not eaten by many because of superstition.

The national nutrition survey carried out in 1969, <sup>1/</sup> found that the most serious nutritional problem in the Dominican Republic was protein-calorie deficiency. Average daily calorie intake (1634) and protein intake (45 grams) are, respectively, only 76 and 82 percent of that recommended. Malnutrition was found to be most critical in children from 0-5 years. The poor nutritional status of mothers, especially when lactating or carrying children, affects the children's nutrition from the very beginning. Over three-fourths of the pre-school children examined had protein-calorie malnutrition according to Gómez classification (Table 18). Body weight was normal at birth, but by 12 to 18 months, retardation of growth had become apparent (Figure 8). Deficits in health and weight appeared to persist through life (Figure 9 and Figure 10). Other significant dietary deficiencies included Vitamin A, riboflavin, pyridoxine, Vitamin B12, Vitamin E, copper, zinc, and magnesium (Figure 11).

Malnutrition is a common problem throughout the developing world, but there is reason to believe that in the Dominican Republic it is more severe than many countries, for example, in comparison with Central American countries (Table 19).<sup>2/</sup> Striking regional variations also occur within the Dominican Republic (Figure 12). More serious nutritional problems exist in the rural than in the urban areas, but particularly in the Southwest region. (Table 20). The problem of malnutrition stems in large part from the inability to pay for food and from the lack of adequate food supplies, but also because of food preferences and a lack of nutritional knowledge. Consequently, differences in economic, agricultural, and social development among different areas help to determine these disparate nutrition levels.

A greatly increased national concern for improving nutrition will have to occur before significant improvement in nutrition can be expected. In many respects, good nutrition results from attitudes even more than from discrete programs. Consequently, there needs to be an awareness about nutrition and nutritional benefits when decisions on policy and resource allocations are made, be these in health, education, public information or agricultural institutions and agencies.

---

<sup>1/</sup> W. H. Sebrell et.al., "Nutritional Status of Middle and Low Income Groups in the Dominican Republic," Archivos Latinoamericanos de Nutrición, Vol. 22. Número Especial (July 1972).

<sup>2/</sup> While all data in Table 19 were obtained with similar methodologies samples were drawn differently, and the data are not strictly comparable.

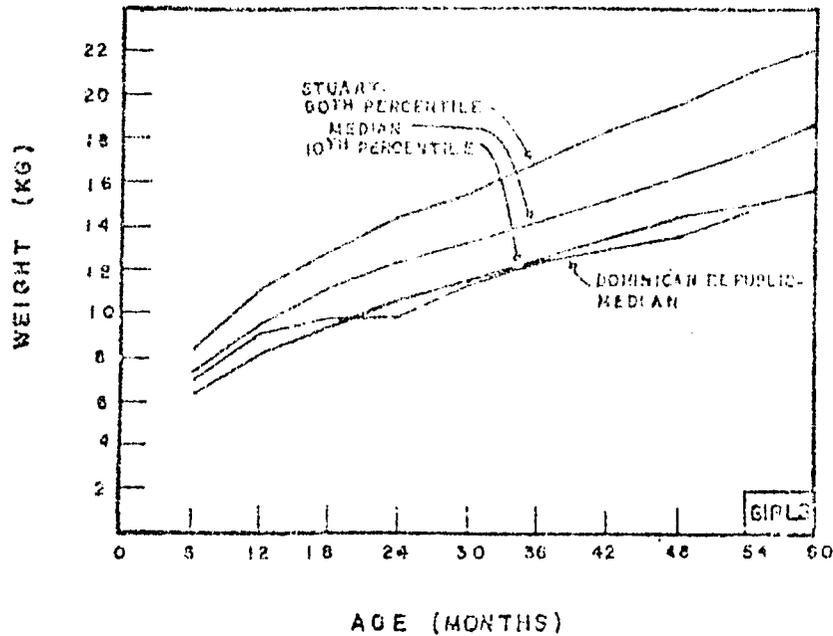
Table 18

Gomez Classification of the State of Malnutrition  
of Pre-School Children

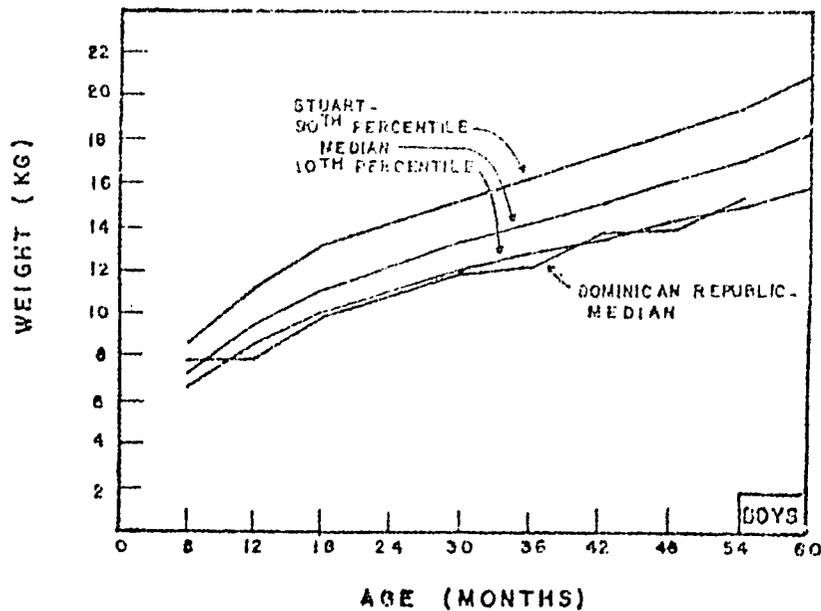
<u>Classification</u>	<u>Percent Standard Weight</u>	<u>No. of Subjects</u>	<u>Percent of Subjects</u>
Normal	91 or above	271	25
Grade I	76 to 90	536	49
Grade II	61 to 75	249	23
Grade III	60 or below	44	4

Source: Sebrell, W. H. et.al. "Nutritional Status of Middle and Low Income Groups in the Dominican Republic", Archivos Latinoamericano de Nutrición, Vol. 22. Número Especial (July 1972).

FIGURE : 8  
 WEIGHT OF PRE-SCHOOL GIRLS COMPARED TO THE  
 STUART- STEVENSON STANDARDS



WEIGHT OF PRE-SCHOOL BOYS COMPARED TO THE  
 STUART- STEVENSON STANDARDS



SOURCE : W. H. SEBRELL , ET AL. "NUTRITIONAL STATUS OF MIDDLE AND  
 LOW INCOME GROUPS IN THE DOMINICAN REPUBLIC," ARCHIVOS LA  
 TINOAMERICANOS DE NUTRICION, VOL. 22 . NUMERO ESPECIAL, JI

Table 28

\*COMPARISON OF 1969 AND 1974 COSTS OF MONTHLY FOOD PURCHASES IN 1969  
BY PER CAPITA INCOME GROUPS

	B \$ 5-9.99		C \$10-14.99		F \$25-29.99		G \$30-49.99		I \$100-199.99	
	1969	1974	1969	1974	1969	1974	1969	1974	1969	1974
Cereals	\$ 1.89	\$ 3.08	\$ 1.96	\$ 3.19	\$ 3.07	\$ 5.00	\$ 3.04	\$ 4.95	\$ 3.98	\$ 6.49
Tuber Roots	.18	.31	.26	.44	.38	.65	.49	.84	.79	1.35
Sugar	.25	.25	.34	.34	.57	.57	.62	.62	1.09	1.09
Pulses	.34	.50	.39	.58	.59	.88	.48	.71	.66	.88
Vegetables	.23	.29	.38	.48	.73	.92	.75	.94	1.80	2.28
Fruits	.45	1.05	.56	1.31	1.35	3.17	1.35	3.16	3.20	7.51
Meat	.73	1.23	1.87	3.17	3.09	5.24	3.21	5.44	8.23	13.95
Eggs	.05	.06	.05	.06	.27	.32	.43	.51	1.10	1.31
Fish	.14	.36	.19	.48	.27	.69	.40	1.01	.87	2.31
Milk	.47	.59	.90	1.12	2.21	2.76	2.41	3.01	4.01	5.00
Oil	.68	.98	.89	1.29	1.65	2.39	2.21	3.20	3.00	4.34
Other Foods	.39	.59	.47	.71	.75	1.14	.87	1.32	1.38	2.09
Non-Alcoholic Beverages	.30	.41	.42	.58	.84	1.17	.88	1.22	1.81	2.52
TOTAL	\$6.10	\$9.70	\$8.68	\$13.75	\$15.77	\$24.90	\$17.16	\$26.93	\$31.95	\$51.12

Source: Banco Central, "Income and Expenditure Survey," 1969 - Santo Domingo.

## C.2. The Dominican Assessment

The Dominican Assessment suggests that there are three ways to increase real income of the poor: increasing employment, direct transfers of income, and reducing the cost of food. There is no suggestion as to how these objectives should be achieved. Unemployment in Santo Domingo in February 1973 was estimated at 15 percent among men and 30 percent among women, while 45 percent of the total labor force is unemployed. Underemployment in Santo Domingo was estimated at 50 percent. Rural underemployment was estimated at 40 percent. The data base is weak and too much attention should not be paid to the figures. What is clear is that there is an unemployment problem of large proportions. Obviously, improvements would have a significant impact in raising food purchasing power. The generation of employment for women would likely have more nutritional impact, since women have more responsibility for the children.

Direct transfers, most probably in the form of food price subsidies (food stamps, etc.) were also deemed appropriate as a short-term measure. This type of program could provide special food supplements to high risk groups. However, price subsidization programs do not provide a viable permanent solution to nutrition problems. The potential problems of serious market distortions and sequel of production and economic problems are great. Efforts to reduce the cost of food are considered in succeeding paragraphs.

While no one can quarrel with the advantages to reducing the level of unemployment, health professionals, per se, have no competence with regard to specific measures which should be undertaken.

Direct transfers of food are currently being made to a limited extent. While this approach may indeed be serving a useful purpose, it does not constitute a long-term solution.

## D. THE SUPPLY OF FOOD

Increased supply of food is needed to meet the increased demand. It will not be possible to rectify nutritional deficits of low income groups unless both demand and supply of food increase more rapidly than the population.

The diet of Dominicans because of food preferences utilizes reasonably cost-efficient sources of calories and protein. The input costs for protein and calories possible for different foods are shown in Figure 15. The least expensive such diet -- corn and fish -- costs about 22 cents per day or \$6.60 per month. Even very low income families could improve their nutritional intake by consuming more rice, beans, fish, and other high efficiency foods. While such diets would not be balanced, they would more nearly meet the fundamental caloric and protein requirements. Much education and public information would be required to modify cultural practices and traditions.

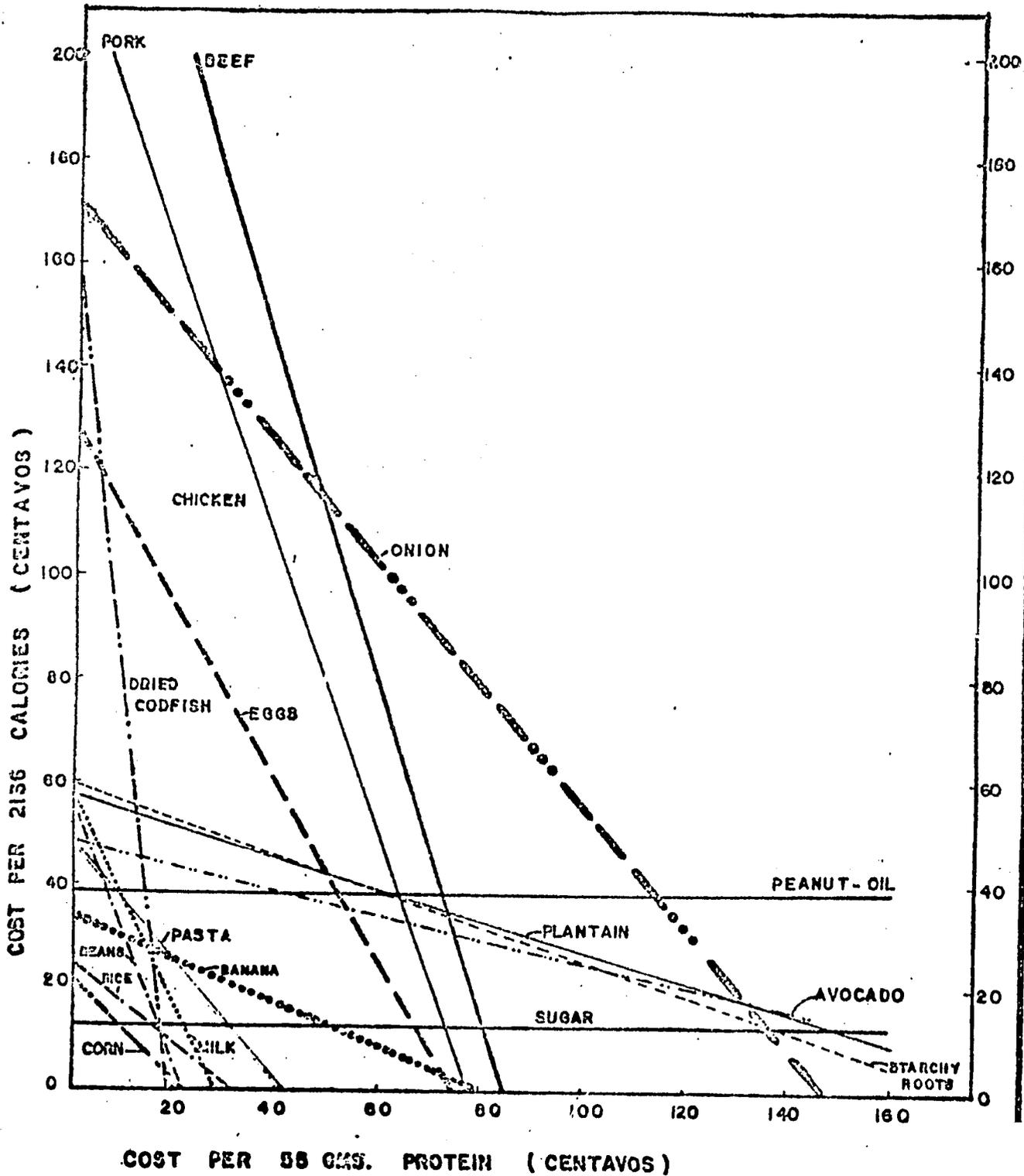
#### D.1. Agricultural Production

Production of more nutritious foods must be obtained if major nutritional impact is to be achieved. In recent years, more than 40 percent of the value of agricultural production has been in the principal export crops: sugar cane, tobacco, coffee, and cacao. World prices continue to be high. Production of food for export rather than domestic consumption will continue to be attractive for some time. Agriculture accounts for 72.1 percent of total commodity exports. While food imports have varied from 12 to 22 percent of total imports, they are still far less important in the balance of trade than agricultural exports. CODR is making a major effort to expand production of food crops, at the same time it is taking advantage of currently high world prices.

Long term trends in agricultural production are shown in Table 29. The reader is cautioned not to put too much reliance on this data collection which in many cases is acknowledged to be estimates and approximations. Nevertheless, general trends are probably reasonably accurate. Most noticeably, per capita food production would appear to have decreased over the last 15 years. This tends to be confirmed by increases in food imported. Table 30 reorders the data for some of the crops according to rate of increase of production. Of the basic food crops, only paddy rice production has increased faster than the population in this time span.

FIGURE : 15

NUTRIENT EFFICIENCY OF PURCHASE OF DIFFERENT FOODS



SOURCE : CALCULATED BY USAID/DR .

Table 29

DOMINICAN REPUBLIC: Production of Selected Agricultural Commodities,  
Production Aggregates and Indices, 1957-59 Average and Annual 1969-73

	Average 1957-59	1969	1970	1971	1972	Estimated 1973
<b>A. Production</b>						
	<u>Thousands of Metric Tons</u>					
Rice, paddy	109	195	210	207	200	177
Corn, shelled	48	43	45	47	50	40
Beans, dry	22	26	25	28	30	32
Potatoes	5	23	23	24	25	26
Cassava (yuca)	150	165	170	184	195	205
Sweet Potatoes	81	84	87	91	95	97
Sugarcane	7,621	8,331	9,500	10,200	10,463	10,600
Tobacco	22	22	23	23	28	30
Peanuts, in shell	57	73	75	77	83	N/A
Bananas	257	267	275	280	290	310
Coffee, green <u>1/</u>	33	44	44	46	46	46
Cacao beans, dry <u>1/</u>	35	26	26	26	41	26
Beef and veal	22	32	32	33	37	39
Pork	7	10	11	12	16	17
Milk	228	264	283	304	315	330
<b>B. Aggregates of Production</b>						
	(Constant Values)		<u>Millions of Dollars</u>			
Crops	111.2	135.5	137.7	139.9	152.1	144.3
Livestock	40.8	50.0	53.0	56.9	61.4	64.6
Total agriculture	152.0	185.5	190.7	196.8	213.5	208. <sup>a</sup>
Total food	130.1	159.0	165.5	173.5	184.2	179.
<b>C. Indices of Production</b>						
Crops	100	122	124	127	137	130
Livestock	100	122	130	139	151	158
Total agriculture	100	122	125	130	141	137
Total food	100	122	127	133	142	138
Per capita agri.	100	88	87	87	93	87
Per capita food	100	88	89	90	93	88
Index of population 1958 population = 2,834,300	100	139.3	143.4	147.7	152.0	156.

1/ Data for coffee and cacao beans refer to the marketing years beginning in the indicated calendar years, even though most of the harvest occurs between January 1 and the end of the marketing year

Source: GODR, USAID/ DR Industry contacts, and U.S. Agricultural Attaché estimates based on official and unofficial information.

Table 30

CHANGES IN PRODUCTION OF VARIOUS CROPS IN THE DOMINICAN REPUBLIC

Food	Production 1957-1959	(000 MT) 1973	Percent Change
Potatoes	5	26	+420.00
Pork	7	17	+142.86
Beef and Veal	22	39	+ 77.27
Rice (paddy)	109	177	62.38 *
Milk	228	330	46.05
Beans (dry)	22	32	45.45
Coffee	33	46	39.39
Sugar Cane	7,621	10,600	39.09
Cassava (Yucca)	150	205	36.66
Tobacco	22	30	36.66
Bananas	257	310	20.62
Sweet Potato	81	97	19.75
Peanuts (in shell)	57	67	17.54
Corn (shelled)	48	40	-16.67
Cacao Beans (dry)	35	26	-25.71

\* Population growth during this period was estimated at 56.9 percent. Thus, production above the line grew faster than population while that below the line grew more slowly.

SOURCE: Compiled from Agriculture Production Figures of USAID/DR and the American Agriculture Attaché.

The major cause of reduced agricultural production was the period of political and social instability that followed the death of Trujillo and the drought of 1967 and 1968. Lagging investment in the agricultural sector is a more recent factor although early correction is in prospect.

More recent trends are shown in Table 31. In the four years from 1971 to 1974, there were increases in all crops noted with the exception of rice and corn. 6/

For better nutrition, production of rice and beans should be increased and starchy roots and plantains decreased to make higher protein staples more generally available. Even corn which at present has low acceptability for human consumption would be better than starchy roots and plantains. Nevertheless, changes in production patterns are not a guarantee of significantly better nutrition and a comprehensive program of better nutrition information will need to be developed in schools, media and through special campaigns.

Theoretically there is great potential on increases in crop production. In practice the time needed to reach these goals is very considerable indeed. (Table 32). Using no more land than is now planted in five major food crops, but using the best available land for this purpose, increasing yields to that which appear attainable in the Dominican Republic would result in enough calories and protein for eight to ten million inhabitants. Major effort will be required to keep production moving ahead of population growth.

#### D.2. Summary of Agriculture Sector Assessment Findings

The agricultural sector has been analyzed in some detail in 1974 7/. Studies and analyses will continue under the auspices of the Secretariat of Agriculture. Parts of the Agricultural Sector Assessment record a number of observations which have relevance to our consideration of the nutritional problem. These are summarized as follows:

6/ Corn is primarily livestock feed in the Dominican Republic.

7/ Agriculture Sector Assessment.

TABLE 31

DOMINICAN REPUBLIC: Agricultural Production for Selected Crops  
Calendar Years 1971-74, in metric tons

	<u>1971 (revised)</u>	<u>1972 (revised)</u>	<u>1973 (estimated)</u>	<u>1974 (forecast)</u>
Rice, paddy	207,000	200,000	177,000	193,000
Corn	47,000	50,000	40,000	40,000
Peanuts	77,000	81,500	81,700	82,000
Sugarcane	10,200,000	10,463,000	10,660,000	11,475,000
Sugar	1,210,000	1,255,000	1,300,000	1,400,000
Coffee <u>1/</u>	45,500	46,000	46,000	48,000
Cacao Beans <u>1/</u>	26,000	41,500	25,695	42,000
Tobacco	23,000	28,400	30,000	31,000
Poultry	24,883	25,091	31,026	32,659
Beef	33,000	36,700	39,000	40,000
Pork	12,000	16,000	17,000	18,000
Milk	304,000	315,000	330,000	340,000
Garlic	4,000	5,000	5,000	6,000
Pumpkin	1,900	2,000	2,200	2,400
Sweet Potatoes	91,000	95,000	97,000	100,000
Onions	10,000	11,000	12,000	13,000
Pigeon Peas	26,000	37,600	41,300	47,000
Bananas	286,000	290,000	310,000	315,000
Beans, dry	23,000	30,000	32,000	34,000
Yams	25,000	27,000	28,000	31,000
Potatoes	24,000	25,000	26,000	27,000
Pineapple	5,000	5,000	5,500	6,000
Plantains	558,600	581,000	600,000	615,000
Grain Sorghum	16,000	26,000	30,000	34,000
Yucca	184,000	195,000	205,000	215,000

1/ In crop years, Oct. 1 - Sept. 30.

Source: Secretariat of Agriculture, Agricultural Bank, USAID, local trade contacts, and U.S. Agricultural Attaché estimates based thereon.

Table 32

Potential Increase in Supply of Selected Foods 1/  
(Metric Tons)

Commodity	Actual	Production Using Most Productive Land <u>2/</u>	Increasing Yield Further by Applying Available Technology Available in D. R.	Theoretical Optimum with Existing Technology
Rice	72,727	109,091	209,455	363,273
Beans	234,000	351,000	565,110	1,130,220
Corn	110,000	165,750	193,928	387,855
Yucca	139,669	209,508	301,685	545,708
Plantain	104,038	156,057	469,732	597,693

1/ Land Area Constant.

2/ Adjusted for transfer of most suitable lands to these crops, substituting for less suitable lands now in production. The increase of 50 percent yield was set arbitrarily after consultation with FAO officials and other agricultural experts.

Source: Preliminary Data, Food and Agriculture Organization

Land -- With some exceptions, almost the entire agriculturally usable land area is in agricultural production. Less than half of agriculture land is used to produce crops for domestic consumption. Most farmer's holdings are very small and 62 percent of the farms are operated by their owners. A series of Agrarian Reform laws were promulgated in 1972 and currently the Agrarian Reform is proceeding slowly. Increases in production are possible through the use of new technology, more intensive farming, more efficient land use and use of suitable lands for the best possible crops.

Preliminary FAO estimates for the Cibao Valley indicate that of the 630,000 hectares of land area, approximately 359,000 are usable for agriculture or cattle-raising. Of this total, 167,700 hectares are in pasture land, or 46.7 percent of the available land. Estimates for the nation indicate the figure may reach as high as 57 percent of non-sugar agricultural land in pasture.

Labor -- Rural unemployment and underemployment are estimated at 40 percent of total available rural manpower. The rural work force has relatively poor educational, nutritional, and health levels.

Irrigation -- Seven percent of agricultural land is irrigated and that figure will nearly double to 13 percent by 1980. As of 1973, approximately 50 percent of the irrigated land was planted in rice, which is subject to Agrarian Reform laws. The President attaches much priority to irrigation and has in the past authorized substantial investment. He has asserted recently his intention to continue this policy.

Investment -- Although adequate data are not available, the decrease in per capita production in agriculture indicates a relative decapitalization over the last fifteen years. The GODR is seeking to reverse this trend. The rate of investment in the rural areas will increase appreciably in 1975 over 1974 and prior years.

Agricultural Machinery -- Agricultural machinery is not presently available to the small farmer but could be made available through a system of equipment rental and other schemes.

Fertilizers and Agrochemicals -- The use of fertilizers and agrochemicals is becoming increasingly expensive for small farmers. Availability and use is dependent on availability at lowest possible prices and much technical assistance and credit supervision of small farmers.

#### Increase in Production

Rice -- There will be a significant governmental effort to increase rice production. Additional irrigated lands and research programs to develop new varieties of rice for the Dominican Republic are factors favoring increased production.

Beans -- In 1973, 11,170 tons of beans were imported to cover 27 percent of the effective demand. This reflects Dominican food preference, drought conditions affecting production adversely, and prices which were relatively more beneficial to consumers than some other crops.

Fish -- Dried codfish has been one of the most popular and cost effective sources of animal protein. Recently, higher prices have reduced consumption. Fresh fish is not popular because inadequate marketing procedures have made it unsafe except near its source of supply. Fishing potential in the Dominican Republic is probably low because of the limited coastal shelf and the relative lack of nutrients in the waters. The IDB has under consideration a pilot fishing fleet project which is estimated could produce 2,000 tons annually. Stocking of inland rivers and lakes would seem to offer some possibilities as well.

#### E. THE PROCESSING AND DISTRIBUTION OF FOOD

Food distribution in the Dominican Republic is primarily through cash market systems. The urban population is fully dependent on market systems. About 50 percent of the rural diet is purchased rather than produced for home consumption. Of the major food crops, only cassava (yucca) is retained for large home consumption (Table 33), other crops are grown principally for market. Over 80% of the food produced for sale comes from small farms. Rice and beans, the most important food crops, are almost totally sold before harvest, and families must later repurchase for their own consumption.

Price increases between the farm and the consumer are illustrated in Table 34. As would be expected, relatively easily-handled staples, which are not subject to deterioration or major loss in handling, e.g., beans, plantains, increase less in cost than do more perishable products. A weighted average indicates that with current consumption patterns, the consumer pays about twice what the farmer receives.

The potentiality for increasing real income of consumers by lowering food prices through reduction in distribution costs is promising. Prices of fish, fruits and vegetables to consumers, especially pigeon peas, avocado, and oranges, are high compared to selling price of producers. Products such as these should figure more prominently in the diet. To some extent prices are an inhibiting factor to greater product use. Thus, while farm prices per unit of production may be reduced through increasing yields and without compromising farmer income, improved marketing of agriculture products appear to be as promising in obtaining better nutrition. A combination of programs could reduce prices to consumers.

Table 33

FARM USES OF PRODUCTION OF VARIOUS CROPS

(%)

<u>Product</u>	<u>Home Consumption</u>	<u>Animal Consumption</u>	<u>Seeds</u>	<u>Payment in Goods</u>	<u>Sales</u>	<u>Stock</u>	<u>Other</u>
Rice	3.5	-	1.9	1.7	91.9	1.0	-
Corn	7.0	6.0	1.5	.3	79.9	3.8	1.5
Beans	6.3	-	2.2	0.1	90.9	0.3	0.1
Plantains	21.7	-	-	0.1	78.0	-	0.3
Cassava	45.8	1.7	-	0.3	51.4	-	0.7
Sweet Potatoes	29.1	2.8	-	-	67.4	-	0.5

122

Source: "SLA Estudio sobre Consumo," December, 1973

TABLE 34

GROSS MARGINS OF COMMERCIALIZATION OF PRINCIPAL  
AGRICULTURAL PRODUCTS

Product	Unit	1960	1970	1971	1972
Sweet Potato	100 lbs.	62	131	107	110
Potato	" "	113	62	64	100
Yucca	" "	108	82	169	143
Yautía	" "	98	75	98	100
<u>Name</u>	" "	85	58	89	92
Beans (kidney)	" "	43	75	58	44
Garlic	" "	195	106	101	94
Onion	" "	116	114	79	128
Pigeon Peas	" "	96	137	313	462
Tomatoe	" "	160	389	143	147
Cabbage	" "	96	236	242	109
Avocado	Thousand	230	226	613	454
Banana	Dozen	142	136	121	148
Oranges	"	94	140	287	365
Oranges (cooking)	"	438	376	560	414
Plantain	Unit	63	11	42	65
<hr/>					
Fruits & Vegetables					
Weighted Average *		93	90	123	131
<hr/>					
Beef	Pound	33	63	62	70
Pork	"	64	88	96	94
Crabmeat	"	51	67	96	91
Fish	"	124	187	202	233
Chicken	"	52	45	55	61
<hr/>					
Beef and Chicken					
Weighted Average *		47	65	70	77
<hr/>					
Fresh Milk	Quarter	81	102	92	100
Eggs	One	56	70	63	38
<hr/>					
Eggs and Milk					
Weighted Average *		75	94	85	84
<hr/>					
Total Weighted Average *		70	80	94	99

\* The above products have been weighted according to the average assigned within the market basket of goods and services used in the price index calculations.

SOURCE: Banco Central, Estudios de los Precios en Finca de los Principales Productos Agropecuarios, Santo Domingo, 1973.

There is a wide variation in prices from one year to another and between one region and another (Table 35).<sup>8/</sup> While food prices are often higher in Santo Domingo than in other sections of the country, this is not always the case. Despite the Dominican Republic's being relatively small, differences principally result from three factors. There is no system of regular marketing information. Distribution is in the hands of a great many persons and truckers who contract to purchase production at farm site frequently well in advance of time of production and distribution. Storage facilities are limited, particularly for perishable crops, and production is not cycled to meet consumer demand. There are also major seasonal variations in food prices.

The Dominican Assessment team was handicapped in its analytical tasks because adequate marketing information was unavailable. Only this year, was radio broadcasting of market information initiated. Prices however were current prices. There is no system for estimating future average prices. INESPRES, lacking food stock information, makes import purchases on the basis of crude estimates. INESPRES domestic and import purchases contribute to price fluctuations. This is contrary to INESPRES's purpose and function. Many farmers enter into contracts with food processing plants which guarantee a purchase price and furnish loans, inputs and services. These include such crops as peanuts and tomatoes. The guaranteed minimum price is more advantageous than for some other crops where there is a higher risk of price fluctuations. Up-date information on crop yields and market prices is needed. Price stabilization is also needed.

The distribution of staples is not systematized and is complicated. Despite the large numbers of purchases of food at the farm level, in practice farmers have virtually no alternatives for ensuring a fair price paid for his production. Thus, tens of thousands of small farmers sell to thousands of truckers who in turn sell, often through several levels of intermediaries,<sup>9/</sup> to retailers, who are usually located within walking distance of their customers. Furthermore waste is high because of losses in harvesting, infestation, storage and the primitive transport practices. For perishable crops it is particularly high, thereby denying consumers needed nutritional foods at more modest prices. The retailer who offers a wide variety of goods may deal personally with 20 to 25 suppliers daily. In each

---

<sup>8/</sup> Peace Corps Volunteers carried out a sample survey of retail prices in various portions of the country to obtain this data.

<sup>9/</sup> The "Asociación de Almacenistas Importadores" and the "Asociación de Mayoristas" serve different clientele in this system of intermediaries.

Table 35  
PRICES FOR FOOD ITEMS BY REGIONS

Item	National District	Cibao	Northern	Eastern	Southwestern	Supermarkets National District	Supermarkets Santiago
1. Rice	\$0.26/lb.	\$0.22/lb.	\$0.23/lb.	\$0.23/lb.	\$0.22/lb.	\$0.24/lb.	\$0.20/lb.
2. Oatmeal	\$0.34/14 oz.					\$0.31/14 oz.	
3. Spaghetti	\$0.38	\$0.30	\$0.39	\$0.21	\$0.30	\$0.33	\$0.33
4. Bread	\$0.35 loaf	\$0.05 roll	\$0.05 roll	\$0.05 roll	\$0.05 roll	\$0.35 loaf	\$0.35 loaf
5. Cassava	\$0.12 lb.	\$0.08	\$0.10	\$0.09		\$0.20 lb.	
6. Potatoes	\$0.14 lb.					\$0.10 lb.	\$0.07 lb.
7. Sweet Potatoes	\$0.10 lb.					\$0.19 lb.	
8. Sugar - White	\$0.55/5 lbs.	\$0.11 lb.	\$0.10 lb.	\$0.10 lb.	\$0.12 lb.	\$0.54/5 lbs.	\$0.52/5 lbs.
9. Sugar - Brown	\$0.09 lb.	\$0.08 lb.	\$0.10 lb.	\$0.08 lb.	\$0.08 lb.	\$0.08 lb.	\$0.08 lb.
10. Pinto Beans	\$0.30 lb.	\$0.27 lb.	\$0.25 lb.	\$0.24 lb.	\$0.30 lb.	\$0.32 lb.	\$0.44 lb.
11. Black Beans	\$0.35 lb.					\$0.26 lb.	\$0.28 lb.
12. Plantain	\$0.05 ea.	\$0.04 ea.	\$0.04 ea.	\$0.05 ea.	\$0.07 ea.	\$0.06 lb.	\$0.03 ea.
13. Tomatoes	\$0.20 lb.					\$0.17 lb.	\$0.17 lb.
14. Meat	\$1.22 lb.					\$1.24 lb.	
15. Poultry	\$0.57 lb.					\$0.79 lb.	
16. Eggs	\$0.89 doz.	\$0.08 ea.	\$0.07 ea.	\$0.08 ea.	\$0.08 ea.	\$0.89 doz.	\$0.67 doz.
17. Codfish						\$1.69 lb.	\$1.45 lb.
18. Past. Milk	\$0.28 ltr.					\$0.31 ltr.	\$0.30 ltr.
19. Raw Milk							
20. Whole Powder Milk	\$1.47 lb.					\$1.53 lb.	
21. Peanut Oil	\$9.50/15 lbs.	\$1.24/lb.	\$1.15 ltr.	\$1.12 ltr.	\$1.07 ltr.	\$9.93/15 lbs.	
22. Salt	\$0.05 lb.					\$0.05 lb.	\$0.05 lb.
23. Coffee	\$0.85 lb.					\$0.80 lb.	
24. Tomato Paste	\$0.91 kilo					\$0.94 kilo	\$0.88 kilo
25. Rum	\$1.56	\$1.50	\$1.50	\$1.80	\$1.68	\$1.57	\$1.39
26. Beer	\$0.56	\$0.66	\$0.57	\$0.67	\$0.65	\$0.56	
27. Malta Morona	\$0.15	\$0.15	\$0.4	\$0.15	\$0.19	\$0.15	
28. Katsup	\$0.50					\$0.49	\$0.45
29. Mayonnaise	\$1.35/16 oz.					\$1.34/16 oz.	\$1.25/16 oz.
30. Cond. Milk	\$0.25/6 oz.	\$0.22	\$0.20	\$0.21	\$0.24	\$0.25/6 oz.	\$0.20/6 oz.
31. Nestle Quick	\$1.45/16 oz.					\$1.45/16 oz.	\$1.45/16 oz.
32. Sobrino Chocolate	\$0.85/16 oz.					\$0.85/16 oz.	\$0.79/16 oz.
33. Butter	\$1.49/5 lbs.					\$4.19/5 lbs.	\$4.09/5 lbs.
34. Vegetable Soup	\$0.28					\$0.28	\$0.26
35 Crackers	\$3.55/3-1/2 lbs.					\$3.65/3-1/2 lbs.	\$3.89/3-1/2 lbs.
36. Salchichón	\$0.85 lb.	\$0.76 lb.		\$1.00 lb.	\$0.58 lb.	\$0.77 lb.	
37. Salami	\$1.08 lb.					\$1.19 lb.	\$0.95 lb.
39. Red Onions	\$0.18 lb.					\$0.22 lb.	\$0.18 lb.
40. Garlic	\$0.25 lb.					\$0.29 lb.	\$0.9 lb.
41. Canned Fish		(\$0.27)	\$0.21	\$0.23	(\$0.12)		

SOURCE: Peace Corps Volunteer Survey, July 1974.

June 1974

Table 36

FOOD PROCESSING COMPANIES IN THE DOMINICAN REPUBLIC

<u>Type</u>	(a) <u>1967</u>	(b) <u>1969</u>	(b) <u>1972</u>
Meat Products	6	18	11
Pasteurized Milk	3	3	5
Ice Cream	14	22	14
Butter and Cheese	23	30	32
Other Milk Products	-	2	1
Margarine & Vegetable Facts	1	2	3
Edible Oil	2	2	6
Wheat Mills	1	1	1
Corn Mills	1	2	2
Bakeries	330	367	216
Spaguettis, etc.	5	6	5
Sugar Mills	16	16	16
Candies	22	37	23
Chocolate	6	13	8
Rice Mills	43	53	44
Fruit Preserves	2	3	1
Fruit Juices	2	3	5
Tomate Sauce	3	4	3
Coffee	34	35	40
Toasted Ground Coffee	5	11	2
Rum Distilleries	9	9	9
Breweries	2	2	2
Non-Alcoholic Beverages	5	11	6
Vinegar	3	12	6
Salt			2

a) Source: Nutrition Survey of the Dominican Republic

b) Source: Oficina Nacional de Estadística.

case, he must inspect merchandise, negotiate prices, and arrange for transportation to his place of business. At the same time, the average purchase of the consumer for non-staple items is very small and prices to individual customers are high to insure profit. Procedures for more efficient distribution and reduced handling of foods would reduce losses and permit the possibility of reduced prices.

INESPRE has a storage system, mostly for cereals and crops easily stored. The Government has not actively encouraged the private sector to invest in storage facilities. Nevertheless there is a fair amount of speculative storing which has resulted in punitive action by the Government. This too has discouraged the development of a rational and modern system of marketing and distribution. INESPRE is currently increasing storage facilities and is now storing garlic, onion, and potatoes. Guaranteed prices of garlic and onions have been so high as to encourage an excess production. Losses in INESPRE storage have thus been high and consumers have not benefitted.

Most food in the Dominican diet is not processed by the food industry. Other than sugar, coffee, cacao and tobacco and a few specialty products, as mushrooms, the food industry is domestically-oriented. With the saturation of the domestic market for tomato paste for example, combined with favorable U.S. market prices, surplus production is now being exported. See Table 36 for a list of food industries.

Special attention should be given to the processing of rice, pastas, flour, and salt. These foods reach the majority of urban consumers and offer possibilities for nutritional improvement through fortification. Such fortification could be directed toward specific deficiencies (e.g., salt with iodine to reduce goiter, flour with vitamin A to reduce deficiency blindness, and iron for iron deficiency anemia), or with protein supplements in the case of rice and wheat products.

## F. DISCUSSION OF PROGRAM POSSIBILITIES

### F.1. Introduction

The Supplementary feeding programs in the D. R. consist of a series of food supplement programs administered by three U. S. voluntary agencies using PL 480 Title II foods primarily, a GODR fresh milk distribution program, and a GODR subsidized food program, both raw and prepared in communal cafeterias. Total efforts are estimated to reach about 12 percent of the population. Appendix III discusses these programs in more detail. These programs do not make the most, nutritionally, of the opportunities provided. Furthermore, the most important group, expectant mothers, nursing mothers and infants, are

not the principal target. These programs, combined with the preventive health services are the principal nutrition programs at the present time in the health sector.

Correction of malnutrition is difficult and complex. There are many causes. Numerous disorders fall within the general classification of malnutrition. Most do not have single or simple solutions. Action must be taken in many areas: agriculture, education, health. Efforts in any one sector need to be related to other sectors. The issue is how?

The Dominican Health Sector Assessment has suggested specific steps be taken under the following broad headings: increasing purchasing power of consumers; increasing the supply of basic foods; providing adequate nutrition education; distributing food to particularly vulnerable segments of the population and enriching particular foods. These, however, constitute "conclusions" and are not framed to facilitate decision-making. There are no nutritional goals. Nutrition is recognized as a major health problem, but the lack of alternative policy choices and courses of action make this area probably the weakest in the entire health sector. Furthermore, governmental experience and capacity in this area is limited.

It is also clear that there is little awareness on the part of Dominican leaders of the nature and magnitude of malnutrition in the Dominican Republic. The economic, as well as social costs, are substantial but not fully appreciated. Fixing responsibility for nutrition policy planning and coordination of implementation should be considered.

## F.2. Food Distribution

Efficient food distribution to particularly vulnerable groups, children under the age of two years and pregnant and nursing mothers, is inhibited by the lack of efficient governmental services in urban, but particularly rural, areas. Such distribution should be practicable in the logistical sense, but it could involve difficult decisions for the GODR. While it is logical to think of a "health delivery system" this is by no means the only alternative. There are food distribution points now and an extensive school feeding program. Food supplements are not now achieving their maximum nutritional impact. A number of factors are taken into account in food distribution. The GODR is presently spending almost \$6.5 million annually on feeding programs. While this sum is significant, it constitutes a very minor part of total GODR expenditures. Additional sums, well-directed, could have a substantial nutritional consequence for the country.

Table 37

Quantity and Cost of Dietary Supplement \*

Age	Number of Beneficiaries (000)	Quantity of Food		Cost Per Year (000)
		Tons/Month	Tons/Year	
0 to 1 year	75	225	2,700	\$1,850 (a)
1 to 2 years	75	188	2,250	667 (b)
Pregnant Women	80	120	1,440	720 (a)
Nursing Mothers	75	188	2,250	<u>1,125 (a)</u>
Total Product Cost				\$4,362
Distribution & Profit				
Margin				\$1,000

(a) At US\$0.50/Kg.; Caloric Density = 500 Cal/100 grams.

(b) At US\$0.30/Kg.; Caloric Density = 400 Cal/100 grams.

\* Estimated costs include simple, cheap, packaging materials, e.g., plastic bags.

Source: Rutman, M. "Alimentos para el Primer Período de Vida." August 1974.

Table 38

Budget for Market Research

Study of Consumer Preferences, Infant Food Habits - 500 Interviews at \$20.00/Interview	\$10,000 *
Study of Wholesale, Retail, and Institutional Distributors - 100 Interviews at \$10.00/Interview	1,000 *
Study of Users of By-Products, Alternative Foods	1,000 *
Data Analysis	<u>2,000</u>
Sub-Total	\$14,000
Includes sample design, questionnaire, development, training, and validation of interviewers, salaries, per diem.	
Taste Panel	\$ 3,000
In-Home Panel - 500 Interviews at \$15.00/Interview	7,500
Market Test. - 500 Interviews at \$20.00/Interview	10,000
Data Analysis	<u>2,000</u>
Sub-Total	\$22,500
TOTAL	\$36,500

Source: Cooke, Tom "Mass Media as one of the Determinants  
of Nutritional Status." Sept. 1974.

TABLE 39

Comparative USG and GODR Funding for Alternative  
Supplementary Feeding Programs

	<u>Value of Food US\$</u>
GODR Economic Kitchens	
Prepared Food	\$ 430,560
Raw Food	3,311,880
Cruzada del Amor	249,600
MCH Fresh Milk Distribution	1,500,000
GODR Distribution Costs of PL 480 Title II (1974)	1,586,487
USG Costs of PL 480 Title II (1974)	3,040,043

---

Source: USAID and GODR sources.

F.3. Importation of Weaning Foods, Development of a Locally-Produced Weaning Food and Research on Readily Available Local Foods

Product testing by limited importation of weaning products, e.g. INCAPARINA, should be tried, but longer term solutions are probably dependent on a locally-adapted product. The Dominican Health Assessment identifies the development and distribution of a subsidized, low-cost weaning food and a dietary supplement for pregnant and lactating women as a primary nutritional intervention. These supplements are intended to complement, not replace, breast feeding, particularly when infants reach the age of six months. Clearly appreciable and beneficial nutritional impact could be obtained from more extensive breast feeding. Yet breast feeding, as cited earlier, is inhibited for a variety of cultural, social and economic reasons. A campaign should be considered. This can be done through nutrition education, by health care services, and mass media educational techniques. Medical doctors should be encouraged to place more emphasis on the importance of breast feeding, both during the pre- and post-natal care periods. Commercially prepared formulas in maternity hospitals should not be routinely supplied unless there is reasonable expectation that they can be continued. Infant foods available (Enfamil, Similac, Nan) and recommended by health practitioners in the Dominican Republic are prohibitively expensive for most Dominican families (e.g. \$4.00/lb.).

There should be a low-cost, culturally and nutritionally acceptable, infant food. It should be nutritious, easily digestible, soluble, high in calories, have a sufficient quantity of high quality protein, be easy to prepare, hygienic, and have acceptable taste, color, and texture. This is easier to specify than to achieve. It will also take some time to research and bring into production and distribution. Furthermore, consideration of this alternative should not become an excuse for not paying more attention to food products which may more generally be available, particularly in the countryside and which can be prepared and adapted for infant and child use. Varieties of fruits and vegetables frequently go to waste because their value or potential is not appreciated or diminished in preparation. This would be a useful area for investigation looking toward the establishment of a practical and pragmatically-oriented food research laboratory. Greater use of readily available food should be considered.

To decrease the cost factor of a weaning food, consideration should be given to designing the composition of the infant food so that it more nearly approximates the composition of human milk rather than that of cow's milk. One possibly acceptable product would be a milk analog which has the physical characteristics of milk powder (an already acceptable product but prohibitively expensive) and is much lower in cost. The powdered milk plant near Vega, currently closed, could possibly be used to prepare and/or process the food produced.

Any new subsidized infant food should be commercially presented as a "baby food" to discourage consumption by adults. This can be aided by advertising and packaging. In the case of the supplement for pregnant women and nursing mothers, a similar product with its own particular identifying characteristics can be promoted as "food that goes only to the child," or an "hembra" food related to female sexuality to make it unattractive to men or women of other groups.

Taking into consideration the logistical and administrative problems of manufacture and distribution, production of weaning foods and food supplements should be on a commercial scale with the GODR guaranteeing the purchase price. Commercial manufacture would probably assure more efficient production and normal marketing channels could be used to promote and distribute the products. An MCH program could utilize these products in both urban and rural areas, for example, by offering food stamps to be presented at local markets (colmados) to obtain the product.<sup>10/</sup> Other distribution systems to be considered are: (1) SANAR and CURAR, (2) the military distribution system, (3) governmental hospitals and clinics, etc.

Cost is very difficult to estimate since the composition and proportions of the product has not been established. The values in Table 37 are only approximate. For purposes of calculation it is assumed that the foodstuffs will be used by 50 percent of the target population, and will supply 50 percent of the nutritional requirements of the birth to one year age group; 30 percent of the one to two year age group; 100 percent of the suggested additional supplement for the pregnant women (see Table 37), and 50 percent of that additionally recommended for nursing mothers. The cost of production for 8,640 tons/year are estimated to be about \$4.5 million to which would be added distribution costs and profit of about \$1.0 million. Various alternatives for production site are discussed in the Dominican Assessment.

Other costs are estimated at \$75,000 for developing the products composition, consisting of six man/months for two food chemists; \$36,500 for market research as explained in Table 38; \$100,000 for costs of media promotion during two years; \$45,000 for non-media promotion for two years; and \$10,000 for evaluation and product control. The costs of this proposal can be compared to those of the existing supplementary feeding programs shown in Table 39 (see also Supplementary Feeding Programs, Appendix III).

<sup>10/</sup> "Alimentos para el Primer Periodo de Vida", Dominican Health Sector Assessment

Table 40

## PER CAPITA DAILY CONSUMPTION OF STAPLE FOODS BY SELECTED INCOME GROUPS

FOOD	S O C I O - E C O N O M I C G R O U P S			F/A**	J/A**
	-A-* Lowest Income Bracket Represents 4% of Pop. (Less than \$5/mo.)	-F-* 8.5% of Pop. (\$25-\$30/mo.)	-J- Highest Income Bracket Represents 5% of Pop. (More than \$200/mo.)		
Rice (a)	100	188	162	1.85	1.02
Pastas (a)	8	9	24	1.13	3.09
Bread (b)	0.64	1.82	1.11	2.84	1.73
Sugar (b)	0.15	0.57	2.12	3.80	14.10
Salt (a)	12	17	23	1.4.	1.35
Coffee (a)	2	17	17	6	8.5

(a) in grams

(b) in units

\* Note that population between income groups A and F represents 55% of the total.

\*\* The relationship between the consumers of groups F and J with respect to A serves to establish the effects of fortification. In reviewing F/A, the pastas and salt are the best vehicles for distribution and the worse is coffee. Group F consumes 6 times more coffee than A. If our target group were to be selected from the bracket J, then salt, rice, and bread would be the best choice.

SOURCE: Compiled from material obtained from the 1969 Central Bank Survey.

#### F.4. Fortification

Vitamin and mineral fortification of various basic processed foods is well known and could be employed to attack vitamin/mineral deficiencies in the Dominican Republic. Some foods are already fortified but are consumed largely by the upper and middle income families. Labeling and control laws do not exist and the consumer has only the assurance of the producer that the advertised fortification does exist.

The most suitable foods for fortification are wheat, sugar, dried and evaporated milk, rice, and coffee since per capita consumption is relatively high. See Table 40.

The 1969 Nutritional Survey<sup>11/</sup> estimated the cost of a Public Health-based national nutrient fortification formula at \$2,992,387 (based on 1970 prices). This formula included methionine (an amino acid) which alone represented a cost of \$2,200,000 annually. Another ingredient in the proposed formula -- Vitamin A -- could be offered by injection under low cost health delivery programs. The remaining vitamin/mineral mixture necessary for a fortification was relatively inexpensive.

Food supplements needed by persons in the several income brackets differ. Therefore any fortification program, or nutritional supplement program, would need to take into account problems of oversupply as well as undersupply in the daily diet. The best food vehicle is probably rice fortification. Rice would also benefit the lowest income groups most. Thus, an appropriate program, even including vitamin A, would cost approximately \$1,232,000 per year (See Table 41). It is estimated that it would take approximately one year to put the fortified food on the market; this timing includes a pre-design study to test types and quantities of vitamins and minerals and consumer acceptance.

#### F.5. Nutrition in National Policies and Programs

The complexity of the nutrition problem has been cited. Much more study needs to be undertaken by the GODR to determine how agricultural, education and health agencies should take the nutrition factor into account in formulation of policies and programs, what programs to have, how to organize to perform new and strengthened

---

<sup>11/</sup> Sebrell, W. H. et.al. "Nutritional Status of Middle and Low Income Groups in the Dominican Republic," Archivos Latinoamericanos de Nutrición. Vol. 22, Número Especial. (July 1972) Table 31.

Table 41

PROGRAM FOR VITAMIN AND MINERAL FORTIFICATION OF SELECTED FOODS STAPLES

(In Thousands of Dollars)

<u>YEAR</u>		<u>COSTS</u>
1975	Technical Assistance for the Identification and Fortification Programs	50
1976	Cost of Vitamin/Mineral Mixture* Product Control	1,232
1977	Cost of Vitamin/Mineral Mixture* Product Control	1,232
1978	Cost of Vitamin/Mineral Mixture* Product Control	1,232
1979	Cost of Vitamin/Mineral Mixture* Product Control	1,232

\* Assumes that medium costs for fortification mixture are used.

Table 42

A SAMPLE NUTRITION UNIT STAFFING PATTERN

Number Needed	Position	In RD\$		Total Requirement Per Year
		Salary/Person Month	Year	
1	Director - Dominican, with proven capacity in applied nutrition	750	9,000	000
1	Administrative Officer	500	6,000	000
1	Nutritionist (as Head of Applied Nutrition Div.)	700	8,400	400
1	Nutritionist/ Dietitian	650	7,800	800
1	Agro-Economist	650	7,800	800
1	Marketing Specialist	650	7,800	800
1	Medical Doctor with training in Maternal/ Child Health and Nutrition	700	8,400	400
1	Statistician	500	6,000	000
1	Economist	650	7,800	800
1	Information Officer (editorials & reports)	500	6,000	6,000
4	Secretarie	250/ 275	3,000	12,000
			Sub-Total	87,000
	Overhead at 30 per cent			26,000
				<u>113,000</u>
1	Full-Time Advisor (Contracted for 5 years)		25,000 +5,000 + 50%	<u>45,000</u>
			<u>TOTAL</u>	<u>\$158,000</u>

Complementary agricultural activities are discussed in the USAID/DR Agricultural Sector Assessment, 1977

SOURCE: Estimated by USAID/S&DR.

functions efficiently. Such focus in governmental agencies now is either minimal or non-existent. Yet it would not be unreasonable to assert, even if it can not be proved, that adequate nutrition over the past generation would have been more beneficial for the country than the total of governmental development expenditures in the same period.

Nevertheless, a nutritional focus within organizations is needed. Nutrition is broader than any single governmental agency. Thus there are a number of agencies where such function could lodge, depending on whether primary emphasis should be on food production, education or health. The Presidency should not be excluded from consideration. A sample budget of such unit is included as Table 42.

In its simplest form a Nutrition Policy is: Eat more; eat better. Exhortation is rarely persuasive and this simple formulation is not a useful guide for action.

If the constraints to better nutrition are examined, it becomes readily apparent that certain Dominican cultural food habits and preferences constitute a significant constraint. Better nutrition for much of the population is also dependent on either subsidy or increased capacity to pay. To what extent the cultural and preference constraint, and, the economic constraint overlap is difficult to say. While preferences may have developed as a consequence of purchasing cheap foods, there is no assurance what-so-ever that improvement in economic condition would automatically lead to an appreciably-improved diet.

Those medical practitioners who advocating formula-feeding in lieu of breast-feeding is suggestive of several things, two of which are: One, the medical fraternity has influence in the country despite the food taboos which abound. How can the medical fraternity be mobilized to support better nutrition? Two, the medical fraternity is no less immune than other groups in developing countries in seeking "modern" and "technological" solutions even when these solutions may have only limited application.

Any technically-advanced "solution" to the problem of malnutrition introduces a new series of practical constraints: research on product composition; production and quality control; distribution; preparation for consumption, including product quality and germ free state at this stage. The first constraint can be overcome through application of a combination of imported and national expertness. The second is also susceptible to technology transfer and importation of the necessary machinery. Distribution is basically a question of choice of alternatives or combinations of alternatives, e.g. distribution through colmados, pharmacies, health clinics, schools, etc. Decisions would also be required about how to make the product available at affordable cost.

The fourth constraint is the most difficult. To a major extent all constraints except this final one are controllable. The better-nutrition-foodchain, based on modern technology is weakest at the point of the intended beneficiary. If quality is not then maintained, e.g. as a consequence of dilution, or if hygienic standards are not observed, the product could introduce rather more adverse than beneficial effects. Where living conditions are poor -- inadequate housing, primitive conditions of food preparation -- there is no basis for assuming that handling of the technological product would be any better than other food preparation practices unless, of course, cultural traditions and practices were sharply modified. This, however, would take time.

Therefore, one must take several "time" factors into account in considering technologically-advanced solutions. The first is realistically judging the time to develop, produce and market the product. The second is the time to develop acceptability under adequate conditions of use. The third is the time to modify tradition and cultural practices. The constraints surrounding technologically-advanced solutions are severe. While there is a definite place for such solutions, impact -- particularly in the short and intermediate term is likely to be limited -- and, optimally, such solutions should be applied under controlled conditions.

This leads to the question of how to control conditions. In this society at present, control, generally, should be institutionalized in some form. Once education on product use has some possibility of being followed, regarding both quality and hygienic standard, the control can be the self-control of the last persons in the better-nutrition-food chain.

There is another major alternative choice for improving nutrition. Obviously some locally-produced foods are more nutritious than others. The Dominican Health Assessment Team suggested promoting greater use of certain foods in the diet, particularly rice and beans. This is a pragmatic and constructive observation. Appreciably greater use of rice and beans would indeed improve nutrition generally. In both cases the Dominican Republic does not produce enough of these agricultural products, despite its having certain natural production advantages. It has the potential for meeting its current consumption needs, but now importations are high and costly and the GODR, with its central purchasing, has to compete in the world market where widespread food scarcity prevails. The Government is now encouraging greater production of both crops but has not allocated sufficient foreign exchange and budgetary allotments to import enough high-yielding seed. While foreign exchange and budget income, per se, are not a constraint, the necessary allocations have not been forthcoming. For example, \$900 thousand was estimated as the requirement to purchase improved bean seed. \$200 thousand was allocated. The consequence will be reduced production of high-yielding bean varieties. There will be need for substantial foreign

exchange expenditures if current food requirements are to be met. Furthermore, there is no increased production margin to support improved nutrition, using beans as a basis, during the coming year.

While rice and beans can be the hard core program for better nutrition, there are other foods readily available in the countryside which can be used. For example, bananas are widely-produced, but more for income than for consumption. The nutritionally poor plantain is widely-consumed green where produced. Citrus fruits are usually plentiful, but frequently rot on the ground. There could be much more extensive growing of tree crops, e.g. avocado and coconuts. Increased production of chickens and pigs can be obtained using feed crops generally and naturally available in the countryside. Little care for some of these are necessary, and, they can be produced on marginal lands. Growing and using these crops more for consumption would make more nutritional food a reality.

Dominicans in rural areas need to be encouraged and helped to produce more and better foods. Greater activity in this direction, obviously, would have greater potential application and practical benefit in the countryside than in the cities.

What is clear is that the problem of identification of food production priorities from the nutritional viewpoint -- except for rice and beans -- is not being systematically addressed.

Nor has the problem of distribution network for food supplements been considered except for the present food distribution programs such as the Cruzada de Amor, school and institutional feeding programs, the present limited MCH program and the even more limited food-for-work program. The systems which exist are not utilized to the optimum in reaching the most nutritionally-vulnerable members of the population -- pregnant women, nursing mothers and infants. As pointed out earlier, those benefitting from current programs are not necessarily those who would benefit most from nutritional supplements. The needs of the most vulnerable group are only marginally met in current food supplement programs -- both in terms of proportion of total in category served, and, in terms of proportion of daily adequate diet provided.

Furthermore, the adoption of the modern technology food supplement choice and greater use of local products choice address primarily the problem of production. The distribution problem of the former could prove to be difficult while that of the latter is negligible. The lesson to be learned in any society, developed or undeveloped, is to reduce the incidence of difficulty by reducing the number of problem areas.

Discussion of either choice do not yet address the problem of how to encourage greater adherence by people to improved nutritional

practices. Here the constraint of acceptability becomes almost overwhelming because it is culturally and traditionally-based. It matters little if availability is increased while patterns of acceptability do not change. Integral to implementation of any nutrition policy would have to be programs of public information and education, requiring the use of all communication media.

As stated above, the nutrition problem is perhaps the most serious Dominican health problem. Malnutrition is a substantial factor in infant, child and adult morbidity and mortality. Economic as well as social costs can be estimated. There is indicative information and data on the state of malnutrition in the 1969 nutrition survey of middle and lower income families. The calorie and protein deficiencies are calculable, as are other essential vitamin and mineral deficiencies. The constraints are identified even if their full extent has not adequately been assessed. There are resources, financial, institutional and to some extent human, which could be mobilized to deal with the communication problem.

The remaining questions are: Is the extent of the problem known and the benefits to be obtained through better nutrition appreciated by governmental and non-governmental leadership? Where does nutritional improvement figure among governmental priorities? Consequently, is there a desire and willingness to attack the problem aggressively and even enthusiastically? Can and will a national nutrition policy be formulated and implemented? Can the leadership in agriculture, education and health, and supporting services like public media, be made sensitive to nutritional needs and be motivated to work for nutritional improvement? Can public opinion be motivated and public interest in better nutrition be sustained?

All these questions have to be answered affirmatively if there is to be an appreciable impact in improving the level of nutrition in this country. To attack the nutrition problem piece meal and ad hoc is to tinker with the machinery without making any really significant improvement in nutrition and in health. To have programs that "do good" does not necessarily achieve significant and lasting results. Impact can be beneficial in some respects without really coming to grips with the problem, providing thereby only an illusion of progress.

In the Dominican Republic there would necessarily have to be several preconditions to effective action in the nutrition area. One, there has to be an advocate. The advocate has to be the Secretary of Health. Two, the advocate has to be persuaded and he, in turn, has to carry the argument to the President. Three, the President has to become convinced of the necessity to improve nutrition generally. He himself must articulate the goals and the policy. He must instruct secretariat and agency heads to prepare, and when approved, carry out activities which in combination with activities of other agencies will result in better nutrition. He must be willing

to allocate increased financial resources. He must take steps which will mobilize public opinion -- among the medical fraternity and among the public generally.

How? First, there must be a goal and a policy. Second, there must be a mobilization of interested and competent persons to work for nutritional improvements. Third, there must be plans which are focused and, to some extent, are integrated, or, at least are coordinated.

How? One, a National Nutrition Policy should be developed and issued. A suggested one is shown in Annex I. Two, there are three basic alternatives for obtaining policy attention and support. There could be a series of proposals, developed and initiated by a governmental unit charged with nutritional development. A structured National Nutrition Council could be convoked. A prestigious ad hoc and widely representative Presidential commission could be called together to discuss and recommend goals, policies, programs, projects.

The governmental unit approach might carry weight as a technical body but the issue at this stage is not technical but broad policy. Accordingly its influence would be minimal except for performing secretariat functions for a consultative policy body.

A Nutrition Council was proposed in 1963 but never convened. A recommendation to activate the National Nutrition Council has been submitted to the Office of the Presidency. There has been no decision. It is unlikely to be convened until there is a much better and widespread understanding of what the nutrition problem is and what the GOADR can do about it. There is considerable doubt that a central council could usefully coordinate anything at this point although depending on its composition, it might be a useful forum. The forum purpose could be served at this stage by a less formal structure.

Attention by a prestigious group, ad hoc and temporary in nature, with a mandate to examine and propose goals and policy particularly, could possibly be useful in directing national attention to the nutrition problem. The best people in the country could be obtained if they were not required to make a long-term commitment. From such group there might evolve, in time, a National Nutrition Council served by a small secretariat attached to the Presidency or to one of the major secretariats, e.g. health, agriculture, education. As part of a general effort to sustain public interest in better nutrition, those persons who share an interest and concern with nutrition professionals may find it useful to consider establishing, as have such in other countries, an association to promote nutritional improvement.

The foregoing is not a proposal to be implemented. Rather, it is a proposal to be considered. Proposals in the nutrition area heretofore have been partial, limited, and by and large ineffectual. Something bolder and more comprehensive is needed if there is to be significant nutritional improvement in this country any time soon.

ANNEX I

SUGGESTED NATIONAL NUTRITIONAL POLICY

Considering: That malnutrition is widespread among the people of the Dominican Republic, particularly so among preschool children; that malnutrition is a direct or associated cause of most deaths that occur in children in this age group; that malnutrition seriously impairs the physical and mental growth of those individuals who suffer from it, thus seriously limiting their capacity to enjoy a meaningful and useful life; and, that malnutrition exerts an awesome toll in terms of human suffering, diminished productivity of workers, and great expenditure of human and material resources to deal with its effects,

Therefore, the problem of malnutrition is declared to be a matter of urgent national priority and concern. An adequate level of nutrition for all of the Dominican people would be more beneficial for them and for the country than all of the current expenditures for development purposes.

It shall be the goal of this Government that every man, woman and child will have an adequate diet by 1985 and an improved diet as soon as national efforts can be organized.

There will be a national campaign, including assistance from private sector agencies, to improve nutrition. Programs of education and public information will be designed and carried out to promote better food consumption practices.

Priority emphasis in agricultural production programs, credit, technical assistance, and support prices will be for food and produce where nutritional benefit is greatest.

To the extent that better nutrition is beyond the financial means of the Dominican people, they will be assisted and aided.

This Government will support research by public and private organizations, universities, and individuals to provide the additional knowledge necessary for a better understanding of the problem of malnutrition in all its dimensions and to evaluate progress in its control.

The Secretariats of Agriculture, Education and Public Health are charged with the responsibility for the joint planning and implementation of such programs as deemed necessary for carrying out the nutrition policy in this document.

## VI. PERSONAL HEALTH SERVICES

Personal health services are those services popularly referred to as medical services. They may be provided by physicians, modern auxiliary personnel, or traditional practitioners such as midwives or "curiosas." While the efficacy of many modern medical services are unproved, medical interventions can prevent, cure and ameliorate many diseases. In the Dominican Republic, as discussed in Chapter III, many citizens suffer unnecessarily from disease because they do not have ready access to health services, still more because of lack of basic understanding and appreciation about what contributes to good health.

### A USE OF HEALTH SERVICES

As shown in Table 43, the Secretariat of Health has the responsibility of providing services to 68 percent of the population. Autonomous agencies of the Government provide services to an additional 15 percent, and the private sector, principally, is assumed to provide service to 17 percent of the population. This is an oversimplification since the budgets per person show that the services provided by the State Sugar Council (CEA), at RD\$1.09 per person per year are more rudimentary than those provided by the IDSS.

Perhaps the most appropriate indicator of preventive services would be the percentage of the population immunized against certain diseases: diphtheria, whooping cough, tetanus, tuberculosis, measles, polio, typhoid and paratyphoid. Unfortunately, reliable data in this regard are not available.

The Dominican Social Security Institute does very little in the field of immunization. The Medical Assistance Program (MAP), a private charitable institution which provides almost a half million consultations per year, has all but terminated inoculations because it can no longer afford the vaccines. Only CEA, the State Sugar Council, has an active inoculation program, but this program reaches fewer than 10 percent of the total population. The Secretariat of Health has a weak program of routine inoculation services, but it has organized immunization campaigns intended to provide nationwide coverage on occasion, usually in response to an epidemic. Gulf and Western is about to finance a major inoculation campaign in the Eastern region.

From 1969 and 1970, about 6.2 percent of reported mortality resulted from preventable diseases. It is estimated that less than half of all deaths were reported and that mortality rates from communicable

Table 43

1973 EXPENDITURES IN HEALTH CARE BY INSTITUTION  
AND ESTIMATED TARGET POPULATION

Institution	Allocation of Financial Resources		Estimated Target Population		Per Capita Expenditures RD\$ Per Year
	Amount	%	Number	%	
Secretariat of Health (SESPAS)	21,425,068	20.1	3,118,825	68.4	6.87
Social Security (IDSS)	13,000,000	12.2	192,918	4.2	67.39
Armed Forces and Police	5,583,764	5.2	125,000	2.7	44.67
Sugar Council (CEA)	380,292	.4	350,000	7.7	1.39
Other Government	12,396,927	11.6			
Private Sector	54,000,000	50.6	775,598	17.0	69.62
TOTAL	106,786,051	100	4,562,341	100	23.41

diseases are probably higher than reported. Innoculation services are in all likelihood inadequate to maintain appropriate levels of immunity on the part of the Dominican population.

The use of outpatient and hospital services by the target population of two institutions are shown in Table 44. Information regarding the average number of consultations sought per person per year should be available in the future from the "Diagnos" survey, but tabulations are not yet available. In Chapter II, however, it is pointed out that the number of perceived illness episodes is approximately three per person per year. Many of these illnesses would result in utilization of health services if they were easily accessible. Consultations for prenatal care, family planning services, and chronic diseases (diabetes, tuberculosis, and mental illness) are undoubtedly far below optimal levels.

Access Lack of ready access to medical services is a principal reason why the latter are not used. The most serious barriers to services are four interrelated factors: (a) costs of transportation from homes to services, (b) the time costs for use of services, (c) other monetary costs of services, and (d) skepticism about clinical services except for maternity, and the most serious illnesses. Table 45 illustrates economic factors, based on data from a number of "micro-studies" conducted in health facilities.

There are 809 hospital and outpatient facilities in the Dominican Republic. They are concentrated in urban areas and high density rural areas. The average travel time to get to Secretariat of Health's facilities for those outpatient services selected for study varied from 25 minutes to one hour and 12 minutes. There was marked variation, which indicates that some users spent considerably longer periods in travel. Average travel costs for these public outpatient services varied from RD\$0.12 to RD\$1.29.

The total time required for outpatient services, including travel and waiting, varied from one hour and 17 minutes to 4 hours and 5 minutes. Usually, services are offered in these facilities only in the morning. Patients often leave their homes very early and spend long periods travelling and waiting for service.

An even greater barrier to health services consumption, however, is cost. A 1974 study by the International Labor Organization indicated that 30 percent of the population of Santo Domingo, 40 percent of the population of other urban areas, and 50 percent of the rural population were below the poverty line. The patient seeking care must incur both direct and indirect costs which are often prohibitive. Quite often services which are ostensibly free have hidden costs such as medications, laboratory services, or X-rays. The importance of this cost factor is revealed by the popularity of one voluntary agency MAP, which

Table 44

SOME ESTIMATED UTILIZATION DATA OF SESPAS AND IDSS  
1973

	<u>Secretariat of Health SESPAS</u>	<u>Social Security IDSS</u>
Estimated 1974 Target Population	3,118,825	192,918
Outpatient Consultations, 1973	2,090,957	1,173,184
Outpatient Consultations per Person per year	.67	6.08
Number of Physicians	835	410
Number of Facilities	202	91
Number of Outpatient Consultation per Physician per year	2,504	2,861
Number of Outpatient Consultations per Facility per year		
Total Number of Hospitalizations	234,460	28,956
Hospitalization per Person	.07	.15

Source: Dominican Assessment "Diagnóstico".

TABLE 45

SONE INDIRECT COSTS PERCEIVED BY PATIENTS SEEKING MEDICAL CARE  
(Std. Dev. In Parenthesis)

INSTITUTION	PATIENTS			HOURS SPENT SEEKING SERVICES FOR ALL PATIENTS				AVERAGE EXPENDITURES IN TRANSPORTATION ED\$		
	Total	Male	Female	Time Left Home	Travel Time	Waiting Time	Total Time	Number of Patients Paying for Transportation	Mean Transportation a) Costs	MEAN Transportation Costs b)
<b>HSPAR:</b>										
General Hospital Outpatient	121	96	25	5:24 a.m. (1:15)	0:28 (0:17)	3:44 (1:29)	3:49 (1:37)	57	1.22 (0.91)	0.61 (0.58)
Inpatient Urban	22	22	0	7:39 a.m. (2:10)	1:16 (2:02)	0:56 (1:28)	2:09 (1:22)	20	1.65 (1.22)	1.50 (1.26)
Maternity Hospital Outpatient	115	104 c)	11 c)	5:44 a.m. (1:24)	0:43 (0:34)	3:28 (0:47)	4:05 (0:51)	101	1.42 (1.02)	1.24 (0.82)
Inpatient Urban	78	78	0	8:43 p.m. (2:52)	0:54 (0:43)	0:37 (0:51)	1:23 (1:16)	64	2.12 (0.95)	1.77 (0.78)
Pediatric Hospital Outpatient	79	30	49	7:34 a.m. (1:38)	0:54 (0:42)	1:27 (0:43)	2:18 (1:00)	74	1.57 (1.40)	1.29 (1.00)
Inpatient Urban	53	24	29	5:43 a.m. (2:36)	1:14 (1:15)	1:39 (1:51)	2:50 (2:14)	47	2.36 (0.61)	2.25 (0.76)
Health Subcenter A Outpatient Semiurban	80	55	25	7:24 a.m. (1:11)	0:25 (0:20)	2:01 (0:59)	2:28 (0:58)	5	1.35 (2.11)	0.12 (0.18)
Health Subcenter B Outpatient Semiurban	40	30	10	8:00 a.m. (0:48)	0:58 (0:49)	1:31 (0:25)	2:26 (0:44)	13	0.40 (0.12)	0.16 (0.06)
Health Subcenter C Outpatient Semiurban	37	19	18	8:35 a.m. (0:34)	0:40 (0:27)	0:54 (0:38)	1:17 (0:46)	18	0.56 (0.71)	0.38 (0.36)
Rural Clinic A Outpatient	17	10	7	8:05 a.m. (1:42)	1:12 (1:13)	1:15 (0:47)	2:28 (1:20)	8	0.42 (0.22)	0.25 (0.27)
Rural Clinic B	47	30	17	7:10 a.m. (1:20)	0:38 (0:44)	3:12 (1:2 )	7:27 (1:19)	22	0.41 (0.17)	0.20 (0.24)
<b>IDSS:</b>										
Polyclinic Urban	78	66	12	7:38 a.m. (1:16)	0:50 (0:42)	1:13 (0:37)	2:02 (1:10)	52	0.56 (0.20)	0.40 (0.20)
General Hospital Outpatient	68	31	37	7:29 a.m. (1:29)	1:10 (0:58)	4:58 (1:07)	2:56 (1:29)	36	1.74 (1.72)	0.81 (0.65)
Inpatient Urban	44	30	14	7:27 a.m. (2:31)	1:56 (2:14)	2:30 (1:3 )	2:46 (3:05)	33	4.23 d) (2.03)	3.16 (1.41)
<b>MAP:</b>										
Outpatient Urban	89	36	53	6:01 a.m. (3:37)	0:43 (0:40)	2:33 (0:58)	3:44 (1:16)	59	0.76 (0.01)	0.58 (0.62)

SOURCE: Study on Consumption of Health Services.

- a) Average for those who paid out of pocket transportation costs.  
b) Average for all persons.  
c) Includes post natal care for infant.  
d) Costs subsidized by IDSS for travel to hospital for inpatient care.

charges a flat fee of RD\$1.00 for every patient visit. This fee covers both the physician visit and any medication prescribed. Physicians in this ambulatory care center see up to 300 patients daily.

Indirect costs also play a significant role with regard to health service accessibility. The potential patient must balance the cost of the time and wages lost from work against that of continued illness. Mothers are often forced to take all of their children to the clinic, even if only one is sick, because no other family members are available to stay with them. The most effective public transportation system in the Dominican Republic is the collective taxi system. Prices are so high relative to the income of most families as to put this service beyond the reach of much of the population. According to the director of a pediatric hospital, there was an immediate 30 percent drop in the number of outpatient visits to the hospital the day after the price of the collective taxi fare was increased by an average 20 to 25 percent.

#### B. THE SYSTEM FOR SERVICE DELIVERY

The Secretariat of Public Health and Social Assistance (SESPAS) is the main governmental health agency and is responsible for providing personal health services to approximately 70 percent of the population. There is, however, a sizeable group of people with modest incomes using SESPAS' services who are not eligible for services from other entities and are unable to afford private care. These people pay the SESPAS physician an extra fee in public facilities to receive special services not available to charity patients. The personal health services of SESPAS are provided in a variety of facilities: hospitals, health centers, subcenters, and rural clinics. Facilities are located throughout the national territory, but all of the larger institutions and specialty hospitals (pediatric, maternity, psychiatric, tuberculosis, and leprosy) are located in Santo Domingo.

The health services of SESPAS are offered in the morning Monday through Friday. First aid and emergency services are available in some centers on a 24-hour basis. Some services are offered only on certain days. Physicians are paid to work a four-hour day while auxiliary personnel to work a full eight hours. Most physicians have other jobs, and the actual number of hours a physician devotes to his SESPAS job are considerably less than four per day. Most rural centers are operated by auxiliary personnel. Supervisory visits are rare. The personnel in charge of supervision are stated by the Dominican Assessment team to be generally uninterested and apathetic regarding their duties.

The Dominican Social Security Institute (IDSS) provides medical services for certain groups of employed persons who earn less than \$200 per month, (Governmental employees are not included). The actual coverage of the population by IDSS is limited because most workers are excluded by law or in practice. Family members are excluded, except for hospital care at birth for legal wives. Given the society's prevalence of consensual unions, this policy effectively excludes prenatal and postnatal care for many families.

The services of the Dominican Social Security Institute are organized into four zones. Each zone has at least one modern hospital, which serves as the referral point for more complicated medical problems in the zone. In addition, each zone has at least one intermediate level ambulatory care facility for outpatient consultations. There are small consultation offices throughout each zone. These are staffed with practical nurses (mostly male) who function with very little medical supervision. Some are staffed by medical students, particularly in the urban areas. Many have no training. These small facilities provide basic first aid and some other primary care services

A large hospital, located in Santo Domingo, receives the specialty cases from all zones. Most of the human resources (40 percent physicians) are concentrated in this one hospital alone. The health facilities of IDSS usually offer services for only four hours per day, five days a week. Most are open 24 hours daily for emergency care,

Although the IDSS system is relatively well-endowed with buildings, personnel, equipment, and supplies, certain features act to limit accessibility, effectiveness, and efficiency of services. These include: administrative barriers which prevent the insured from obtaining services, the limited hours of operation (which in reality are fewer than four hours per day), the lack of physician accountability for the hours worked, the lack of supervision of para-professionals, and the lack of preventive services.

The Armed Forces and the National Police have developed their own system of health care for the members of their immediate families. The Armed Forces have few dispensaries outside of the capital city. The lack of ambulatory care facilities is solved by utilizing the services of the social security institute for primary care, and anyone who is in need of more specialized attention is transferred to Santo Domingo.

Since 1970, the State Sugar Council (Consejo Estatal del Azúcar, CEA) has made arrangements with SESPAS and IDSS to provide primary care services to those who work on its plantations. The CEA mobile

unit program serves 12 ingenios (sugar mills) and provides immunizations, treatment of venereal disease, dental extractions, and some curative services. The use of more extensive promotion activities and improved organization would offer potential for reducing the incidence of certain communicable diseases such as tetanus, poliomyelitis, diphtheria, and measles in the areas served.

The National Service for Eradication of Malaria (SNEM) was established in 1963 under a tripartite agreement signed by the Dominican Government, PAHO, and UNICEF. A semi-autonomous agency of the Health Secretariat, the malaria service receives insecticides, vehicles, equipment, and supplies from UNICEF, technical assistance and training grants from PAHO, and substantial budgetary support from the Dominican Government.

Using a combination of salaried staff and volunteers, the control of malaria was achieved by SNEM in less than ten years. A reorientation toward prevention and control services was instituted in 1971. The rural extension service provides disease monitoring and patient referral activities for an estimated 1,000,000 to 1,500,000 people in isolated areas.

The private sector is composed of two elements: the traditional or indigenous practitioner system and the more formalized, institutionally trained professional system. The urban, economically self-sufficient population benefit almost exclusively from the more formal system. The rural poor are served by the traditional system. The comadronas prácticas, or empirical midwives are a major segment of the latter system. About 65 percent of the 1970 births occurred at home, and 98 percent of these were attended by practitioners who lacked any formal training. It is estimated that there are about 6,000 empirical midwives throughout the country.

The more formal private system dominates the health sector. Nearly all government-employed clinical personnel have private practices. This system experienced very rapid growth in the post-Trujillo era due to an increase in the size of segment of the population able to purchase services, the construction of private facilities, and the expansion of health insurance schemes. Little is known about these private sector systems in terms of the health needs of the population they serve or the percentage of the population they reach. Members of the Dominican Health Sector Assessment team were denied permission to analyze the most important private health institutions serving the wealthiest class.

C. RESOURCES FOR PERSONAL HEALTH SERVICES

C 1. Financial Resources

As illustrated in Table 43, total 1973 expenditures on personal health services were approximately 106 million pesos. Roughly fifty percent of this expenditure was in the private sector. Only 20 percent of health expenditures are channeled through the Secretariat of Health. Assuming that health services provided by the Armed Forces and other governmental agencies are at approximately the same per capita cost as those of the IDSS and private sector, only 25 percent of the population benefit from 75 percent of the health care expenditures.

The average expenditure per capita was 23 pesos per year. If distributed uniformly, this expenditure would clearly provide basic preventive and curative services for the whole society. However, it is estimated that only 1,650,000, about 43 percent, of the Secretariat of Health's target population received any services in 1973. If true, nearly one-third of the total population received no services at all. The resources which theoretically could provide basic services to all are used to provide relatively high cost services to a quarter of the population.

Central governmental expenditures <sup>1/</sup> for "Health and Social Assistance" have shown a steady decrease from 12 in 1968 to 10 percent in 1973. Moreover, as is shown in Table 46, the Secretariat of Health's portion of this health sector budget declined from 59 to 53 percent from 1969 to 1973, while that of the Office of the Presidency rose from 27 to 32 percent. Thus while both the Government budget for health and that of the Secretariat of Health rose during this period, they did so more slowly than the overall central budget of the Government, and there was a substantial reallocation of financial resources from the Secretariat to the Office of the Presidency, reflecting increased expenditures for construction of health facilities. The Secretariat of Health's share of the total budget dropped from 7 to 5 percent.

As figure 16 shows, the increase in governmental income paralleled the increase in national income. The Secretariat of Health budget, however, barely increased faster than population, and in real terms there has probably been little or no increase over a six year period in the Secretariat's budget per person to be served.

---

<sup>1/</sup> Not including the expenditures of decentralized or autonomous agencies, like the IDSS, Red Cross, etc.

Table 46

Expenditures in Health and Social Assistance  
by SESPAS and other governmental institutions\*  
1969 - 1973

(RD\$)

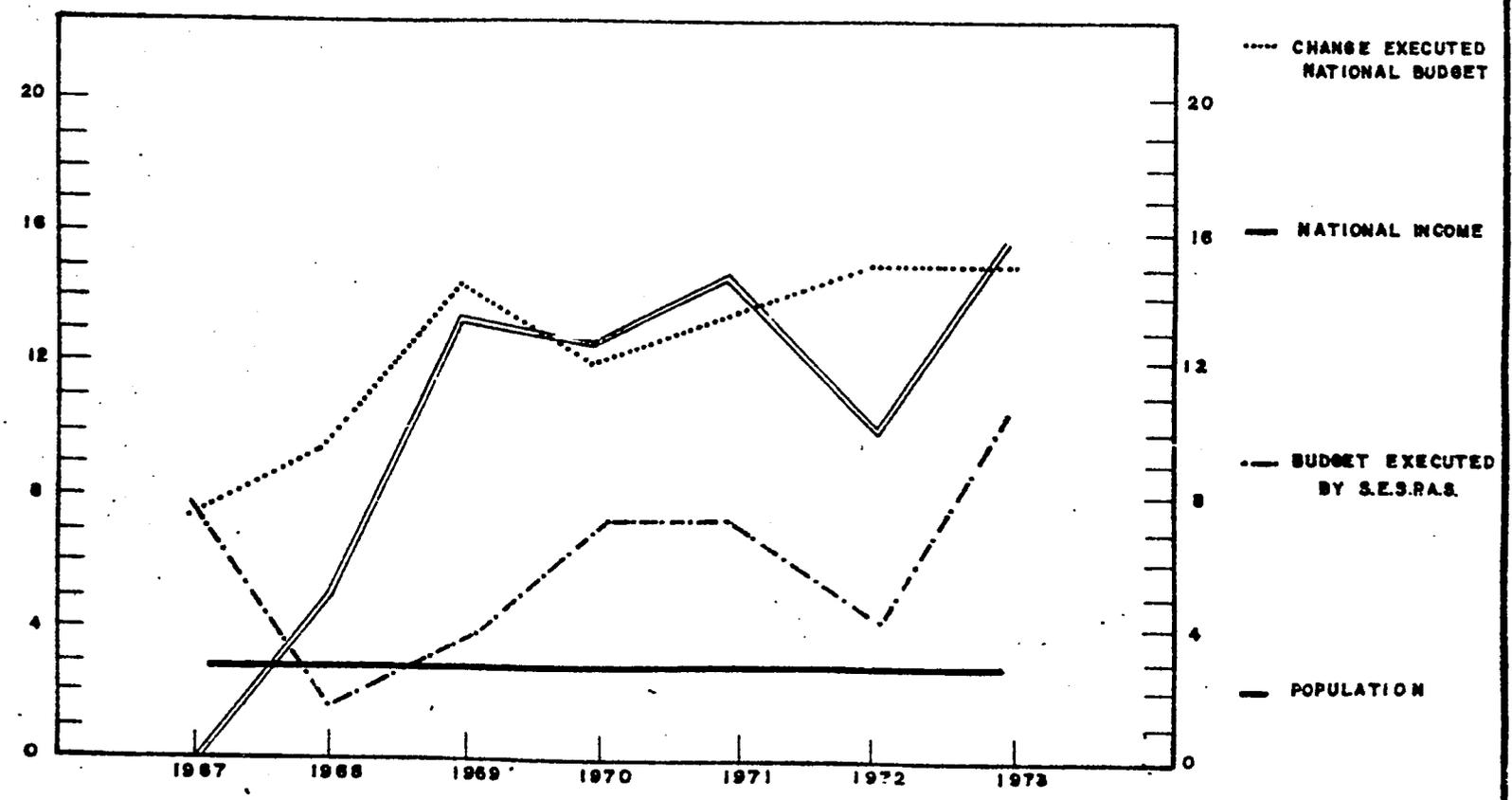
	1 9 6 9	1 9 7 0	1 9 7 1	1 9 7 2	1 9 7 3
<b>Total Expenses in Health/Social Assistance</b>	<b>25,613,030</b>	<b>29,018,580</b>	<b>32,328,481</b>	<b>33,436,436</b>	<b>38,274,828</b>
<b>SESPAS**</b>	<b>15,383,139</b>	<b>16,122,518</b>	<b>17,504,363</b>	<b>18,396,056</b>	<b>20,294,137</b>
<b>Other Institutions</b>	<b>10,383,139</b>	<b>12,896,062</b>	<b>14,824,118</b>	<b>15,040,380</b>	<b>17,980,691</b>
Office of the Presidency	6,810,640	8,132,807	8,536,065	10,366,648	12,206,141
Interior & Police	462,760	1,205,276	2,205,627	1,694,738	2,895,371
Armed Forces	1,924,344	2,117,757	2,137,910	2,640,714	2,688,393
Foreign Relations	6,075	5,512	21,343	5,651	11,965
Finances	156,000	252,500	156,000	156,000	178,821
Education & Fine Arts	965,320	1,182,710	1,767,173	176,620	-
Agriculture	58,000	-	-	-	-

\*Expenditures from Central Budget and do not include the decentralized government agencies.

\*\*SESPAS expenditures do not include some fund transferances made by SESPAS to other governmental institutions such as INAPA.

Source: Ejecución del Presupuesto, 1969-1973

FIGURE 16  
ANNUAL RATES OF GROWTH OF THE BUDGET EXECUTED BY S.E.S.P.A.S.  
THE NATIONAL BUDGET, NATIONAL INCOME, AND  
POPULATION, 1967-1973



SOURCE: EJECUCION DEL PRESUPUESTO, 1966-1973

Figure 17 illustrates the allocation of funds within the Secretariat of Health. The emphasis is on provision of personal health services, as opposed to preventive health care. As stated earlier, only 43 percent of the Secretariat's target population received any services in 1973. The most cost-effective services for those totally unprotected would certainly be those for the control of communicable disease. Funds are concentrated in hospital and medical services to the almost complete exclusion of "epidemic control," "TB control," "health education," and "nutritional improvement."

The Dominican Health Sector Assessment points out that the use of financial resources is inefficient throughout the sector. Budgetary resources are used to keep underutilized facilities in operation. Doctors are paid high salaries to perform services which could be suitably provided by less costly personnel. Patients are maintained in hospitals when they could be treated on an outpatient basis at lower cost.

#### C.2. Human Resources

An indication of personnel availability in the Dominican Republic as compared with other Latin American countries is presented in Table 47. The relatively large national investment in health personnel is in high prestige occupations for physicians and graduate nurses. Relatively few auxiliaries are being trained, and there appears to be resistance to development of additional categories of health professionals.

The Dominican Republic has one of the lowest physician to population ratios in the Americas, in part reflecting emigration of about half of all medical graduates, a trend that has persisted for at least 15 years. Medical school enrollment has exploded in recent years. The country now has 12 medical students per 10,000 population, the second highest such ratio in Latin America. 2/ Four new medical schools have been created since 1965. They account for a smaller number of medical students than the original medical school -- the Universidad Autónoma de Santo Domingo.

The country ranks slightly higher than the average of 1.0 dentist per 10,000 population in Central America, but considerably lower than

---

2/ Argentina has the world's highest ratio of physicians to population.

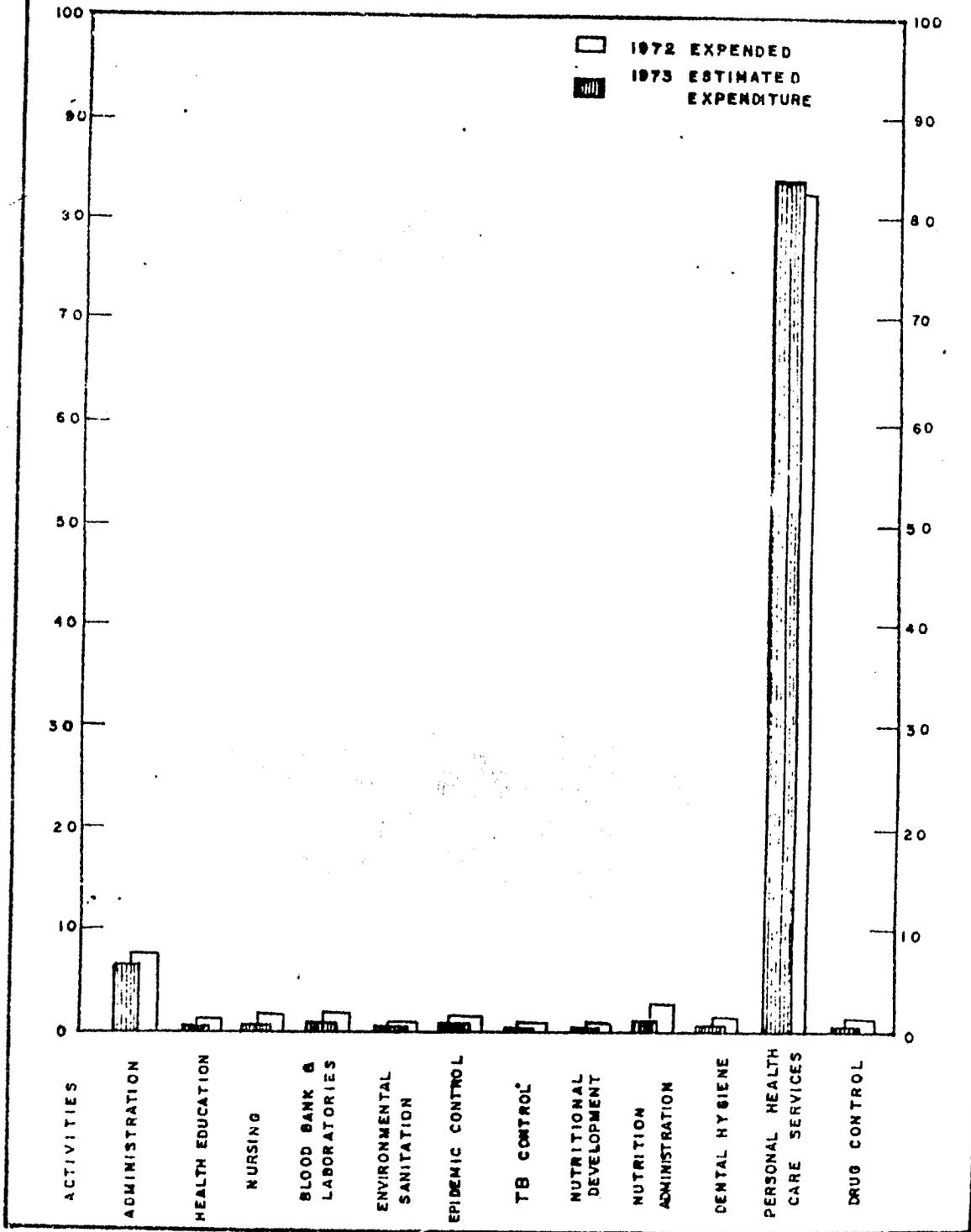
Table 47  
 NUMBER OF PHYSICIANS, DENTISTS, GRADUATE NURSES, AND NURSING AUXILIARIES  
 WITH RATIOS PER 10,000 POPULATION, PER COUNTRY

Country	PHYSICIANS			DENTISTS			GRADUATE NURSES			AUXILIARIES		
	Year	Number	Ratio	Year	Number	Ratio	Year	Number	Ratio	Year	Number	Ratio
Argentina	1972	49,950	20.9	1972	13,300	5.0	1972	14,621	6.1	1972	23,850	10.0
Chile	1973	5,572	5.4	1973	3,875	3.8	1973	2,324	2.3	1973	19,527	18.9
Colombia	1972	10,317	4.6	1972	3,264	1.5	1972	2,700	1.2	1972	14,990	6.7
Costa Rica	1973	1,323	7.0	1973	263	1.4	1973	870	4.6	1973	3,180	16.8
Dominican Republic	1974	1,755 <sup>A</sup>	3.8	1972	510	1.2	1972	317	0.7	1972	3,012	7.0
Peru	1972	8,023	5.5	1972	2,542	1.8	1972	5,040	3.5	1972	11,357	7.9

SOURCE: Health Conditions in the Americas, 1969-1972. p. 226.

\* Data from 1974 Human and Physical Resources Survey.

**FIGURE 17**  
**PERCENTAGE DISTRIBUTION, OF EXPENDITURES ON HEALTH ACTIVITIES**  
**THE "PROVISION OF HEALTH SERVICES" OF S.E.S.P.A.S.**  
**(WITH FINANCING FROM THE GENERAL FUND), 1972-1973**



SOURCE: PRESUPUESTO DE INGRESOS Y LEY DE GASTOS PUBLICOS, 1974

three for South America and four for North America. As in other countries there appears to be little progress in increasing the dentist to population ratio. Although many mecánicos (empirical dental workers) extract teeth, the use of dental auxiliaries is otherwise virtually non-existent.

There are 317 graduate nurses (RN's) in the country, the lowest per capita ratio in the Americas. In contrast, they have one of the higher ratios of auxiliaries per nurse, a ratio of 9.5. This phenomenon has serious implications for the supervision of auxiliary personnel. As a result of the scarcity of graduate nurses, the majority of auxiliary nurses work with no supervision. Nursing school enrollment has gone down in recent years due to lack of appropriate career potential for nurses. A nursing curriculum is to be created at the level of a technical high school diploma. Its graduates, if appropriately utilized could fill this supervisory gap.

The majority of health professionals are located in the largest urban areas, Santo Domingo and Santiago. Moreover, manpower is concentrated in curative and medical specialty services. More than 50 percent of physicians reported specialty practice in areas other than pediatrics, obstetrics, and gynecology. Only four percent of physicians responding to a questionnaire had received any training in public health. Similarly, nurses and auxiliaries tend to prefer specialty hospital practice to basic health services. Those who do practice general medicine are required to handle administrative responsibilities as well, usually without adequate training. The majority of physicians, dentists, and pharmacists are listed as being employed in the private sector. Those physicians who are officially employed by public facilities spend most of their time in private practice. The most serious investment inefficiency in human resources lies in the excess production of physicians. Current estimates of projected production of doctors indicate that from 1970 to 1980 2,750 physicians will have entered the labor force and that by 1980 more than 500 physicians per year will graduate. Since these people cannot possibly be absorbed into the health care system, the alternatives available to those new doctors will be to emigrate or to leave the profession.

Although costs to produce a physician vary because a large number of students spend up to 10 years completing the 6-year program, the total investment in each graduate is estimated to average \$20,000. If a large portion of graduates never produce services, this investment is essentially lost. Given the shortage of nurses and auxiliary personnel, it would seem more reasonable to encourage the production of these types of health workers rather than more costly physicians.

TABLE 48

Distribution of Medical Facilities in the  
Dominican Republic

	<u>Secretariat of Health</u>	<u>IDSS</u>	<u>Private</u>	<u>Other</u>	<u>Total</u>
Region I					
Hospitals & Clinics	15	5	98	8	127
Outpatient Facilities <sup>1</sup>	31	36	142	14	223
Region II					
Hospitals & Clinics	11	3	39	2	55
Outpatient Facilities	44	16	47	4	111
Region III					
Hospitals & Clinics	11	2	30	1	44
Outpatient Facilities	33	11	59	2	105
Region IV					
Hospitals & Clinics	10	1	18	-	29
Outpatient Facilities	27	7	10	2	46
Region V					
Hospitals & Clinics	6	2	17		25
Outpatient Facilities	13	8	23		44
Total					
Hospitals & Clinics	54	13	202	11	280
Outpatient Facilities	148	78	281	22	529
Total	202	91	483	33	809

Source: Survey of Physical Resources

<sup>1</sup>)Health Centers, Subcenters, Medical Dispensaries, Consultation Rooms (consultorios), Polyclinics, Rural Clinics and Sanitation Offices

Utilization of personnel is low. The average number of patients seen on an outpatient basis by physicians is about 10 per day in SESPAS facilities and 12 per day in IDSS institutions. Based on the usual four-hour day in public institutions, this means a consultation rate of about 2.5 per hour. According to a recent human resources survey, the average time spent by physicians daily in Government health institutions was only two to three hours, rather than the scheduled four. The average time spent with patients was less than five minutes.

### C.3. Facilities and Equipment

The distribution of health facility investments reflects the same pattern as that of health personnel. The highest concentration of both hospital beds and ambulatory care facilities exists in the Santo Domingo area as is shown in Table 48. The same holds true for ancillary services such as laboratory and X-ray facilities. Over half of these resources are located in the National District, which contains less than one quarter of the population.

As in most other Latin American countries, the Secretariat of Health operates over 50 percent of the hospital beds. Most of its hospital resources are located in the area of the capital city. This uneven geographical distribution adds to the inaccessibility problem encountered by the rural Dominican population.

The ratio of 2.8 beds per 1,000 population in the Dominican Republic as compared to the mean of 3.2 for Latin America is misleading. Long term hospitals are presently operating near capacity but in general, hospital bed utilization is low. Decisions to further increase hospital investment must be made only after intensive investigation. Similarly, outpatient facilities are fewer per capita than in other countries of the Americas, and are underutilized at the present time.

Inefficient investment appears to be common in the construction of new health facilities. Several new private hospitals have already had to close entirely or partially due to poor utilization. Small hospitals in particular have low utilization, although caution must be used in interpreting these figures. A six-bed hospital may have three patients which would mean only a 50 percent occupancy rate, even though at least that number of surplus beds would be needed in case of emergency. Moreover, in small hospitals, surplus beds may require little or no overhead to maintain. With regard to the larger hospitals, however, it would seem more appropriate for the short term to change utilization patterns than to build additional facilities. The Dominican Assessment proposes transferring some chronic care beds for the use of acutely ill patients

and an effort to decrease the average length of stay in all facilities. The chronic care facilities now cost \$1,807 per tuberculosis patient discharged and \$18,940 per leprosy patient discharged as compared to \$42 for general hospital patients. The proposed changes would probably improve care as well as decrease costs of inpatient services.

#### C.4. Medical Supplies

A growing concern is the limited distribution and use of medical and pharmaceutical supplies in many parts of the country. Drugs are imported almost entirely through private channels. Distribution is also primarily through private channels, since public ambulatory services have almost no drugs -- sometimes only four or five to treat all patients. Similarly, public hospitals often have limited drug supplies. Formularies are not used to assure cost efficient drug prescription, and purchasing and logistics systems are not operated to insure efficient acquisition and distribution of drugs. For whatever reasons, the Secretariat of Public Health has not instituted a low-cost distribution system. The private sector imports most products. Distribution is oriented primarily to the urban areas and to the upper income groups.

The overall national expenditure on drugs, about 25 million pesos per year, exceeds the budget of the Secretariat of Health. This would provide drugs for most of the pressing needs of the population if more equitably distributed.

#### D. INSTITUTIONAL CONSTRAINTS

##### D.1. General

The Dominican Health Assessment group is highly critical of organization and management. There is little administrative strength in health sector organizations. A good proportion of the budget of public institutions is spent for non-medical purposes. Yet administration is generally inadequate. Physicians and nurses are responsible for administration and are not trained for the task. There is no personnel accountability system. Even in the central offices, many employees do not come to work. There is no way of determining which employees are officially on the payroll or to which services they are assigned. There is no way of knowing whether allocated funds were spent for purposes intended. Finally, information and reporting systems are rarely used

in the individual institutions or in the health sector as a whole. Three administrative problems demand immediate attention if any progress is to be made toward strengthening health care administration; (a) accountability, (b) logistics, and (c) information flow, control and utilization.

Accountability. Without appropriate personnel and budgetary accountability, there is no way of assuring proper use of resources. Agency heads frequently do not have authority to appoint and discharge public officials. Personnel are often appointed with no regard to their qualifications and cannot responsibly discharge their assigned duties. Low pay and ill-defined task assignments are common place. Supervision is practically non-existent at any level. Decisions are frequently referred to the highest administrative levels for action.

Logistics. Supplies of medications in particular are a serious problem. In one public facility studied in the Dominican Assessment, two-thirds of the medications prescribed by the physicians were not available in the facility. Supplies for immunizations are particularly scarce. One community physician requested 1,000 doses of measles vaccine from SESPAS and received 150. Personnel interested in outreach immunization programs quickly become discouraged under these circumstances. Shortages and costs do account for some of these problems, but undoubtedly the major difficulty lies in the absence of an adequate distribution system.

There is additional evidence suggesting that the majority of funds for maintenance never reach their final destination. Visits to public institutions reveal rundown facilities and outdated equipment. Even the newer buildings have electrical and sewerage problems. Laundry and kitchen facilities are obsolete. The latter frequently consist of iron kettles over open fires. Even in the best public hospitals in Santo Domingo, laboratory, blood bank, X-ray and other important equipment are lacking or are not being used.

Information Systems. In the Dominican Republic low priority is assigned to the collection and analysis of data concerning health needs, services, and resources. Symptoms of this problem abound:

- There is no meaningful system of epidemiological surveillance.
- 55 percent of the SESPAS health facilities did not report service statistics to the central office in 1973.

- No utilization statistics are available from the Secretariat of Health's Epidemiology Division in 1972 because the person in charge was ill the entire year.
- Mortality and morbidity data are collected only from public institutions.

The reform of statistical systems would be slow and difficult. Data collected by careful sampling could provide a vast improvement in reliability as compared to previous unsuccessful attempts to achieve complete reporting of all cases. Since the law does not require death certification prior to burial, mortality statistics are incomplete and inadequate. Death statistics could be improved by collecting sample data from a number of public, church, and other agencies.

#### D.2. SESPAS

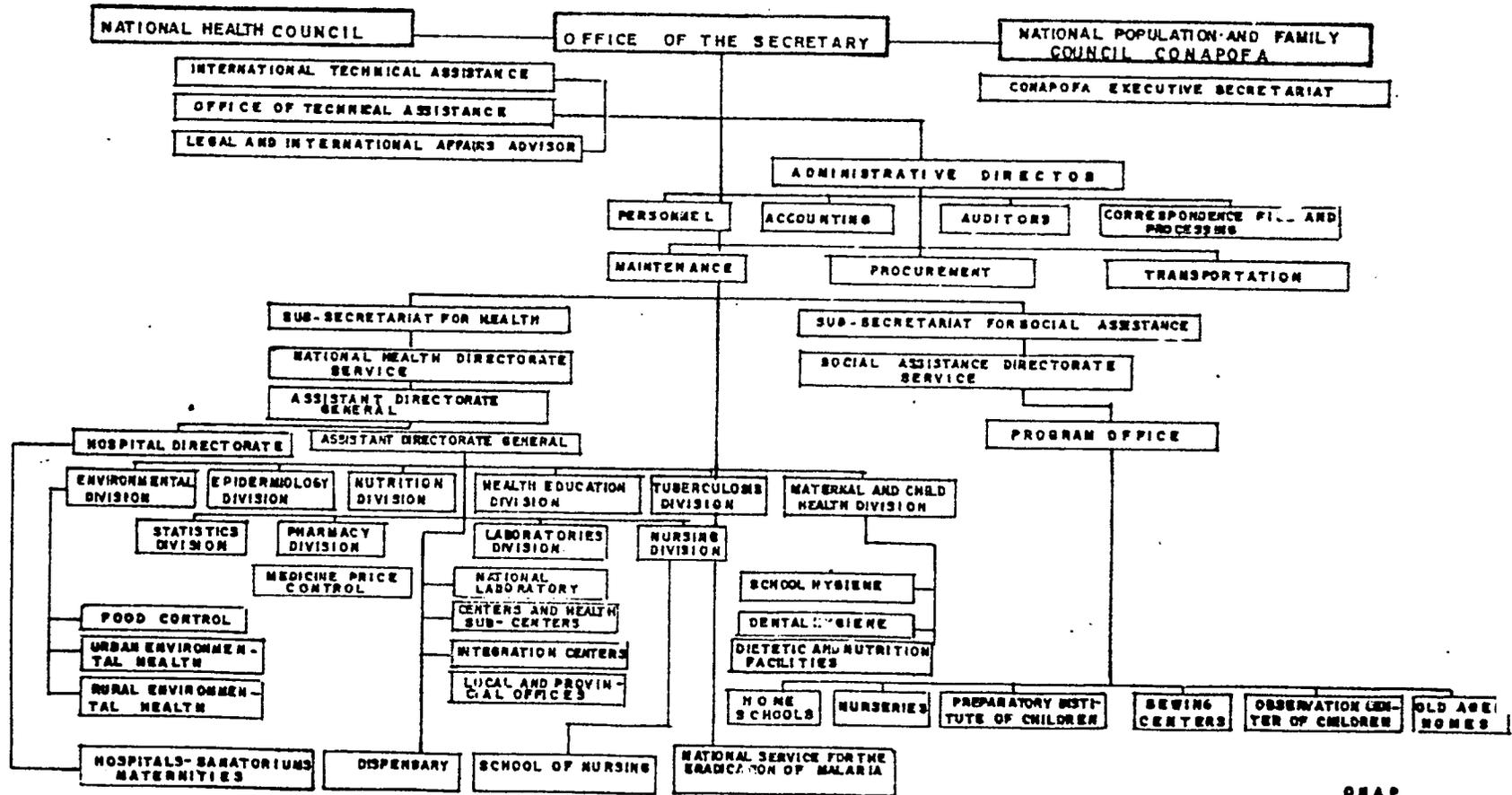
The Dominican Assessment has suggested that administrative improvement within the Secretariat of Health can be accomplished by providing the Secretariat with resources to contract technical manpower, particularly from universities and management firms. It is likely that this type of assistance would be welcomed by the Secretary and senior Secretariat officials.

Beginning in the early 1960's the Secretariat of Health with help from PAHO initiated a regionalization scheme for the delivery of its health services. The country was divided into five health regions, and each region was further divided into areas. The health area is the basic operational unit for the delivery of health services. Each area has one integrated health center or base hospital in addition to three or four subcenters and five or six rural clinics.

Regionalization has proceeded slowly. The main obstacle has been the lack of administrative capability. The Dominican Health Assessment has also proposed strengthening the Secretariat's program of regionalization. The staffing, construction and equipping of four modest regional offices is contemplated, assuming that administrative and policy restraints are removed. Regional staff would have to be given more authority and responsibility through implementation of new laws, the creation of new posts, and the definition of a specific budget for the regional program.

FIGURE 17-A

ORGANOGRAM OF THE SECRETARIAT FOR PUBLIC HEALTH AND SOCIAL ASSISTANCE



165

ONAP  
O Y M, 1971

D.3. The Dominican Social Security Institute (IDSS)

The extent and magnitude of the administrative problems faced by the IDSS do not differ appreciably from those in the Secretariat of Health. IDSS, however, has certain autonomy and more funds to spend per capita of those served. There is still a lack of institutions to provide prepaid medical services to certain intermediate income groups. An alternative to extending the IDSS coverage would be to encourage the private sector to fill this gap.

It seems unlikely that either of these alternatives are feasible at present. Moreover, the new initiatives in health currently under consideration will constitute a strain on available administrative capacities.

D.4. National Malaria Eradication Service (SNEM)

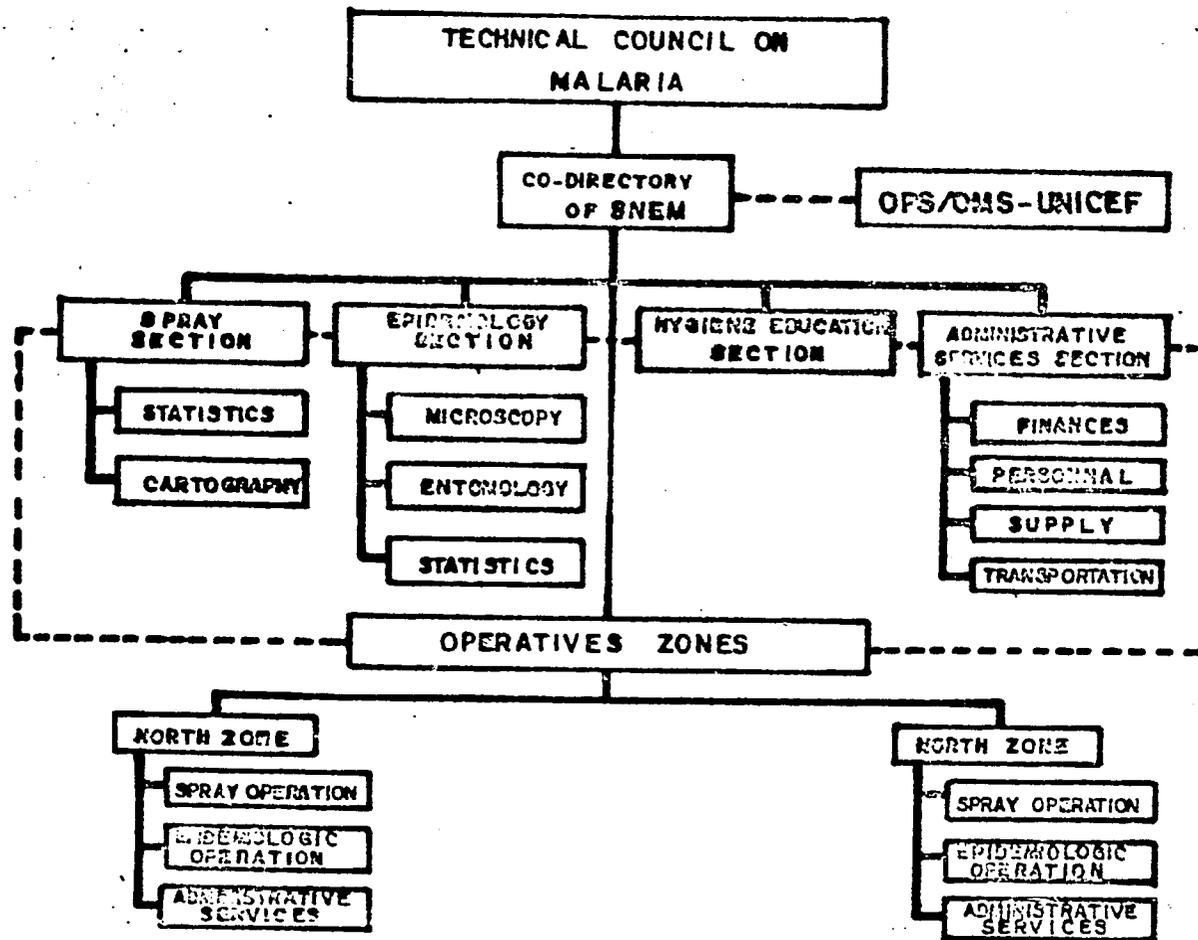
In contrast to other agencies providing health services, this organization is relatively strong. The origin of SNEM dates from a 1963 agreement signed by the GODR, the Pan American Health Office and UNICEF. The Dominican Government readily approved this agreement. The proposed program was modeled on similar programs then being adopted by other Latin American and Caribbean countries. UNICEF donated insecticides, vehicles, laboratory and other equipment, and PAHO contributed technical assistance with advisors and training grants. The Dominican Government provided substantial local support for program operations.

SNEM's organizational structure is unique in the Dominican Republic. Its key feature is operational autonomy. Within its approved yearly budget, SNEM can purchase the supplies it requires as needed and, most importantly, hire and fire its own personnel.

Malaria has not been eradicated, but it has been brought under control. Except for limited areas along the Haitian border where eradication activities still continue, SNEM is primarily involved in surveillance operations. The scale of SNEM activities has declined with the reduction in malaria. From an annual operating budget of RD\$1,130,000 in 1964, SNEM has reached a level of RD\$781,860 per year. This has remained constant over the past five years. In 1973 SNEM employed 342 persons, 53 of whom were supervisory and administrative personnel.

TABLE 17-B

NATIONAL SERVICE FOR THE ERADICATION OF MALARIA S N E M  
ORGANIZATION CHART



Following the reduction in malaria eradication activities in 1971, SNEM began an experiment using its field employees to extend certain elementary health services in the northern part of the country. These services being carried out currently by SNEM field personnel include:

1. Collection of elementary demographic data.
2. Reporting contagious diseases.
3. Referral of mothers and children to other public health facilities when appropriate.
- 4 Environmental sanitation activities.
5. Identification of cases of leprosy and tuberculosis and referral to appropriate authorities.

This rural extension service covers some 1,407,200 inhabitants located in isolated areas not served by any other health service. SNEM has 4,402 volunteers within these rural communities to assist in its program by distributing literature. The majority are local school teachers and other community leaders.

#### D.5 The National Sugar Council (CEA)

This organization presently provides medical service to over 350,000 people annually. While CEA has considerable resources, it could profit from technical assistance in defining priority areas for action and in designing activities to meet these priorities as proposed by the Dominican Health Assessment group.

#### D.6. The Armed Forces

The population residing in the mountainous areas of the Dominican Republic is widespread. SNEM has no personnel in these areas since malaria has never been endemic there. The Dominican Health Assessment has proposed utilizing the Armed Forces to implement some aspects of a rural delivery program in the mountain areas. This approach would appear to be administratively feasible and the Armed Forces have undertaken civic action programs which have benefited rural people, e.g., construction of rural clinics, schools, roads, etc.

## E. ALTERNATIVES

The foregoing description summarizes a number of factors which characterize Dominican health services. Limited resources are used to provide a measure of services to a large number of Dominicans but are often low in quality and serve a relatively small portion of the total population. Better and more costly services are provided to a still smaller proportion of the population. These relatively few people, who can afford to pay, have appreciably better services. A great number of Dominicans, particularly in rural areas, have no ready access to services at all. The Dominican Assessment team has suggested attacking this problem in as rapid and direct manner as possible. They have opted for an array of cost-effective preventive medical services, and for carrying these services directly to the population. The program includes: (1) providing basic services to urban and rural poor people, (2) strengthening the Secretariat of Health, and (3) financing programs for other groups.

### E.1. Outreach Services

The proposed program leads to other long range program possibilities. Since poor Dominicans normally do not take advantage of medical services located more than a kilometer and half from their homes, a system to achieve equitable coverage will have to extend to the smaller villages. Since the GODR is able to spend little per capita for health care, services will have to be very low in cost. The least costly, reasonably efficient personnel would need to provide basic health services. The emphasis of such services would necessarily be preventive rather than curative.

The Dominican team identified the following as the key criteria for the design of the services:

1. Only those activities will be incorporated into the system that have demonstrated to be cost-effective on the basis of randomized field trials in the Dominican Republic.
2. Personnel from local communities will be trained for each activity that they perform.
3. Training will be cyclical, usually related to cycles of mass campaigns. Refresher training in each function will be provided regularly.

4. Supervision will be continuous and will constitute a major part of the program,

5. Drugs and vaccines for the six to ten basic health problems must be available at a greatly subsidized cost.

Training and supervision of traditional midwives to improve their capacities should be considered. The Dominican Assessment team also proposes using these midwives as family planning promoters, providing payment per capita to replace income they might lose through decreased child bearing.

Organization. The Dominican Assessment team has taken the philosophical position that the provision of medical services to the two-thirds of the population who are financially indigent and who do not receive services now must be the responsibility of the Government. No medical institution of the Government currently has the management capacity or efficiency to carry out this task unassisted. The one example of a competent organization with near national coverage is the Servicio Nacional de Erradicación de la Malaria (SNEM). The Dominican Assessment group has proposed building on this organization to provide services at the grass roots. The new service would be called the Servicio Popular de Salud (SPS).

The target population of the SPS is divided into four specific sub groups. A different system is proposed for each. The largest single group, numbering about 1.5 million, are the rural populations in those areas with many small farms and a varied agricultural production. For these people there is the program of Sanitación, Atención Médica, Nutrición para el Area Rural, SANAR. The urban, financially indigent population, estimated currently at 300,000, will be served by the program for Cuidado Urbano por Medio de una Red de Asistencia y Remisión, CURAR. The population in the sugar areas, employed by large agro-industrial organizations, would be served by their respective organization. This mechanism is to reach an additional 300,000 persons. Finally, the public service program of the Armed Forces would be requested to carry out the SPS-designed programs in the difficult to reach mountain areas of the country, serving a population of approximately 200,000.

SANAR. This program is the largest of the low-cost delivery systems. The proposed staffing for SANAR is shown in Table 49. It is proposed to extend the functions of SNEM volunteer workers to include community promotion of health, nutrition and family planning as well as the use of a few simple drugs. Traditional midwives, when trained, will also be included in the program.

TABLE 49

**PERSONNEL PROPOSED FOR SANAR**  
(Assuming Population of 1.5 Million to be Covered)

	Ratio to Population	Number of Persons	Span of Supervision	Office/Site <sup>3/</sup>	Functions	Financing	Communications	Estimated Government Expenditures (Pesos)	
								Yearly	Initial Cost
Midwives <sup>1/</sup>	1/1,000	1,500		Community	1. Deliver Babies 2. Family Planning Promotion	1. Fee for Service 2. Capitation-Family Planning at \$2.0/Year 3. Subsidize Kits	Via Practicante	\$ 360,000	\$ 13,000
Volunteers	1/400	2,730	13 Volunteers per Practicante	Community	1. Health Promotion 2. Drugs and instruction for Automedication 3. First Aid 4. Health Education 5. Distribution of Food Vouchers 6. Family Planning Promotion	1. Volunteer 2. Capitation per person Vaccinated or Contacted in Mass Campaign at \$30/Year 3. Commission on Sale Drugs	Radios	\$ 187,500	\$375,000 (Radios & Motorcycles)
Practicantes <sup>4/</sup>	1/6,000	250	12 to 13 Practicantes per Supervisor	Rural Centers, Six Sub-Centers	1. Training and Supervising Volunteers 2. Mass Action-Use of Jet Injectors, etc. 3. Logistic-Drugs, Information, Food Stamps, etc. 4. Education (Movies, etc.)	1. Salaried at \$1,600 per Year	Radios, Motorcycles		.. 50,000 Radios <sup>5/</sup> and Training 2. 50,000 Motorcycles <sup>6/</sup> 3. \$250,000 (Radios for Rural Centers and Sub-Centers)
Supervisors <sup>2/</sup>	1/75,000	20	5 Supervisors per Region	Regional Offices	1. Supervision of Practicantes and Volunteers 2. Programming, Planning Administration	1. Salaried at \$6,000 per Year	Automobiles	\$120,000	\$ 60,000 (cars -20-) <sup>7/</sup>
Trainers	NA	30	7-8 Trainers per Region	Regional Offices	1. Train Midwives 2. Train Practicantes and Volunteers 3. Develop curricula				
Regional Staffs <sup>3/</sup>	NA	5	Five Regions	Regional Offices	1. Administration of Program	1. Salaried at \$23,500 Total		\$ 117,500	\$ 45,000 (15 cars) <sup>7/</sup>
National Staff <sup>4/</sup>	NA	1	National	Santo Domingo Regional Office, SEBPA	1. Administration of Program	1. Salaried at \$17,800		\$ 17,800	\$ 3,000 (one car) <sup>7/</sup>
Totals	NA	5,390						\$1,252,300	\$414,000

<sup>1/</sup> Midwives will be supervised by the personnel at the Secretariat of Health. Communication via "practicantes". Training b

<sup>2/</sup> Will be physicians.

<sup>3/</sup> Physician (director of region) at \$8,000/year, administrator at \$5,000/year, three drivers at \$1,500/year, three secretaries at \$1,500/year, warehousemen at \$1,500/year.

<sup>4/</sup> National Staff: director at \$10,000/year, secretary at \$1,000/year, administrator at \$6,000/year.

<sup>5/</sup> Offices space will be provided by the Secretariat of Health. Provision for Regional Offices is included in program for that organization.

<sup>6/</sup> Motorcycles will be imported without duty, paid for the practicante and will belong to them. Maintenance and gas included in salary. \$50,000 establishes revolving fund for financing.

<sup>7/</sup> Most of these vehicles already exist and belong to the SEM, so that new investment will be considerable reduced.

CURAR. The urban program is to be operated through satellite health centers in Santo Domingo and Santiago. Two alternatives are offered for staffing: medical students and faculty, or nursing auxiliaries and physicians. Table 50 illustrates the nature of the program. Using medical students as primary care providers under faculty supervision would provide a most important change to medical education by orienting it to public health and outpatient care. The university faculty should find the proposal particularly attractive since the six existing hospitals used for teaching are totally inadequate to handle the load of medical students. The auxiliary personnel model would not be subject to the possible periodic disruption of service that is to be feared in university based programs in Latin America. It would be more expensive since medical students would not be paid.

Estimated annual cost to run the full SANAR program is RD\$1,250,000 for salaries, and an equivalent amount for drugs and supplies, RD\$2,500,000 per year in total. Initial investment should not exceed RD\$1,000,000.

Yearly expenditures for the final CURAR program would be approximately RD\$400,000 for salaries if medical students were the principal providers of care, or RD\$950,000 if auxiliary personnel were used. Drugs and supplies are expected to cost approximately RD\$500,000 per year, so that the CURAR total yearly budget would be RD\$900,000, or RD\$1,450,000 depending on the staffing. Initial investment, assuming community supplied buildings, would be approximately RD\$100,000.

## E.2. Strengthening the Secretariat of Health

The Dominican Assessment team suggests strengthening the Health Secretariat by having a core of several groups of professionals attached to and working under the guidance of the Secretary of Health. Four groups have been identified which would work toward resolving some of the more critical problems presently existing within the Secretariat: human resources, physical resources, health education, and organization and management.

Human Resources. One group would be responsible for studying in detail the problem of human resources, particularly the production and training of personnel. Six full-time and three half-time professionals with staff are proposed with a yearly budget of RD\$75,000.

Table 50

## PERSONNEL PROPOSED FOR CURAR

(Assuming 300,000 Population to Cover)

Type	Midwives	Auxilliarities	Primary Care Providers	Physicians (2)	Other Local Administration	Central Administration	Total
Ratio to Population	1/1000	1/15,000	1/1000	1/10,000	1/10,000	NA	
Number of Persons	300	20	300	30	150	5	805
Span of Supervision	One Auxilliary to 15 Midwives		Ten Primary Personnel per Physician				
Offices	Community	Peripheral Centers	Peripheral Centers	Peripheral Centers	Peripheral Centers	Santo Domingo	
Functions	-Deliveries -Family Planning Promotion	Supervision of Midwives -MCH Care	1. Preventive Medicine 2. Primary Care	1. Supervision of Care 2. Referral Care	1. Auxiliary Nurses (3) 2. Sweeper Janitors (4) 3. Records Clerk (5) 4. Drug Clerk (6)	See Note (8)	
Financing	-Fee for Service -Capitation for Family Planning at \$245/Year	Salary at \$1,800/Year	See Note (1)	See Note (2)	Salary at (3,4,5,6)	Salary, (8)	
Estimated Expenditures Yearly	72,000 3,000	336,000	54,000 (1) 432,000	180,000 (2)	201,600 75,000 (7)	20,500 3,000 (car)	\$384,100 942,100 81,000

- (1) Two Alternatives are proposed for testing: medical students with expenditure of \$1,800 per year for 30, for providing night care in centers, or auxilliarities paid at \$1,440 per year.  
 (2) These physicians may be paid by the university if medical students are used; otherwise, at \$6,00 per year by CURAR  
 (3) Two per center at \$1,440 per year

- (4) One per center at \$960 per year.  
 (5) One per center at \$1,440 per year.  
 (6) One per center at \$1,440 per year.  
 (7) Assuming \$2,500 to equip community supplied center.  
 (8) Director (\$10,000 per Year), administrator (\$9,000 per year), two bookkeepers (\$2,000 per year)

Physical Resources. This group would have the following functions:

- Planning and evaluation of the physical plants and developing architectural standards for the construction and renovation of medical facilities.
- Guidance in the selection of appropriate sites for health facilities.
- Guidance in the purchase of equipment.
- Training in the appropriate use of equipment.
- Creation of a functional system of maintenance of buildings and equipment.

Six professionals plus their staff are suggested at a yearly budget of RD\$65,000.

Health Education. The Health Education Division of the Secretariat of Health is already involved in the training of primary and secondary school teachers in hygiene, nutrition, and health. These activities, however, absorb all of its time and personnel. It is seen necessary to develop a mass media program of health and nutrition education.

Organization and Administration. The Secretariat of Health should develop its technical capacity for planning and designing health programs for the entire health sector. Unfortunately, under its present structure it cannot attract or maintain a group of competent professionals in these areas. It is suggested that the Planning and Program Office be reinforced within the Secretariat. This group might also establish a series of contracts with outside organizations to support the aforementioned groups. This would allow salaries conducive to attracting top personnel. It is desirable to consider use of the teaching faculty of universities for such purposes.

Internally, some basic administrative changes are needed urgently in the Secretariat. The most important change is the delegation of budgeting and personnel power to the Secretariat instead of in the Office of the Presidency where it now resides. Although it may not be feasible in the short run to change the latter, it is suggested that a strengthening of the middle level of organizational

structure in the Secretariat would improve the delivery of health services.

Finally, it is recommended that key management systems be revised and improved including:

- a) Information systems on service activities, and morbidity, mortality, and fertility rates,
- b) Personnel systems.
- c) Accounting systems.
- d) Supervisory and managerial systems.

### E.3. Financing Programs for Other Populations

The remainder of the Dominican population are provided adequate care or are economically able to obtain the medical services they desire. They have access to private care, Social Security, Armed Forces, and prepaid medical insurance. Large amounts of resources are available to provide care for these people. These services are unutilized. Thus there are major inequities and the health service needs of this population are not adequately met.

The Dominican team, noting the inequities, has suggested that employers, including the GODR, and employee groups be permitted to seek prepaid services through either insurance or group practice systems and to choose any entity that provides the services they desire on the basis of least cost per unit of coverage. The Government would set-up a regulatory agency to assure the quality of services offered. New services would be encouraged by the Government. Thus if one medical service institution were to offer low quality service at excessive prices, another group could take advantage of currently unused capacity in the private sector to offer an alternative and more efficient service. There are many practical difficulties and obstacles to such a proposal and changes in the current systems are not likely soon.

## VII. ENVIRONMENTAL HEALTH

### A. HEALTH PROBLEMS DUE TO LACK OF ENVIRONMENTAL SANITATION

Inadequacies in Dominican environmental sanitation conditions cause severe health problems for most of the population. Enteritis and other diarrheal diseases cause more deaths (21.5 percent) in the Dominican Republic than any other major category of disease. They are also an important cause of illness, especially when associated with malnutrition, and account for much hospitalization. The incidence of diarrhea is determined primarily by the quantity and quality of water consumed by people, food sanitation, quantity of insect vectors, the way in which human wastes are disposed, and more basically habits of personal hygiene. All these factors fall under environmental sanitation.

Poor environmental sanitation also contributes to the spread of other serious health problems. Hookworm, roundworm, tuberculosis, and other infectious and parasitic diseases all stem from poor food sanitation, lack of water and waste facilities, aggravated by inadequate housing conditions. A survey of 4,315 persons in Santo Domingo indicated that 53 percent had hookworm; 29 percent had severe cases.<sup>1/</sup> For relatively healthy people, these diseases are not normally fatal, but for people whose nutrition and general well-being is considerably below normal, these problems are difficult to treat and compound other existing health problems.

In study after study, a positive relationship is found between accessibility of water and reduction of diarrhea, especially in infants and small children.<sup>2/</sup> Studies of metropolitan Santo Domingo in 1971 and 1974 found the combined effects of a shortage of water and inadequate handling of excreta was consistently accompanied by increases in the incidence of diarrhea (Table 51). Diarrhea is almost three times more frequent among children age one to four years in homes without water.

---

<sup>1/</sup> Hookworm Survey, Santo Domingo (1973)

<sup>2/</sup> Ruth Rice Puffer and Carlos V. Serrano. Characteristics of Infant Mortality, World Health Organization (Geneva: 1973).

TABLE 51

Average Number of Diarrhea Cases per Child  
Over a Two-Week Period, Children One to Four Years of Age  
Santo Domingo, 1971 and 1974

(Sample Size in Parenthesis)

	<u>1971</u>	<u>1974</u>
Houses with Easy Access to Water	0.1266 (1107)	0.1293 ( 385)
Houses without Easy Access to Water	0.3776 ( 766)	0.3742 ( 263)

Source: "Study of Diarrheas," Autonomous University of Santo Domingo (1974) unpublished.

---

The economic loss as a result of this disease is substantial. Diarrhea attacks are estimated to have cost the people of Santo Domingo one million dollars in 1974 for medicines, lost educational production, and reduced economic production of males.<sup>3/</sup> Water costs an estimated 80 centavos per 1,000 gallons if delivered by pipes, but RD\$4.50 if delivered by truck, and RD\$14.00 per 1,000 gallons by "acuelata" (gallon lot distribution).<sup>4/</sup> The unnecessary direct costs because of inadequate piped water supplies are heavy.

#### B. ORGANIZATION OF THE SECTOR

Several agencies have responsibility for aspects of environmental health: Secretariat of State for Public Health and Social Assistance (SESPAS), National Water Supply and Sewerage Institute (INAPA), the Public Works Investment Commission (CFOIE, or President's Technical Office), and the new Corporation of Aqueducts and Sewerage System of Santo Domingo (CAASD). In addition, the Dominican Municipal League (LMD) is comprised of various city and town governments which have operating control over their own water and sewerage systems. The role each agency plays in environmental sanitation is governed largely by tradition and past experience.

---

<sup>3/</sup> Autonomous University of Santo Domingo. "Study of Diarrheas" (1974) unpublished.

<sup>4/</sup> A colloquial expression combining acueducto (aqueduct) with lata (tin can).

The most serious problem is a lack of regulatory enforcement over sanitation hazards. The multiplicity of agencies was noted by the Dominican Assessment Group to contribute to a certain confusion. The National Water Supply and Sewerage Institute (INAPA) was formed in 1962 to centralize control over the Dominican water and sewer systems. The responsibility for design, construction, and operation of these urban systems was to be handed over to INAPA by the municipal governments (municipios). As of 1972 only 63 urban communities with population over 2,000 were administered by INAPA. Seventy-one were administered by municipalities. Thirteen were without services (Table 52). A number of systems were to have been transferred to INAPA over the past five years. The failure to complete transfer no doubt reflects reluctance on the part of municipalities to give up whatever small revenues the systems produce. Additionally, the Technical Office of the Presidency (CFOIE) is responsible for much of the design and construction work of new municipal systems.

TABLE 52  
Agency Responsible for Water  
System Operation

	INAPA	CAASD	Ayuntamiento (Local)	No System	?	Total
Municipio Urban Center	22	1	54	1	0	78
Distrito Municipal	23	1	9	1	2	36
Other Urban Places	18	7	8	11	0	44
TOTAL	63	9	71	13	2	158

Source: Compiled by USAID/DR

At the present time, in practice, INAPA and the municipios are responsible only for the actual operation of water and sewerage systems. Construction and expansion, on the other hand, is directed by CFOIE.

Since 1966, nearly \$20 million have been spent for small and medium-sized city water and sewerage construction projects under the auspices of the Presidency.

In addition, enforcement authority, affecting environmental health, is not exercised by any of these national agencies. Milk, for example, is transported over long distances without refrigeration. SESPAS is empowered to collect milk samples from dairies and has legal authority to take action against violators of quality standards, but does not exercise this authority. Thus, if milk arrives at dairies with bacterial counts too high to permit effective pasteurization, the SESPAS is unaware of a problem and is not in a position to prohibit the sale of such milk.

## C. PRESENT COVERAGE, PLANS AND EXPENDITURES

### C.1. Water System Problems

Development of improved water supply systems have from time to time received Government attention and priority (Table 53). Fifty-four percent of the people in urban areas presently have access to water. Many systems were constructed during the early 1950's and late 1960's. Santo Domingo and Santiago received recent special attention, including design of a system which is expected to meet water needs through the year 2000. Rural water service reaches perhaps 20 percent of the people. New water system construction continues as a part of a national plan for locales containing 300 to 5,000 people. No effort is presently being made to provide water service to the more dispersed rural population, i.e. under 300 people per locality.

Sanitary waste disposal systems are largely non-existent. Only the largest cities have sewer systems and coastal cities provide no treatment for sewerage discharged into the ocean. A plan for rural latrine construction was prepared recently, and latrine construction projects are underway. As with water supply, there are no national goals within a specified time frame to construct sewers although an informal policy exists to develop sewerage systems in conjunction with water supply systems for urban areas.

Problems with respect to water systems include: (1) need for greater accessibility to sources of water; (2) poor quality of water; (3) loss of water through leakage and misuse; (4) contamination of water supplies. The following discussion focuses on the technical aspects of these problems although lack of authority and control in Government agencies, as cited by the Dominican Assessment Group, remains a principal hindrance to an adequate solution.

There are four multiproject plans for water and sewerage systems for which engineering information exists: "Plan Nacional de Acueductos Rurales" (PLANAR), Rural Latrine Plan, Santo Domingo Master Plan, and Santiago Master Plan. Urban areas outside Santo Domingo and Santiago are not subject to these plans but have received heavy post-1966 water and sewerage system construction investments.

TABLE 53

Annual Increase in Water System Investment, Sewer System Investment,  
and National Economy, Dominican Republic, 1968-1973

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
Gross National Product (at current RD\$)	4.4	13.9	12.1	12.2	18.5	21.5
Total Central Government Expenditures (at current RD\$)	3.3	13.7	11.9	15.1	9.5	10.4
Central Government Capital Expenditures (at current RD\$)	9.6	30.3	26.7	32.8	15.0	16.5
Total Water and Sewer System Investment (at current RD\$)	37.8	-11.7	-2.5	31.6	135.5	-5.7

Source: Compiles by USAID/DR

### C.2. Santo Domingo and Santiago

Over 50 percent of the people in the large urban centers of Santo Domingo and Santiago are served with water connections, (Table 54) but these cities clearly need increasing pumping and processing capacity. As stated above, master plans were recently developed for these cities to accommodate the expected population increase through the year 2000. As the current sources of ground water supply have become increasingly contaminated, new sources are designated in the plans and large capital investments are projected. In Santo Domingo, the Corporation of Water and Sewerage for Santo Domingo (CAASD) was recently established. The head of INAPA has taken over active direction and has transferred many competent persons from INAPA to CAASD. This has weakened INAPA. CAASD now directs all water and waste systems construction, operation and maintenance in Santo Domingo. The cost of the first five year phase of work in Santo Domingo has been set at \$18,000,000 for development of new well fields in the eastern part of the city, study of the feasibility of a new Madrigal Dam on the Haina River, and installation of water meters. It is assumed that, if the dam is constructed and provides an adequate supply of water, the eastern wells will be abandoned.

In Santiago, the master plan being implemented is presently estimated to cost \$13,200,000, covering a five year span. The city water system is operated by the Municipal Government with the assistance of the Municipal League. The project includes new filtration and treatment facilities, reserve tanks, and distribution lines. The plants will have a capacity of 70 million gallons per day.

### C.3. Intermediate and Small Cities

In small and medium-sized urban areas, the press of population growth over the past decade has greatly strained the available sources of water supply. The 1970's Goal for the Americas<sup>5/</sup> for urban areas is a household connection for 80 percent of the population (Figure 18). At present, all Dominican urban areas including the major cities mentioned above provide water for about 55 percent of the residents. Some intermediate cities are being upgraded jointly by INAPA and the Technical Office of the Presidency, CFOIE. Under this arrangement, many water distribution projects are initiated by the CFOIE, planned by local engineering firms and constructed by INAPA. About \$10,000,000 has been spent since 1966 by CFOIE for the various systems while INAPA has invested another \$8,000,000.

---

<sup>5/</sup> At the meeting of Ministers of Health of the Americas in Santiago, Chile, Goals for Health were made for the continent, and have been used in most countries since that time as bench marks for development of the sector.

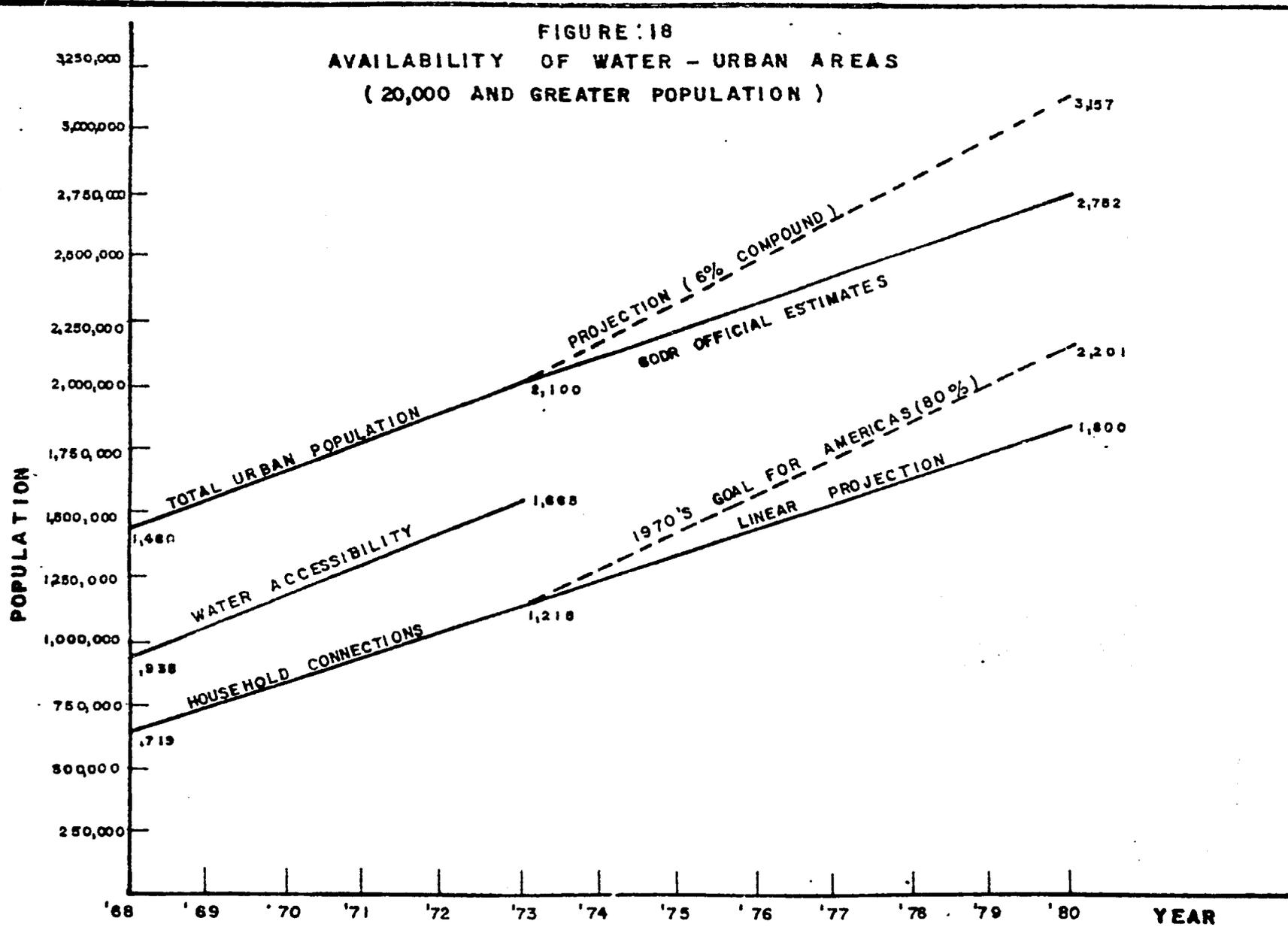
TABLE 54

Availability of Household Water Connections in Santo Domingo  
Based on 1974 Sample of 6,965\* People in 1,257 Households

Area	Income Level	Total	Inside House	Outside House	Inside Another House	With Connection Without Pressure	Other
Area 5	(moderately poor)	277	104	70	9	9	85
Area 6	(marginal)	2,225	545	888	-	450	342
Area 7	(poor)	2,295	1,062	859	23	245	106
Area 8	(medium)	1,044	800	137	9	51	47
Area 9	(high)	949	854	5	8	75	7
	Sample Total	6,790*	3,365	1,959	49	830	587
	Percent of Total	100%	49.6%	28.9%	0.7%	12.2%	8.6%

\* Based on data from the 1974 Diarrhea Study carried out by the Universidad Autónoma de Santo Domingo and the Diagnóstico de Salud. These preliminary findings contain an error of about 7%.

FIGURE 18  
AVAILABILITY OF WATER - URBAN AREAS  
(20,000 AND GREATER POPULATION)



SOURCE : USAID/DR .

From the health point of view, the most beneficial environmental health investment is investment in water systems. No present plan really addresses the needs of small and medium-sized cities for water systems. A national urban water plan directed to these smaller urban centers, PLANURBE, prepared by INAPA, remains in draft form. PLANURBE lists 20 cities which INAPA believed to represent high priority needs for water system construction (Table 55). As it has turned out, many cities not on the PLANURBE list have received water system assistance from the CFOIE. Completion of the 20 systems in PLANURBE would affect 222,600 people at a projected cost of \$15,582,000. Estimated costs, which are already too low, would average \$70 per person served. The PLANURBE list includes both cities which operate their own water systems (with assistance from Dominican Municipal League) and cities where INAPA operates the system.

Maintenance and operation of completed systems is a problem, particularly in those cities where water revenues are credited to the general municipal treasury. Lack of other municipal funds frequently results in these funds being used for purposes other than maintenance. At present, the Municipal League attempts to repair damaged or inoperative systems with approval and financing from the Technical Office of the Presidency. It had been planned that maintenance of these systems would be transferred to INAPA. However, INAPA does not have the resources either.

#### C.4. Rural Areas

In the rural areas the construction of water supply systems by INAPA is proceeding at a slow pace. Between 1968 and 1973, the proportion of the rural Dominican population with access to water improved from about 7 percent to about 19 percent.<sup>6/</sup>

INAPA supplies water to rural communities. Household connections are made and paid for by the residents. Table 56 indicates the 1973 coverage of the population by rural water systems and the respective financial operations. Research evidence indicates that water piped from the community source into the home reduces the incidence of diarrheas. Easy access to water, however, is even more important in terms of the general health of rural communities. As important as potability is, it must be judged secondary to house connection.

---

<sup>6/</sup> "Diagnóstico," p. 45

TABLE 55

"PLANURBE" Aqueduct Enlargement Proposal

No.	City	Supervision and Operation	Population 1973	Population 1980	Cost of Construction
1	San Cristobal	Mun.Gov./LMD	31,179	43,212	2,182,530
2	Baní	" " "	29,167	37,504	2,041,690
3	Bonao	" " "	25,047	39,709	1,753,290
4	Villa Altagracia	" " "	6,691	28,744	469,370
5	Neyba	" " "	14,266	18,168	998,620
6	Santiago Rodriguez	" " "	14,605	14,822	1,022,350
7	Hato Mayor	" " "	11,927	15,081	834,890
8	Villa Bisonó	" " "	11,544	14,199	308,080
9	Montecristi	INAPA	9,356	11,236	654,920
10	Cotuí	INAPA	9,413	11,994	658,910
11	Jarabacoa	Mun.Gov./LMD	8,313	12,530	581,910
12	Sanchez	" " "	7,919	9,370	554,330
13	Cabral	" " "	6,405	7,810	448,350
14	Dajabón	" " "	7,657	10,579	535,990
15	Elías Piña	" " "	6,628	7,313	463,960
16	Loma de Cabrera	" " "	5,329	6,920	373,030
17	Miches	" " "	5,053	5,016	353,710
18	Constanza	" " "	5,095	8,184	356,560
19	Villa González	" " "	4,420	4,700	309,400
20	Jimaní	" " "	2,586	2,939	181,020
<b>TOTALS</b>			<b>222,600</b>	<b>300,000</b>	<b>15,582,000</b>

**TABLE 56**

**Financial Operations of Rural Water Systems, by Zone  
1 9 7 3**

Financial Indicators	Z O N E *				TOTAL
	I	II	III	IV	
No. of Systems	16	40	22	17	95
Population Served	66,217	109,212	41,164	41,118	257,711
Household Connections	5,884	8,572	3,636	4,311	22,403
Total Project Costs (\$ million)**	2.4	2.3	1.2	1.2	7.2
Revenues from Fees	99,512	94,872	51,605	67,241	313,230
Operating and Maint.	57,179	53,395	23,306	30,025	163,905
Surplus	42,332	41,471	28,294	37,216	149,313
Depreciation	16,932	16,566	11,754	14,891	60,143
Interest	25,399	24,902	16,541	22,324	89,166
New Loans (Reinvestments)	10,265	61,950	1,356	8,982	82,553

Source: "Diagnóstico del Sector Salud." Refers to a retabulation of data submitted by INAPA for PLANAR activities.

Zone I includes the provinces of the northwest, Zone II the provinces in the southwest, Zone III provinces in the north central area, and Zone IV refers to the provinces of the east plus the National District, San Cristobal, and Peravia.

Rounded figures.

PLANAR, the rural water supply plan, proposed the construction of water systems in 650 selected localities out of 2,800 total rural localities studied in 1966 (Table 57). Some 450,000 additional rural people were to receive water by 1980, but the work is falling behind schedule and may not be completed until 1982 or later. At the scheduled rate of construction, the country would spend about \$29,000,000 on rural water systems between 1972 and 1980. Applying the Joint Health Ministers' 1970's Goal for the Americas to the Dominican Republic would require that water be made accessible to 50 percent of those in rural areas, or 1,330,000 people (Figure 19). PLANAR projections show water coverage reaching only about 895,000 of the rural population by 1980.

FIGURE 19  
AVAILABILITY OF WATER - RURAL AREAS  
(LESS THAN 20,000 POPULATION)

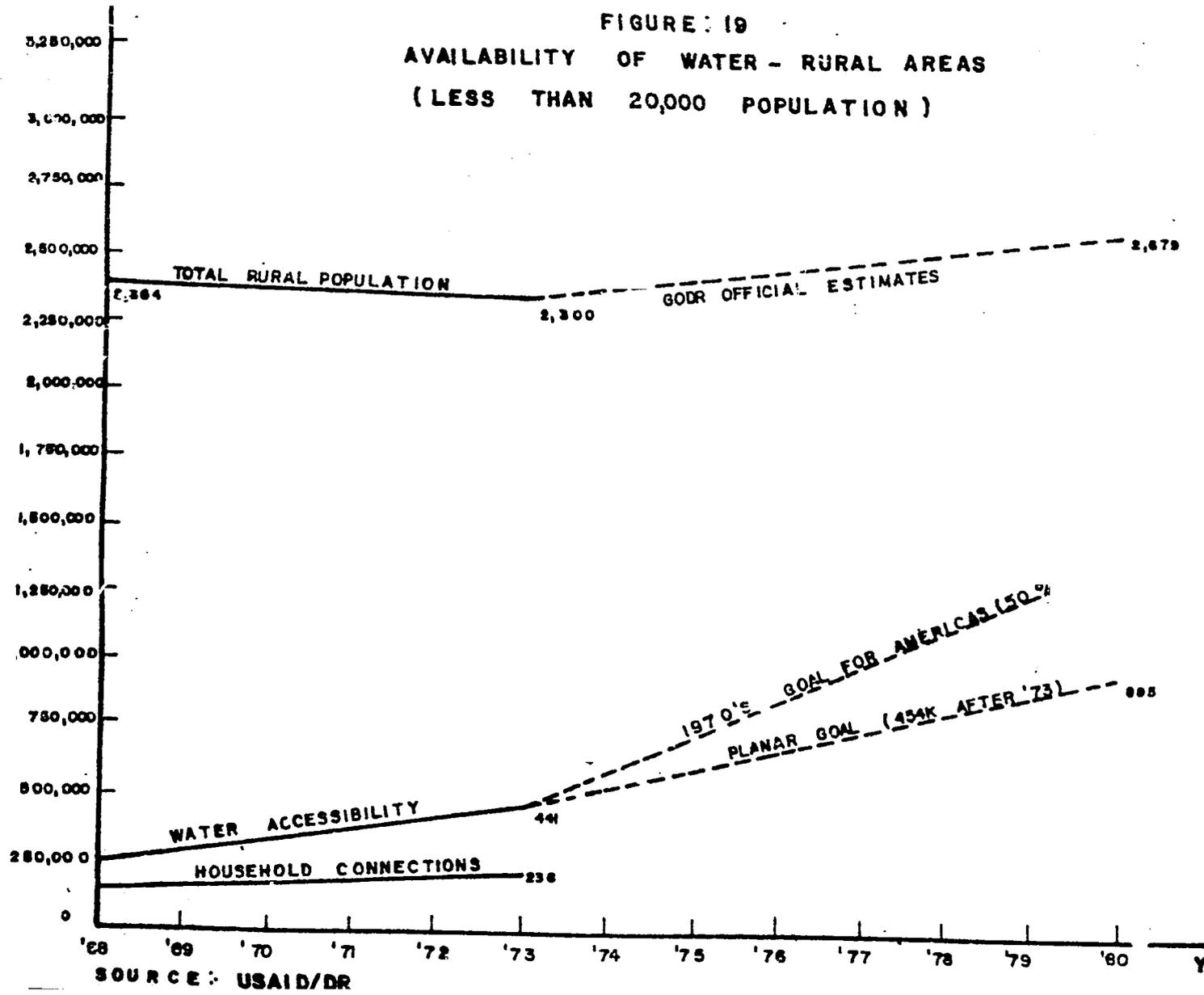


TABLE 57

PLANAR Proposed Work

Stage No.	Years of Execution	No. of Localities	Population Estimate	Cost-RD\$
1	1969-1971	115	141,000	3,500,000
2	1972-1974	180	205,000	7,440,000
3	1975-1977	180	179,000	9,900,000*
4	1978-1980	175	175,000	11,600,000**
TOTAL		650	700,000	32,440,000

\* Estimates

Source: Information compiled by USAID/DR

Price inflation has affected maintenance of rural water systems adversely. Operational and maintenance costs continue to increase while water service rates continue at 1966 levels. Inflation is partially responsible for increased difficulty in collection of water bills.

A recent trend is to construct more complex and larger rural water supply networks, called múltiples, interconnecting five to ten 1,000-person systems and having full-time operators at one central point. On the positive side, some dispersed rural people receive water from múltiples who would not otherwise receive service. On the other hand, costs of múltiples are higher (estimated at 30 to 50%) than for single unit systems. Original costs also vary greatly but are generally higher. The extended useful life of equipment and lower maintenance costs of múltiples are said to offset higher construction costs. No reliable basis for judgement has yet been brought forth.

#### C.5. Sewage Disposal Systems

Piped sewage disposal systems service only a small number of Dominicans at this time (Table 58). Septic tanks, latrines, and other arrangements are used by many more people. Many areas near urban centers are without adequate waste disposal of any type, with ground water pollution occurring as a consequence. Some urban areas have sewerage systems but have an inadequate water supply to handle the water load required by these systems.

TABLE 58

## Cities Served by Sanitary Sewers, Dominican Republic, 1974

Locality	1970 Inhabitants	197? Projected Inhabitants	Population Served	Population Capacity of Trunk Pipelines	Date of Construction	Type of Treatment	Class of Treatment	Final Disposition
Santo Domingo	671,402	755,236	360,000		1928-1973	none	none	Caribbean Sea
San Cristobal	25,829	28,224	23,000	43,000	1956-1973	none	none	Caribbean Sea
Santiago	155,151	174,524	110,000	348,000	1959-1973	Complete & Primary	Conventional Plant & Imhoff Plants	Yaque River
Puerto Plata	32,181	35,165	26,000	60,000	1973	Complete	Aeration Lagoons	Atlantic Ocean
San J. de la Maguana	32,248	35,175	30,000	108,000	1969-1973	Complete	Imhoff, Percolator, Aeration Lagoons (Pilot)	San Juan River
San F. Macorís	43,941	48,016	44,000	156,000	1973	Complete	Aeration Lagoons	Guamacaje Creek
Monte Cristi	8,252	9,017	6,000	13,000	1973	Primary	Imhoff Plant	Atlantic Ocean
La Vega	31,085	33,967	32,000	108,000	1973	Complete	Aeration Lagoons	Ponton Creek
Higüey	21,741	23,757	17,000	74,000	1973	Complete	Aeration Lagoons & Anerobic Lagoons (Pilot)	Yuma River
Samana	<u>4,435</u>	<u>4,846</u>	<u>4,846</u>	<u>12,000</u>	<u>1973</u>	<u>Complete</u>	<u>Aeration Lagoons</u>	<u>Atlantic Ocean</u>
Other Urban Centers	<u>1,026,265</u>	<u>1,147,927</u>	<u>652,846</u>					
Dominican Republic	<u>1,603,937</u>	<u>1,752,665</u>	<u>652,846</u>					

Source: Based on estimates by "Acueductos y Alcantarillados, C. por A."

In Santo Domingo, about 25 percent of the population are served by piped systems.<sup>7/</sup> Lack of sewage treatment facilities in these systems results in pollution of the Ozama and Isabela rivers. It is estimated that implementation of the sewerage system planned for Santo Domingo would require some \$40 million through 1980, and would cover completely the projected population. Investment in piped sewerage systems for Santiago and the moderate-sized towns has proceeded in an attempt to keep pace with urban population growth. The cost for Santiago, assuming 95,000 persons lacking service and a RD\$52 per capita figure would be about RD\$5 million. Using the average cost of current construction of RD\$52 per capita, and the cost to provide all cities over 10,000 population with sewerage and treatment service by 1980 would be RD\$30 million (excluding Santo Domingo and Santiago).

Septic tanks remain the most common sewage disposal method in the Dominican Republic, while latrines also are in use in some areas. Particularly in rural areas, sanitary latrines are considered the only reasonable solution to low cost sewage handling at present. Latrine construction is proceeding under a national plan prepared in 1970, but after years much work remains. An estimated 1,840,000 rural people need waste disposal services with 320,000 new latrines required to provide minimal service. While the plan appears efficiently implemented, it is constructing only 8,400 latrines per year and thus is about keeping pace with population increase. Assuming no population growth, it would require 39 years to satisfy national requirements at this rate.

#### D. ALTERNATIVES FOR ENVIRONMENTAL HEALTH

The Dominican Assessment has determined that the highest priority alternatives among environmental health problems are those related to providing more extensive water and waste disposal services to urban and rural people. Priority should be given to systems which benefit the greatest number for relatively modest per capita costs. This suggests installation of systems where there are economic concentrations of people, e.g. intermediate cities. Food sanitation and environmental pollution are increasingly great hazards and are discussed below.

---

<sup>7/</sup> "Diagnóstice." p. 67C

#### D.1. Urban Water Systems and Waste Disposal Projects

Because of rural/urban migration, as well as natural increase, demands on urban water systems are beyond capacity and account for the growing incidence of diarrhea and related problems. Scattered but increasingly frequent reports of outbreaks of typhoid are also indicative. A continued increase of urban sanitation problems must also be regarded in light of possible introduction of cholera in the next decade if the world-wide pandemic arrives in Latin America.

Santo Domingo -- Guided by the 1969-70 Boyle Engineering Study and the Hydrotechnic Study of water and waste disposal system needs through the year 2000, the Dominican Assessment proposes the systematic implementation of the plan in new construction by the CAASD. The plans require massive investments, including dam and treatment plant construction, over the next two decades.

The proposed Dominican strategy for water systems calls for continued construction, so that the trunk lines needed by the population in the year 2000 will be installed by 1990. Without concurrent development of the sewer and storm drain systems the water system plan will not effectively serve the growing population. Present sewer service covers only 25 percent of the population and contamination of water sheds and of supply systems throughout the city is mounting. Current estimates place the cost of sewer development in Santo Domingo at \$60,000,000 through the year 2000. The analyses which led to the Santo Domingo plans were competently performed and their use to guide further construction seems most appropriate.

The Dominican Assessment assumed preventive maintenance would be improved if personnel received better salaries. While improved wages may be a precondition to hiring and retaining competent staff, this does not guarantee better maintenance. They also advocated tighter control by a central agency. While controls and standards may need to be introduced, organizational alternatives will need to be considered. In practice maintenance may continue to be neglected for a variety of reasons. Management was not fully treated in the Dominican Assessment. It would also seem prudent that "master plans" should be reexamined periodically to adjust to changing conditions.

Santiago -- The city is well on its way to achieving at least the potential to provide the projected 1985 population with water services. The engineering and construction activities developed in the master plan for Santiago have been accepted by the Dominican Assessment team. The Dominican Assessment also focused on the urgent need to establish satisfactory staffing and maintenance procedures to

avoid tragedies such as the 1973 contamination of the water system which resulted in a severe diarrhea epidemic affecting half of the population. The lack of chlorination for long periods of time is illustrative of deficiencies which need to be corrected. Another recommendation was to increase household connections, including subsidizing connections if necessary. The total cost of the current planned program to improve this water system is RD\$13.2 million over a five-year period.

In 1969, approximately 75 percent of the city area had a sewerage system. Although no reliable data exist concerning the number of household connections, certainly the percentage of the population served is considerably below three-fourths. An estimate given on an ad hoc basis by INAPA engineers places the population served by sewerage system at roughly 120,000 in 1974 of a total population of 205,000.

Recent population growth trends for Santiago point to a 60 percent increase by 1985. The present inadequate sewerage system, therefore, would have to be expanded to meet the needs of 330,000 people by 1985. The one treatment plant on the banks of the Yaque del Norte River is over fifteen years old. The Dominican team noted that maintenance over the years has not been exemplary and that this has led to a severe deterioration of service.

The Dominican team has recommended two major investments. The first involves increasing the sewage treatment capacity of the present plant, either by enlarging and reconditioning the present one, or preferably, installing a modern new plant.<sup>8/</sup> The second, concurrent with the first, is to increase the number of households served by the system. Implicit in this second strategy is the training, staffing, and supporting of a municipal department in Santiago (or through INAPA) which need not await the major investments.

Intermediate Cities -- Unless the secondary cities of the Dominican Republic can absorb a larger share of people moving from rural to urban areas, Santo Domingo and Santiago will be faced with insurmountable demands for public services. Availability of adequate water and sewerage, together with other public services, can make small and medium-sized cities more attractive to migrants and improve prospects for job formation in the agri-business and light industries, assuming appropriate governmental incentives on industrial location. Improvements in intermediate cities should reduce population pressures on the two major cities.

The Dominican Assessment Group advocated the following water system proposals for small and medium-sized cities. The order is

---

<sup>8/</sup> See the Boyle Engineering recommendations referred to earlier.

suggestive of the sequence to be followed.

1. Improvement of planning, maintenance, and operational control in small and medium-sized cities by bringing the municipalities operating under the LMD and the cities under INAPA so as to improve central supervision.

2. Channel assistance for the design and construction of new water systems in urban localities not presently served with any aqueduct water.

3. Channel assistance for the design and construction of the water systems in small and intermediate cities now partially provided with such systems in order to expand coverage.

The first proposal could have immediate beneficial effect. The second requires investments on the order of \$5 million. The third requires investments of about \$15.6 million and, according to the Dominican Team, should be preceded by organizational changes and improvements.

The first proposal calls for bringing control over secondary cities water and waste system development and operation under the supervision of one agency (INAPA, Secretariat of Health, LMD, or Technical Office of the Presidency) by providing funds to establish a balanced program of planning, maintenance, and operational control. This program would include: (1) upgrading of urban water operations through training of personnel, purchase of vehicles, tools, and machinery, and analysis of operation control routines; (2) subsidy of municipal governments to enable them to redirect water revenue funds back to these functions; (3) expansion of regional supervisory operations to enable coordination of these maintenance and operational control duties; and (4) strengthen the planning and analysis capacities of the selected central agency for preparation of surveys and plans.

#### D.2. Operation of Intermediate Cities Water Systems

Operation of Systems -- At the rate of 15 cities per year, about 75 cities could be upgraded by 1980. INAPA has estimated on an approximate basis labor and materials costs of \$50,000 per city in the first year and continuing costs of \$10,000 for each covered city in the second and following years. Thus, the costs would total \$5,250,000 through 1980, as follows:

	<u>Cumulative Total Cities Served</u>	<u>Total Cost</u>
1976	15	\$ 750,000
1977	30	900,000
1978	45	1,050,000
1979	60	1,200,000
1980	75	<u>1,350,000</u>
	TOTAL	\$5,250,000

In 1981 and after, the cost is estimated to be \$750,000 above current expenditures for the cities. The staff at each site should in most cases include an engineer, operator, plumber and helper. The central agency would have two additional engineer-planners, two additional engineering assistants, and access to technical advisors from Santo Domingo or elsewhere on the more difficult problems. This program would be established under contractual provisions which would require that planning and supervisory control for each city water system be assigned to a central agency at the time it is brought under supervision. Either municipal governments or some other agency would accept responsibility for actual field operation, maintenance, and quality control with assistance from the central agency.

While INAPA is legally responsible for potable water systems, its operations have been limited to only a number of cities. Cities having independent water and waste systems do not contract with INAPA for a number of reasons, e.g. (1) loss of city control over water revenues, (2) reluctance to vest responsibility in an organization not directly responsible to the municipality, and (3) the seeking to deal directly with the Presidency rather than through a third organization is more traditional and traditionally is more effective.

Financing -- The long range financing method advocated would provide national Government transfers to the city government in amounts equal to or greater than present city water revenues, thereby freeing water money for water operations. A second alternative would use national Government funds to subsidize water operations, leaving water revenues flowing to local government for general purpose activities. Water billing rates and water revenues would remain unattached to water costs.<sup>9/</sup> A third alternative would place water billings receipts into the hands of a national agency, such as INAPA, and arrange complete ownership of the water system by that

---

<sup>9/</sup> The common practice of flat rate, unmetered water billing in the Dominican Republic where there are house connections places a relatively greater burden on those least capable of paying.

agency. No attention was given by the Dominican Assessment team to a valorization system, whereby those benefitting from public works improvements are taxed accordingly. This has proved successful in Colombia and elsewhere and helps to remove some of the substantial financial burden from the central government. More study by financially competent experts would be beneficial.

Personnel -- There are few professionally-trained persons operating and maintaining water and sewerage systems. There are, in fact, too few persons to assure adequate operations. Some centralized national supervision over water and sewerage planning and engineering programs are indicated. Training of around 200 technicians would seem to be a high priority requirement.

### D.3. Construction of Systems

Assistance is also proposed by the Dominican Health Assessment Team for the design and construction of water systems in the small urban localities which presently have no piped water service. This would be fairly expensive on a per capita basis and would not in itself assure improved maintenance and operational control in existing water systems. At the RD\$75 per capita PLANURBE estimates, RD\$5,000,000 would bring water to around 65,000 people or 13 urban localities averaging 10,000 population.

Perhaps the most cost effective team proposal is to invest in water system expansion for intermediate cities. Expansion in this context refers to the delivery of water to areas of cities not presently receiving water as well as to the connection of households to existing networks. For example, the total cost would be approximately \$15,600,000 for the 20 high priority PLANURBE cities. This alternative would require financing in excess of that devoted to these cities in recent years. Some of the 20 PLANURBE projects are in fact already under development by the Technical Office of the Presidency.

Institutional Constraints -- The Public Works Investment Commission (CFOIE) is now, at the President's direction, arranging to have urban water and waste systems constructed by private engineering firms. Private firms have demonstrated a capacity to produce the desired result more promptly. This has contributed to some attrition in the operation of INAPA. Future intentions of the GODR about INAPA are not at this time clear. The Dominican team advocates designation of one agency, either INAPA or an alternative, to take responsibility for planning and construction of all urban water and waste disposal systems except those in Santo Domingo and Santiago. Organizational conclusions would not seem to be as conclusive or

clear cut as portrayed and additional study will no doubt be undertaken before a decision is made.

Rural Water and Waste Disposal -- In unserved rural areas, ratios of benefit to cost may demonstrate the practicality of investment in neighborhood water supply systems irrespective of water quality. Later efforts to increase rural water quality would have an additional health payoff. At planned rates of construction, rural water service will serve 35 to 40 percent of rural Dominicans -- far below the 1970's Goal for the Americas of 50 percent coverage.

Contrary to the conclusion of Dominican Assessment, there would appear to be some advantage in setting a high priority for bringing water supplies to the rural population. Cost is an important consideration. At \$66 per capita, for example, 50% coverage of the rural population by 1980, i.e. 500,000 more than currently targetted, would cost an additional \$33,000,000. A program of this size would likely tax the capacity of institutions. An alternative not considered by the Assessment is the installation of plastic pipe and hand pumps at a per capita cost under \$40 using self-help labor. Given sanitation practices, this alternative might not prove practicable. PLANAR, the division of INAPA which devotes itself to the provision of potable water to rural communities, has demonstrated its administrative capability to provide potable water in rural areas and could likely carry a greater load than at present.

Attention to problems in rural waste water and excreta disposal should continue to focus on rural latrine construction, or some low cost, low pollution alternative. In the interim, the maintenance and servicing of septic tanks requires attention in many areas of the country.

Increased emphasis on the construction of latrines for rural families is proposed by the GODR at this time. A variety of Government agencies including the Secretariat of Health, the National Office of Community Development, and the Secretariat of Agriculture would implement the program under a plan prepared by PAHO and administered by the Secretariat of Health. In the past, the materials for constructing latrines have been donated by the Secretariat of Health, but there does not appear to be great impetus in this program.

No specific recommendations are proposed in the Assessment for other environmental problems. There appears to be little interest in environmental pollution, nor is it the problem it is in developed countries. Regulatory action on food and drink is likely to be a matter for action at a later stage in the country's development except that enforcement takes place in export oriented agri-

cultural and agro-industry. There is also an important measure of self-enforcement in these instances. Consultations were held between PAHO and national health leaders this year concerning the possibility of strengthening national public health laws and regulations. They ended without formally proposing changes to the codes.

#### E. CONCLUSIONS

1. Those diseases which arise from lack of water and sanitation, including diarrhea and hookworm, are responsible for many deaths as well as the highest proportion of hospitalization in the country.

2. The public agencies concerned with environmental pollution are understaffed and uncoordinated, thereby imposing limitations on what can be accomplished in the short term.

3. A 1962 attempt to centralize urban water systems operations under one public agency was unsuccessful in improving planning and maintenance operations of urban water systems and there is not present disposition evident in moving in this direction again at this time.

4. There is limited regulatory control over quality of domestic food products.

5. There is no public agency attempting to bring better water systems to small rural localities (e.g. fewer than 300 people).

6. Reentry of untreated sewage into local water systems threatens water quality significantly in several urban areas, including Santo Domingo.

7. There appears to be a disposition to construct new water and sewerage systems than to assure high quality maintenance of existing systems.

8. Price inflation and division of local water revenues to other purposes have reduced available funds for water system operation and maintenance to a perilous state in many areas of the country.

9. Lack of adequate water and waste disposal systems in intermediate cities indirectly adds to population growth pressures in Santo Domingo and Santiago.

## VIII. ANALYSIS OF THE DOMINICAN ASSESSMENT

"... the health of the population is the most important component of social and economic well-being, for in addition to assisting economic growth and structural change, it singularizes the essential; that is, the spiritual significance of health, the authentic infrastructure of the happiness of the people." 1/

The programmatic aspects of the Dominican Health Sector Assessment Team's conclusions have been described in the preceding chapters. The team sought to identify those actions which would in their judgment be most effective in meeting the critical health problems of the country. However, as in any professional document attempting to describe the health situation, the reality has necessarily been depersonalized. For many Dominicans, the effort to offer their children better opportunities than they themselves had, is too often unrewarded. Fortunately, there are leaders with vision and capacity who are dedicated to improving the quality of life of poor Dominicans. This is the reality and, despite the difficulties, affords promise of improvement in the health field. With an impressive economic growth of over 10 percent per year for the past five years, an improved budgetary situation, and improved balance of payments prospects in the short run, Dominican resources are sufficient to reduce appreciably the incidence of disease and mortality among the very poor.

### A ANALYSIS OF THE DOMINICAN ASSESSMENT AS VIEWED BY THE AID ASSESSMENT TEAM

The Dominican Republic has a history of strong central government but relatively weaker public administrative institutions. The health sector, because of the complexity of the problems, and multiplicity of agencies with responsibilities which to some extent duplicate and

---

1/ Dr Héctor Pereyra Ariza, Secretary of State for Public Health and Social Assistance, Dominican Republic, "Política de Salud: Período 1973-1989," September 1973.

overlap, poses unusually difficult problems for resolution. Complete and reliable health information and data does not exist. The achievement of the Dominican health professionals involved in the assessment is all the more remarkable. They have produced a document with a strong public health orientation.

Each of the Dominican health professionals have had significant responsibility in the Dominican Republic health system for long periods of time. Their "feel" for that system, their level of cultural and intuitive understanding of its functioning is evident in their analysis and conclusions. The assessment is without doubt the most complete analysis of the health situation in the country yet written.

While the Dominican health professionals would not claim to be economic experts, they were not reluctant to raise economic questions. For example, the Dominican team has pointed out that the price support mechanism for rice could be modified or adjusted to encourage increased production of a more nutritious food. Since many cannot afford a suitably nutritious diet, food subsidies have important nutritional and income redistribution benefits. While not pretending to provide the definitive judgements, assessment statements are likely to stimulate useful public debate.

The greatest strength of the assessment lies in its suggestions for possible programs and its attempts to encourage activities which they considered would net the maximum health benefits. The Dominican team has advocated program recommendations it believed were (1) low in cost, (2) composed largely of elements tested and proved acceptable in the Dominican Republic, (3) directed toward those Dominicans most in need of services, and (4) administratively and otherwise feasible. These program recommendations would involve some shift of health resources in the public sector, a significant increase in services to the urban and rural poor, and a strengthening of key public institutions. The program appears financially, administratively, and otherwise feasible -- if indeed it were to accord with GODR priority concerns. It may be noted that it does not set goals, does not identify the time frame, does not consider alternative choices, does not analyze constraints to be overcome.

The Dominican Health Assessment has provided a most complete description and analysis of the health situation during and since the colonial period. Its perspective on the future is modest with projections of five, ten, and occasionally fifteen years. Yet many of the current health policies and programs cannot be assessed in such short term time frame.

The Dominican analysis has been cautious in detailing program alternatives. While the courses of action proposed are known to be relatively low cost, there are few estimates of total costs. Much additional work will be required before the GODR can confidently proceed on given courses of action.

It was obviously not possible for the Dominican team to cover all aspects of health in the limited period available to them. Certain areas were omitted, for example, consideration of constraints and how they are to be overcome is infrequent. Cost-effective alternatives could have been identified and considered. Thus the Dominican Assessment is an impressive major step forward which allows opportunity for further development.

Environmental sanitation was one such area. Almost all of the Dominican analysis came from the files of INAPA, an organization which is perhaps less active than heretofore. Many of its recommendations have not been acted upon affirmatively for good and sufficient reasons. Therefore, reliance on INAPA may represent an analytical weakness. Moreover, the Dominican team did not elaborate the decision-making process in this sector.

There are gap areas for further study. Accidents are a principal cause of death in adults, and yet a comprehensive program of industrial and traffic safety was not discussed. Vector disease, particularly dengue, respiratory diseases, and other health problems related to poor housing are of great importance, but the health effects of housing programs was not considered, etc.

The situation with regard to public and private sector health services is different. The private sector serving a much smaller community has access to twice the financial resources of the public health services. As the Medical Assistance Program (MAP) demonstrates, there are enormous possibilities for improving services to the poor by tapping these resources. There are possibilities for health insurance schemes which would allow both greater utilization of private services and greater accessibility of services to a larger portion of middle class Dominicans. There was little opportunity for analysis of these kinds of alternatives.

The nutrition problem was identified by the Dominicans as being of the highest priority, but advocacy of a nutrition policy or program is prominent by its absence. The team decided that institution building would be required before resources could be used efficiently and effectively to improve nutrition, but institution-building for what purpose was not explicitly focussed upon.

The GODR has clearly recognized that rapid population growth in this country constitutes a serious problem, and it has acted to confront this obstacle to economic growth and human well-being by creating the National Council of Population and Family, <sup>2/</sup> The team neither confronted the issue nor supported the policy, although obviously family planning services are implicit in many of their proposals. The importance of reducing the rate of illness and death from the viewpoint of the GODR is shown by a statement of the Secretary of Health which places emphasis on "the most vulnerable age groups of the population: those younger than 15 years (especially those younger than 5 years.)" <sup>3/</sup> There is little awareness, if indeed it is true, that these two problems are interrelated. High mortality rates among the very young in the poorest segment of the society would seem to favor high fertility. High fertility is associated with increased maternal mortality and morbidity, higher incidence of malnutrition among the children, and poorer family health in general.

The GODR in confronting health problems is hampered by a number of factors. Responsibility for the provision of health care is fragmented. No single entity is responsible for overall planning, nor is coordination of health services programs effected.

The Dominican Health Assessment asserts that management of the two principal providers of health care, the Secretariat of Health and the Dominican Social Security Institute, is poor. The programs of these two organizations were characterized as wasteful and inefficient. The complexity of the task, however, must not be underestimated.

#### B. ASSUMPTIONS

Three interrelated issues are central to an understanding of the problems of health in the Dominican Republic; first, rapid population growth and disease must be treated as interrelated phenomena; second, administrative practices of the several institutions involved in health

<sup>2/</sup> Decreto No. 2091, creating the "Consejo Nacional de Población y Familia." February 14, 1968.

<sup>3/</sup> "Política de Salud: Período 1973-1980," Secretaría de Estado de Salud Pública y Asistencia Social, Santo Domingo, September 1973.

care must be improved if health services are to be expanded and improved; and third, in terms of resource allocation and program orientation, more emphasis should be given to preventive rather than curative medical care.

#### B.1. A Crisis Exists

As of this moment the Dominican population has grown in excess of the nation's capacity to provide it with adequate food, housing, decent drinking water, and educational and health services. If birth rates remain unchanged, the population of this country in ten years will reach 7.0 million people. With a fairly rapid decline in fertility, the Dominican population would reach 6.7 million by 1981. Of course, the latter course of events would mean enormous savings for this country. As shown elsewhere in this assessment, even a modest decline in fertility could result in a savings of \$30 million over a ten year period in the field of primary education alone. Other savings would accrue in water and sewerage facilities, hospital construction, housing, etc. Nonetheless, resources will be strained to meet the needs of so many people, even with declines in fertility.

#### B.2. Appropriate Measures can Improve Health

As documented earlier, not all health programs bring beneficial effects to their recipients. Some approaches, which include maternal and child health programs, the provision of potable water, and improved nutrition, favorably influence morbidity and mortality rates, particularly among the very young (those under five years). As has been repeatedly emphasized, it is declines in this age group that are associated with subsequent declines in birth rates, one of the clearly stated aims of the GODR.

#### B.3. Priorities are Focused on the Poor

The Dominican Health Assessment has asserted that the greatest single health problem is inadequate nutrition. (Many would suggest, as stated above, accelerated population growth.) It has also stated that nutritional status is a function of income. No one would doubt that this is a major factor, but not the only one. Those with low intake of protein and calories are those who suffer the highest rates of illness and mortality and bear the greatest number of children. If the overall state of health of the Dominican people is to improve -- and birth rates are to decline -- priority must be given to helping those who need help most -- the poorest elements of the society.

#### B.4. Services Must Be Taken to the People

The GODR has invested large sums of money and human resources in creating a network of health services: hospitals, sub-centers, health centers and rural clinics. The orientation of the current health system is toward traditional medical services on a one-to-one basis. It does constitute an infrastructure for health. This system is not fully utilized. The Dominican Health Assessment pointed out that the percentage of beds occupied in hospitals with 100 or fewer beds (and most hospitals of the Secretariat of Health have 100 or fewer beds) varied from 66 percent to 28 percent. Repeated visits to out-patient facilities such as health centers and rural clinics offer the visitor a panorama of sparsely populated waiting rooms. In this society, particularly in rural areas, where suspicions continue to exist about "hospitals," services must be carried into the home. This approach has been shown to be effective elsewhere and, indeed, in the Dominican Republic by such entities as the National Malaria Eradication Service.

#### C. ESTABLISHMENT OF GOALS

##### C.1. The Potential For Reform

A most hopeful sign on the horizon in this regard is the concern of the highest levels of leadership in the Dominican Republic. There is recognition of the problem of rapid population growth. This is a matter of public record at home and abroad. There is interest in providing better health services to the disadvantaged segments of the society.

The Dominican Health Assessment has created some awareness of the nature and magnitude of the problems of health in this country both within the Government and the private sector. The Secretary of Health in particular is cognizant of health problems.

The willingness of the GODR to undertake reforms in the health sector would afford a suitable environment for requesting and accepting external aid. Previous AID assistance in health, which was not predicated on policy reforms, has also produced results that are considerably less than optimal. The willingness of the Government to allocate more of its budget to population, health, and nutrition (or to effect significant reallocations within the existing budget toward these activities), would help to signify the willingness of the GODR to carry out certain needed changes.

## C.2. Assets Available to Improve Health and Reduce Population Growth

The Dominican Republic has experienced much economic growth, and political stability in the last eight years, and future prospects continue to be encouraging. As a result of major increases in world prices for its principal exports, one can expect that Government revenues and foreign exchange reserves will increase substantially in the short run. Some of these financial resources could be made available for additional programs to improve health.

An institutional base also exists for expanded health activities. Moreover, there exist specific institutions with administrative capacities which could be more directly employed.

Infrastructure in terms of physical facilities, communications systems, roads and transport all exist. Moreover, the country is small and nearly 50 percent urban, so that services can relatively easily be made accessible to a substantial portion of the population.

Human resources for health and health services also exist. There are 2,000 health professionals, and many thousand more auxiliary health workers trained and working in the field. Similarly, other sectors that have a major impact on health (public works, agriculture) have competent persons who might be used for intersectoral health support activities.

### GOALS

The identification of national goals for health programs is difficult. Many variables influence the state of health of a given society and are beyond the control of health planners. For example, a reduction of the unemployment rate by 5 percent in the Dominican Republic would have a most salutary but unquantifiable effect on health. Similarly, an increase in the unemployment rate by 5 percent would have most unfavorable repercussions in terms of malnutrition and its associated mortality. Health professionals have little or no influence over such matters.

There are few appropriate guides and useful models are rare. The benefits of health are only occasionally quantified.

Despite the difficulties in doing so, goals must be set and an evaluation mechanism must be instituted to assure that progress is being made. In the event that changes in mortality cannot be demonstrated, additional program inputs or alternative measures must be considered.

Maternal and child care programs do reduce infant mortality, and similarly, better nutrition reduce mortality in the one to four year age group. These programs, together with ready access to family planning services by those who desire them, should favorably affect birth rates.

The following goals related to reduction of fertility and mortality are indicative of those which the GODR may wish to consider:

<u>Indicator</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>
Infant Mortality	104	80	60
Preschool Mortality	16.8	14.0	11.0
Crude Death Rate	14.7	13.3	11.5
Crude Birth Rate	47.5	47.5	37.6

If these sample goals were achieved, there would be a slight increase in the annual rate of population growth at the mid-point of the program. However, the rate of annual growth would decline from its present level of about 3.3 percent to 2.6 percent by 1989. (International migration is assumed to be constant.)

Achievement of such goals would not be an easy task, but could be achieved. Should the GODR elect to establish such demographic goals, measurement of progress toward goal achievement becomes very important. Complete and accurate data are not now available. A dual registration system approach would need to be established. Based on random selection of study areas, would offer the best means of measuring demographic change where national registration of vital events is inadequate.

In areas where low cost delivery systems are implemented, program targets should be established for the percentage of pregnant women receiving prenatal care, the percentage of children under the age of fifteen years to be immunized against specific diseases, etc. Program evaluation is meaningful when the size of the population at risk is known. The dual registration system is immediately useful in this regard.

#### D.1. Health Services

The Dominican assessment gives priority to the long term development of a more efficient system of health services with coverage increasing from approximately 50 percent to 100 percent of the population as quickly as possible. While it does not provide time schedules, it is estimated that the increase in coverage could be effected in six to ten years with application of more cost-effective procedures such as vaccination.

The Dominican assessment may be optimistic about timing. For example, it recognizes that a small but significant proportion of the population lives in isolated mountainous areas. It proposes to delegate the responsibility for the provision of basic medical health services in these areas to the Armed Forces. As noted earlier, the Armed Forces have had experience in civic action programs and the Secretariat of Agriculture was well satisfied with assistance in Agricultural Extension by the Armed Forces. This proposal by the Dominican team is thus well-founded, but the proposal assumes an additional function for the Armed Forces. There might be some little time before putting such activity into effect.

The Dominican assessment suggests that the State Sugar Council (CEA) should be given the responsibility for providing health care for its workers. It has already assumed this responsibility, but expenditures per capita while higher than SESPAS are lower than IDSS. A higher quality of services would seem indicated and well within CEA's current income possibilities.

If the GODR were able to provide efficient, basic medical services to 75 percent of the population of this Republic, within a relatively short time span, this would be considerably better than the governments of most developing countries.

Strengthen the Secretariat of Health. The principal reform proposed in the Dominican assessment is the development of new outreach divisions in the Secretariat of Health which would provide cost effective services to meet the currently unmet and perceived health needs of the majority of the population. While highly critical of organization and management, changes are suggested but not developed in detail. Furthermore, most advocated changes are more program than management oriented.

Within the Secretariat of Health current structure, the Dominican Assessment team proposes:

1. Strengthen the Department of Planning and Programming.
2. Provide increased implementation capabilities through contracts administered by the Planning and Programming Department for:
  - a. Health Services Design
  - b. Human Resources Planning
  - c. Physical Resources Planning
  - d. Organization of Health Education Programs
3. Strengthen the regionalization program of the Secretariat more rapidly to extend the supervision of the Secretariat to cover all of its facilities.
4. Request foreign technical assistance for major reform of the administrative and management procedures of the Secretariat.

The Dominican Assessment team concludes that such changes would equip the Secretariat to accept greater responsibility at a later date and to play relatively soon a more active role in coordinating sector activities as well as operate an extended service system more effectively.

These proposals appear desirable. Experience suggests that accomplishing the aims set forth in the Dominican assessment would be an extraordinarily difficult task. Nevertheless, if these in fact become the goals of the GODR, much can be achieved. It is reasonable to assume that there would be a favorable disposition in external aid agencies to help if asked.

The Department of Planning and Programming of the Secretariat of Health will might be able to put together a well-conceived design for human resources planning. If the Dominican assessment is correct in its conclusions of management inefficiency, execution of such plan will be more difficult.

There are competent professionals in the Secretariat of Health. They carry a heavy responsibility and their capacity to undertake additional tasks efficiently would have to be considered most carefully by the Health Secretary. Additional competent staff would be needed to effect any comprehensive changes and improvements. Some structural and procedural changes in the Secretariat might permit more effective utilization of the professional expertness which does exist.

A Personnel or Human Resources Division that could maintain accurate information on the physical location of the Secretariat's employees would help the Health Secretary mobilize and allocate his personnel to areas of greatest need. An Auditing and Inspection Division that kept up-to-date records of receipts and disbursements would be an asset. The regionalization program once it is in effective operation would provide a greater measure of supervision of the Secretariat's professional personnel in the field. These institutional reforms which are among a long list prepared by the Dominican Assessment group could net early beneficial results.

Other Personal Health Services. The Dominican assessment also proposes that the institutional capacity to organize and coordinate the private medical sector be increased. While no specific mechanism is described, the intent appears to be to convene a special Presidential commission for this purpose. It also recommends that measures be taken to allow individuals and agencies to choose between alternative insurance programs, rather than require that coverage by the Dominican Social Security Institute be maintained by all industrial institutions. There would seem to be ample opportunity for improvement of existing governmental institutions before taking on additional tasks and responsibilities.

Resource Development. The Dominican assessment contemplates the retraining and continuing education of a large number of basic, primary care providers -- volunteers, "practicantes," and traditional midwives. It identifies the need to shift the emphasis from formal and traditional medical training to training of intermediate level personnel (laboratory, nursing, administrative, etc.). While not explicitly mentioned, a major reform of medical education is implied by the CURAR system, since the traditional hospital-based medical training would be modified to include strong elements of participation in outpatient services, community health, and preventive medicine. By virtue of its simplicity, potential for wide coverage of those most in need, and low cost, this proposal has the possibility for widespread beneficial results quickly.

#### D.2. Population

The Dominican longer-range conclusions identify the interrelation of socio-economic development, health, and reduced population growth. It recognizes that achievement in each tend to produce improvement in the others. As one element in their strategy they propose to:

1. Make family planning services easily accessible to the entire population through all health services and channels, including pharmacies and neighborhood stores (colmados), and through traditional midwives.
2. To extend coverage of mass media family planning education and motivation programs to cover the entire population.

This assessment recommends that the technical capacities of the National Council of Population and Family (CONAPOFAO) be strengthened. Additional financial and technical assistance are identified as necessary for accomplishing this.

The assessment also recognizes the importance of the private sector in the national population program and recommends that the Government continue to encourage the development of the Asociación Dominicana Pro-Bienestar de la Familia.

The proposals of the Dominican assessment group in the population/family planning area are positive. The range of options set forth are nevertheless few given their conclusions about the importance of reducing the rate of population growth. There is no discussion of the pros and cons of incentives, post-partum programs, etc.

The Dominican assessment group confirms the importance of the Dominican Association for Family Welfare but does not suggest a greater measure of governmental financial support. The CODR has given it primary responsibility for all educational and motivational programs in family planning. Yet, this organization is almost totally dependent on international donors for its resources.

#### D.3. Nutrition

The Dominican assessment proposes that the long range aspects of a national nutrition program include:

1. Increased production of staple foods.
2. Subsidies of rice and bean prices.
3. Control of prices of food staples.
4. Programs to improve income distribution by increasing employment.
5. Food supplementation for children less than two and for lactating mothers.

It suggests that it will be necessary to create a national nutrition planning and implementation institutional capacity. They propose that this problem is "sufficiently important that the President of the Republic should himself take direct responsibility" for nutrition policy. They recommend that INESPRE is the most probable agency to be able to operate the program, and that it be strengthened institutionally for that purpose.

While a number of specific measures are suggested, particularly in areas where they explicitly disclaim expertness, how these related to each other, or what the goals are is unclear. Nor is it clear what the institutional capacity to be created is to do.

#### D.4. Environmental Sanitation

The Dominicans note that "in general terms the needs to improve environmental conditions are greater than investment possibility for the next several years, requiring a change in the strategy or policy of investments if one wishes to effect a notable improvement."

The programs they suggest are to:

1. Increase the construction of water systems for cities of more than 5,000 population.
2. Planning, administration, and operation of these systems by decentralized entities (CAASD, INAPA).
3. Achieve 75 percent coverage of rural population for water supplies.
4. Study various alternatives for sewerage systems for Santo Domingo.
5. Provide sewerage systems to all cities with population greater than 10,000.

While priorities are suggested, it will be up to the CODR to decide how it wishes to allocate its resources. Implicit in their conclusions is the necessity to effect major institutional changes. They suggest the need to:

1. Strengthen the institutions in the sector.
2. Improve data collection and processing.
3. Realize a more complete study to define priorities, costs, and benefits.
4. Develop and execute a national plan for aqueducts and sewerage system construction.
5. Review and revise the pertinent legislation for the sector.
6. Improve institutional coordination in the sector.

#### D.5. Immediate Impact Programs

As pointed out, the Dominican assessment does not detail its ideas on program and project planning for immediate impact programs. In the following pages some immediate program alternatives are set forth, as identified and described by the Dominican team.

Low-Cost Delivery Systems. Low-cost health services delivery systems are to be developed on a pilot basis immediately. They are intended to have direct impact on communicable disease (serving the total population by 1975), on use of family planning services (serving approximately 560,000 persons by 1976), and on mortality from diarrhea, and other simple disease (also serving approximately 560,000 persons by 1976). They are intended to be the vehicles by 1978 for low-cost food supplementation programs. Mortality because of eradicable diseases is concentrated in children, and represent 6 percent of all mortality. Malnutrition is an even greater factor of child deaths. A mass campaign would have the possibility of achieving great impact. The number of women with easy access to family planning services is proposed to be doubled.

Development of the low-cost delivery systems is now planned for near term implementation. The Secretary of Health has already announced at a formal press conference that he will present a plan for the rural health service, SANAR, to the President before the end of the year, and request authority to make the Malaria Eradication Service into the implementing agency. The National Health Council has approved plans for a national tetanus inoculation campaign in early 1975, intended to be the first activity operated through the new service.

SANAR will be used to provide national coverage for malaria, tetanus, and certain communicable diseases immediately. The first phase of development of the family planning, health promotion, and automedication program will be run for 500,000 people for two years on a pilot basis, starting in late 1975.

The first experimental clinic of CURAR, the low-cost urban system, is to go into operation in the Roscoso Puella Hospital on December 3, 1974. The experience from this project will be used in the design of a six-clinic pilot program which will be operational in 1975. Experience in the pilot program after two to three years is to lead to the initiation of the national program to cover 30 percent of the urban population.

Food Supplement Programs. Since malnutrition is directly or indirectly implicated in nearly two-thirds of preschool child mortality in Latin America, and since malnutrition is noted in 70 percent of Dominican children in a sampling of middle and low income families, a food supplement program specifically aimed at children is proposed. A program could have major impact in achieving health goals of reducing mortality of this critical group. The most critical target groups are pregnant and lactating women whose food intake influences infant and child health and children less than two.

Two applied research efforts are recommended by the Dominican Health Assessment team to be initiated immediately in order to design appropriate low-cost high-protein foods for production in the Dominican Republic for mothers and children less than two years of age and to improve the food enrichment program designed for the Dominican Republic.

Potable Water Programs. Since child diarrhea is one fourth as common in households with water than in comparable households without easy access to water and gastro-intestinal problems are the principal cause of mortality in children, expansion of household water services would also have a major impact on the goals of the health sector.

Programs to bring water to Santo Domingo, Santiago, and to larger rural localities are recommended by the Dominican assessment.

The Dominican assessment group felt sufficient coordination does exist in the provision of water to secondary cities that a coordinated national program could be initiated immediately.

Similarly, it is recommended that a major effort be undertaken to plan a self-help water supply program. Such a program would reduce per-capita costs of \$66 to approximately \$5 per household. It is estimated that working through SANAR, it might be possible to reach 50 percent of the rural population with water services by 1980 with such a self-help program and appropriate outside assistance. This contrasts with current programs which plan to reach 25 percent of the population.

Population and Health Education Programs. Studies have shown that mass media education programs favorably affect the utilization of family planning services in the Dominican Republic. Similarly, simple changes in behavior, such as increased breast feeding of infants and improved hygiene, could greatly reduce mortality. Therefore, a health and population education program is proposed by the Dominican assessment program.

Using the radio time available through an extensive network of radio stations, the proposed mass media education office of the Secretariat could begin a major program during FY 1976, to provide such education to the entire population.

E. JUSTIFICATION OF THE STRATEGY

The strategy of the Dominican Assessment is essentially conclusion-reaching and program-recommending. It is weakest in problem areas designated as the most serious: malnutrition and rapid population growth. It is strongest in some traditional health areas. It is innovative and promising in three important respects. its public health orientation, its emphasis in low cost delivery systems, and its concern about the need for improved governmental health management. Despite certain weaknesses, it provides ample scope for health sector improvement. The issue of whether or not the Dominican strategy can be realized is important. The CODR has stated the problem of rapid population growth to be of priority importance at the highest level of the Government. It has made a commitment of resources in the existing program. These resources are, however, less than the program can efficiently absorb. The Dominican assessment has identified improved nutrition and environmental sanitation as critical for improving the health of the society, and has provided more specific and comprehensive proposals re the latter. The recommendations encompass these inter-related problems to some extent.

The Secretariat of Health has the legal responsibility for the health of the Dominican people, but institutional weaknesses, attributed by the Dominican Assessment group, would place severe limitations on the capacity of the Secretariat to implement the programs suggested. Weaknesses are also attributed to most other governmental institutions charged with responsibilities in health. A constraint analysis in this respect was not done.

The Secretariat of Health is more oriented to public health needs and has national scope. Moreover, it has the constitutional and legal authority to coordinate the sector. To seek to institutionalize health sector planning and coordination functions in any other institutions would appear inappropriate. The task facing the Government is how to improve its capability.

The Dominican Assessment group found there to be no institution in the Dominican Republic that has the capability of creating a rational nutrition policy or developing an effective nutritional emphasis in government programs.

Lastly, while INAPA is charged by law with the responsibility of implementing water programs, for good and sufficient reasons it is a participant without exclusive responsibility. If its potential is to be realized, its capability should be strengthened. At the moment this area of activity is in some disarray.

The benefits of constructive programs in the foregoing areas will not be apparent for some years. In view of the urgency of problems of health and population growth, decision-makers will undoubtedly need to take those steps which will provide relatively immediate beneficial effects. A low-cost delivery system of basic medical care, including nutritional advice and family planning services for those who wish them is envisioned in the Dominican assessment.

#### F. POTENTIAL FOR COOPERATIVE PROGRAMS

The Health Sector Assessment was undertaken with various purposes in mind. The Secretary of Health wanted a current assessment of its health problems as a basis for policy and program formulation. The assessment process was to provide an opportunity to improve professional capacity in the Dominican Republic to perform this type of analysis. An assessment would help external lending agencies to evaluate requests for loans.

The Dominican team was seriously delayed in finishing the assessment, the last section reaching USAID/DR in final draft on November 30, 1974 rather than September 30 as earlier scheduled. Further, neither the GODR nor the USAID have had adequate opportunity to review, much less discuss the assessment. In addition, much benefit can be derived by discussions with other international lending agencies contemplating cooperative health programs in the Dominican Republic. Specific definition of cooperative programs at this time, therefore, is not possible. However, there would appear to be ample opportunity for such cooperation to develop.

## APPENDIX I

### ANALYSIS OF PREVIOUS AID HEALTH RELATED PROGRAMS

In the preparation of future health programs, AID should examine its prior experience in health, in order to ascertain what lessons can be drawn. The principal AID activities in the Dominican Republic which are judged pertinent to this inquiry are:

1. The series of projects that involved construction or remodelling of hospitals, sub-centers and rural health facilities, training, and technical assistance to the public health sector.
2. A loan program which provided some foreign exchange availability to the private health sector as a minor proportion of total effort.
3. The PL 480 Title II program.
4. The recent Dominican Health Sector Assessment.

#### Health Loans

There have been a series of programs with large portions devoted to the construction of health facilities. One such project involved RD\$1.5 million for the construction and reconstruction of sixteen rural health centers. 1/ A second project 2/ supported the Armed Forces Civic Action program in constructing three rural health centers. The most recent and largest involved a loan of US\$7.1 million, the Maternal and Infant Care Loan (MIC), 517-L-021, which had the following components: 3/

Construction	47.2%
Equipment	31.0%
Education & Training	14.7%
Technical Assistance	3.0%
Special Studies	2.4%
Mass Media	1.7%

- 1/ Investment Budget Agreement No. 19.  
2/ Memorandum of Understanding No. 2.  
3/ See Appendix II.

One notable aspect of this loan was the over-optimistic statements of goals and objectives. In particular, an unrealistic estimate was made of the effect of this program on population growth. At this time, more than five years after the date of the signing of the loan, there is no objective evidence that the birth rate has decreased as a consequence of this loan. More importantly, it must be added, that even if totally successful, the program as proposed could not have been expected to have had an appreciable impact on population growth or birth rates.

Seventy-eight percent of total loan funds were expended on the construction and equipping of 45 health facilities. The work was distributed as follows:

	<u>NEW</u>	<u>REMODELLED</u>	<u>TOTAL</u>
Hospitals	1	5	6
Sub-Centers	7	4	11
Rural Clinics	<u>26</u>	<u>2</u>	<u>28</u>
Total	34	11	45

The improvement of five hospitals and the construction of a new hospital (in replacement of an older one) may be expected to have significant social benefits, to create employment, and to improve hospital medical care. Similarly, of the 39 sub-centers and rural clinics, many projects remodelled or replaced existing centers and could not be expected to increase greatly the outreach capability of the health system.

Visits to 20 of the 39 sub-centers and rural clinics in November 1974, indicated that seven were not yet operational. (Two incomplete centers were operating, and three completed clinics were not yet operating). Of the 13 operating facilities, five offered no family planning services, and two were being used by a private agency to offer such services.

Construction took considerably longer than planned. These delays were due to: (1) unrealistic mission planning; (2) "normal" unforeseen problems; and (3) a contract bidding procedure consistent with GODR practice, but which awarded all construction to one contractor who was unable to carry out so large a task. When an AID bidding procedure was instituted for Phase II, the same contractor was permitted only limited qualification by the Dominican review committee.

The fact that facilities that are completed are not offering services and that facilities offering services are not offering the proposed family planning services, reflects on the administrative capacity of the Secretariat of Public Health. In all facilities visited, staffing was inadequate and services fell far short of the needs of the target population. Unless the Secretariat demonstrates more management capacity, these facilities will continue to be under-utilized. More diligent and longer preparation of the Secretariat for the staffing requirements of these centers might have improved the situation somewhat, but it appears unrealistic to assume that measures could have been found to correct the basic inability of the Health Secretariat to carry out a loan of this particular character within the time period projected.

Education and training have been an important element in the loan, accounting for 14.7 percent of the total expenditures. Funds were provided to enable the Secretariat of Health to provide training for provision of family planning services. The overall impact of this effort is assumed to have been positive in that it has set a precedent for career, in-service training and has produced a corps of non-professional health workers. There was no built-in evaluation system. Thus, it was impossible to evaluate objectively performance retrospectively.

Technical advice was supplied to the Secretariat by PAHO during the period of this loan, and consequently requirements on AID funds for technical assistance were somewhat less than originally expected. The technical advisors were able to develop a number of administrative procedures for the Secretariat, typically for loan implementation activities, that were innovations and improvements. Their success has been limited in two respects: (1) some of the innovations such as modern procurement practices have been limited to procurement under AID lending, and (2) the preventive maintenance service has not been fully implemented.

Special studies were included in the loan, which while small in size, were of potential importance. These studies included the evaluation of the loan and an investigation of administrative reform for the Secretariat. In the first five years of the project, these studies were not carried out. One study of a different nature than that planned was done about the knowledge, attitudes, and practices related to family planning. In 1974, three large sample surveys were conducted, using loan funds, in partial support of the Health Sector Assessment.

One of the proposed studies on revision of the Health Code of the Dominican Republic was not carried out under the loan, but was, in fact, attempted by PAHO and the Secretariat. This report has not yet been published. The failure to carry out an organizational and management study of the Secretariat may indicate a reluctance to take reform measures which might be proposed. Future lending by the international lending community could not reasonably be expected by the GODR in the absence of progress in this area.

The sample surveys carried out as part of the Health Sector Assessment suffered defects in design. Time and resources available were inadequate for thorough analysis. The multiple responsibilities of personnel in charge of some surveys also complicated the process. Thus, in spite of the hard work of Dominican professionals, the survey results were less than had been hoped for. Thus, in the future greater emphasis should be placed in assuring the feasibility of such research proposals, on assuring that the authorized personnel are competent to carry out the survey, and in providing technical assistance to assure the quality of analysis.

The lack of completion of the evaluation function in this loan (even though such studies could have been funded under the loan) is illustrative of a general lack of evaluation activity in the health sector. Appropriate information and evaluation systems are a key factor in management, and their absence has serious repercussions. The development of an adequate evaluation system should be agreed as an integral part of any future loans.

The mass media portion of the loan, instead of being utilized for a large-scale communication project, was redirected primarily toward payment of salaries for ten family planning promoters for a two-year period. These individuals worked on a door-to-door and small group basis. Since there are now more than 100 family planning clinics in the Dominican Republic, the effect of these promoters is not likely to have been significant. The salaries and costs for this program are high. Hence, it probably could not be replicated on a national basis. The balance of these funds financed a school teacher training project in family planning, nutrition and health and were probably used in a cost-effective manner. The ADPBF, however, did conduct an effective mass media program for family planning during this period. Future health loans should include more effective project selection criteria.

### Fund for Investment for Economic Development

For several years, AID has supported a private investment fund operation called Fondo de Inversiones para el Desarrollo Económico (FIDE) some of which has been used to make foreign exchange available in the private sector, including a number of private health clinics and hospitals. FIDE monies are maintained at central banks for relending to commercial banks for private sector loans.

### Health Sector Assessment

The recent program to support a Dominican Health Sector Assessment appears to have served a useful purpose. A document was produced with well-thought out program recommendations in a number of areas. Improved health of the population could be expected if carried out. Furthermore, the value of this effort will depend on its future effects in terms of reorganization, planning, programming, implementation, and evaluation.

It is again noted that administrative problems greatly complicated the assessment. The assessment was carried out by an ad hoc team and there was little participation of the professional staff of the Secretariat in the assessment. 4/

The preceding paragraphs, in searching for lessons in AID experience in the health sector in the Dominican Republic, have tended to focus on problems. An incorrect and overly negative impression may thus have been created. In fact, the overall effects of AID health programs have been undoubtedly beneficial. The continued support and interest in the National Council of Population and the Family, which has been part of this program, has been of major importance to that organization. During the period of this assistance, the Council has led a program which has created public and governmental concern for the problems of over-population. It has gained wider acceptance for the idea of a family planning program. Similarly, the physical infrastructure and human resources for the delivery of health services have been significantly improved.

---

4/ Not of PAHO advisors who were depended upon to provide complementary technical assistance to that provided by AID.

Therefore, significant potential does exist for health programs. In order that the benefits from such programs be widely distributed to the poor, however, means will have to be sought to strengthen the institutional capacities of the Secretariat of Public Health. Programs will need to be more directly focused at those most in need. More care will have to be taken than in the past not to overburden the capacity of Dominican institutions and to identify program goals and objectives that are realistic.

## APPENDIX II

### ANALYSIS OF OTHER DONOR ACTIVITIES

The assistance of donors to the health sector has been fragmented and uncoordinated. There has been a concentration (and, at times, duplication) of activities in a few key areas, such as family planning and nutrition education, while there has been little activity in other critical areas, e.g., preventive disease campaigns. Future programs of all donors would be more effective if they were complementary to Dominican priorities and to each other. A technical advisory committee to the Secretary of Health might prove useful to help achieve this purpose.

What follows below, is a brief outline of other donor activities by health subsector.

#### Family Planning

World Bank. Although the World Bank has not been involved to date in the area of family planning, a loan request from the office of the Presidency of the Dominican Republic to expand such activities is currently under consideration. Concentration of loan supported activities would be on human resource training and on the development of health posts in one of the rural areas to extend general maternal and infant care, including family planning services. In the spring of 1974, a bank preappraisal team visited the Dominican Republic and prepared a Pre-Appraisal of a Family Welfare Project. The findings of the spring report led to the following recommendations:

1. Low and inequitable salaries are the underlying factors behind the reason why SESPAS has not been able to attract enough qualified staff. For SESPAS to be an effective vehicle for the promotion of family planning, it must have adequate funds and staff and effective supervision. The staff must also have a high commitment to family planning.

2. Management training (preferably in-country) of top and middle level personnel of SESPAS, CONAPOFA, and other related agencies is needed. Such training would be expected to:

- a. Create a unity of leadership style in SESPAS and CONAPOFA.
- b. Create a regularized delegation of authority and responsibility.
- c. Clearly define functions of the different units of the organizations (SESPAS and CONAPOFA) and clarify job descriptions of personnel.
- d. Establish better communication and coordination between related agencies.
- e. Formulate uniform technical and administrative standards and operating procedures for better program direction and supervision.
- f. Improve the recording and reporting system.
- g. Improve policy, administrative, and operational planning.
- h. Ensure proper budget allocation based on program priorities

3. A unit of health manpower planning and staff development in SESPAS should be created and the possibility of establishing a MCH/Family Planning Institute might be considered. This unit could be responsible for the establishment of at least two regional training divisions of SESPAS and CONAPOFA.

4. A physical planning and maintenance unit should be established to be responsible for:

- a. The equitable distribution of existing health facilities.
- b. The upgrading of inadequate facilities and the construction of new ones where these do not exist.
- c. The upgrading of the operating functions of physical facilities and the setting of standards for construction, utilization, and maintenance of buildings and equipment.
- d. The establishment of a system to ensure that an increased demand for adequate health facilities and services will be met. (A system of licensing or certification may need to be studied).

5. A Family Health Statistics System in SESPAS should be established which would provide a statistical basis for the continuous evaluation of the MCH/FP program and the project.

6. A curriculum for a new category of "technical nurses" should be formulated and implemented in collaboration with the Secretariat of Education and with the cooperation of the PAHO nursing education advisor.

7. There is a need to provide a larger and better equipped building for the present SESPAS school of nursing and for further re-examination of the present nursing curriculum. (PAHO/WHO could provide required technical assistance.)

8. Public Health concepts with emphasis on MCH, population dynamics, and family planning should be integrated into the basic curriculum and in-service training of medical, nursing, and other paramedical students and/or personnel.

9. The traditional medical point of view that has characterized the doctor's role should be redirected to develop a combination of orientation and skills that will be relevant to family planning (e.g. socio-psychological and cultural factors and their relationship to fertility-related behavior and the development of skills in policy planning, politics, human organization, behavioral change, etc.).

10. There is a need to make family planning program strategies more effective; more commitment and effective use of additional resources will be required by CONAPOFA.

11. A group should be established to study the introduction of family life education in teacher-training institutions and schools and in non-formal education for out-of-school youths and adults (possible technical assistance from UNESCO).

12. A continuing national effort should be made and directed at reaching the different target groups (not only eligible women). This effort should utilize varied media approaches and techniques with messages suited to the degree of sophistication of the various target groups.

13. The information and education components of the family planning program need to be reinforced by person-to-person contact (through clinics, home visits, etc. ODC Community workers could be utilized).

14. A joint Educational Production Center should be created which will develop capabilities and increase and upgrade staffing for the production of mass media materials for family education planning; for the use of CONAPOFA and the Asociación Dominicana de Bienestar de la Familia (ADPBF).

15. The construction and equipping (including transportation and communications) of rural health clinics and sub-centers in selected locations and of regional training centers in Santiago and San Pedro de Macoris for the delivery of health care services, including the preparation of qualified training staff, are needed.

16. An experimental area using an integrated comprehensive community health care approach should be developed which can also serve as a field practice area for base and in-service training for medical, paramedical and auxiliary staff as well as other community workers.

17. Personnel should be exposed to the above described field practice area. This would shift the orientation of trainees from the hospital to community health services. The World Bank representatives have stated, however, that they will utilize the Dominican Health Sector Assessment as a basic document for their strategy planning.

UNFPA/GODR. UNFPA is playing an important role in providing financial support and technical assistance to CONAPOFA for implementation and evaluation of the national family planning program. The collaborative effort of these institutions have resulted in recent substantive program improvements. There has been continuing activity in program evaluation, especially with regard to estimates of the number of women currently practicing contraception. The number of clinics offering family planning services is increasing at an accelerating rate, and graduate nurses are inserting IUDs while auxiliary nurses are prescribing the pill. The foregoing have resulted in substantial increases in the number of new family planning acceptors in recent months.

#### Nutrition

Interamerican Development Bank (IDB)-PIDAGRO Project (Proyecto Integrado de Desarrollo Agropecuario). IDB has made a US\$24.8 million loan to the GODR for the Agriculture Sector. The total projected project costs are US\$37.2 million with a four-year disbursement period. The loan concentrates in two areas: livestock and crops. This project is discussed in detail in the AID Agriculture Assessment.

Fishing Cooperatives. The GODR has obtained a loan from the IDB of \$1.6 million for deep sea fishing and processing. Because of additional cost requirements and other factors this loan may not be activated.

Although fish is an excellent source of protein, there is little demand for fish in the Dominican Republic. At the present time, seafood storage methods are poor and there is a reluctance on the part of most Dominicans to purchase local fish. Markets serving the poor barrios and rural areas do not have refrigeration or freezer capacity. Possibilities in other processing methods such as salt drying fish should be explored (imported salt cod was a sought after food until its price made it unavailable to the lower classes).

The Peace Corps has been active in nutrition. There are 47 volunteers involved in nutrition and agriculture. This work is comprised of three projects: (1) support staffing for CARITAS food distribution and nutrition education program in the Southwest part of the country; (2) assistance to the State Sugar Council (CEA) nutrition program by fiscal year 1977; and (3) work with the Dominican Agrarian Institute (IAD) in developing improved nutritional levels in resettlement areas for the agrarian reform program.

CARE in conjunction with SESPAS is conducting classes in nutrition education as the educational component of its PL 480 Title II supplementary feeding program.

Catholic Relief Services (CRS) is concentrating the major part of its efforts in the Southwestern region. Working through its Dominican counterpart, CARITAS, it spends about US\$19,500 yearly for applied nutrition programs. It is utilizing a nutrition team, composed of a para-nutritionist, a nurse, and an agronomist and is backstopped with PCVs. Recently, a British volunteer (nutritionist) has also starting working in the area. CRS/CARITAS is also using mass media techniques, but those in use were not designed for use in the Dominican Republic and require additional research to determine their effectiveness.

Church World Service (CWS) through its counterpart Servicio Social de Iglesias Dominicanas (SSID), provides health education in diet, health care, hygiene and child care. In cooperation with SESPAS, it provides contraceptive supplies and financial support for mobile and demonstration teams in areas of population and family planning as a follow-up to a nationwide Pap smear project for which CWS supplies slides and supplies.

In 1973, CWS/SSID opened a nutritional rehabilitation center (mothercraft center) which is unique in the Dominican Republic. Although this center follows a basic design of providing health and nutritional

education with medical care. It currently depends in part on PL 480, Title II donated foods which, of course, are not available on a commercial basis.

### Health Services

World Health Organization/Pan American Health Organization (PAHO). Operating under a basic agreement with the Dominican Government, PAHO provides a wide range of supporting technical assistance, including malaria and tuberculosis control; nutrition; and physician, nurse, dental, and sanitation engineering education to the Secretariat of Public Health and Social Assistance (SESPAS). Assistance is centered around nine full-time in-country staff as well as consultants available on request. Within the area of general health services, PAHO staff have been instrumental in the design and implementation of the national regionalization plan.

PAHO also provided significant input to a ten-year Activity Implementation Plan (1970-1980) of SESPAS which outlines basic policy and budget planning for that decade.

Servicio Nacional de Erradicación de la Malaria (SNEM). SNEM originated as a result of a tripartite agreement between the GODR, PAHO, and UNICEF. SNEM activities are comprised principally of the prevention and control of malaria. In addition to its malaria activities, SNEM has provided a small scale delivery outlet for elementary rural health services.

CARE. In cooperation with SESPAS, the CARE/MEDICO program is providing specialty training programs within the medical profession. Instruction in Orthopedic Surgery, Operating Room, Nursing, Pediatrics Nursing, In-Service Nursing, and Buco/Maxillo/Facill Surgery are being conducted in major hospitals in Santo Domingo.

The CARE/MEDICO program in Orthopedic Surgery has been instrumental in the creation of the Dominican Association of Orthopedics (the first Dominican organization of professional medical specialists). Persons trained in the MEDICO project are required to serve one year in the interior in order to be certified.

CRS. The CRS parasite treatment program received an allocation of US\$42,000 from the GODR. The program is staffed by one full-time and one part-time doctor, a laboratory technician, a secretary, and one administrative person and is located in a center in Santo Domingo which treats approximately 1,500 persons per month. A mobile team comprised of these same center staff treats about 800 persons monthly.

Medical Assistance Program (MAP). The MAP program is sponsored by the Baptist Church of the Dominican Republic and administered locally. Services by a U.S. charitable organization with home offices in Winston, Illinois, include allocation of approximately 120 tons of medical supplies and equipment yearly valued at approximately \$60,000 for charitable distribution through some 40 private health centers located throughout the country. In addition to medical supplies and equipment, MAP in the past has provided direct medical assistance to state-operated hospitals and clinics through participation of volunteer specialists in short-term practical training exercises. Recently, MAP has brought in a mobile operating unit which is self-sufficient and is being utilized by U.S. voluntary medical teams on a rotating schedule in various rural regions of the country.

MAP is currently initiating, with the Government's approval, the in-country manufacture of essential medicines which will substitute for foreign donations.

#### Water Systems

IDB. Over the last several years, the IDB has been a major contributor to the development of the water and sewerage systems of the Dominican Republic. Loans from this organization to the National Institute of Potable Water and Sewerage for construction of aqueducts and sewage disposal facilities in various localities across the nation totaled over \$6 million in the five year period from 1969-1973.

IDB has a loan of \$18,600,000 as part of a \$23,300,000 project for a water system in Santo Domingo which was signed in November of 1973 with estimated completion in four years. The project includes construction of wells to increase water supply to Santo Domingo, some small distribution and pressure systems, and technical assistance for the design of a second phase which will include water and sewerage systems. Also included in the second stage plans is a dam on the Haina River and the possibility of a treatment plant. PAHO and a private firm (Boyle Engineering) are supplying technical assistance.

Other IDB infrastructure-oriented loans have also been instrumental in providing financial resources for projects for the two major cities of the Republic. These include the expansion of the Tavera Dam system to assure adequate amounts of water for the city of Santiago and its surrounding areas, and the creation of the Corporation of Water and Sewage Disposal for Santo Domingo (including the technical assistance necessary to handle the water treatment and distribution and sewage disposal needs of the capital).

IDB also has a rural water program in progress in cooperation with INAPA. This rural water program is for the construction of a series of potable water systems in towns outside of major cities and the capital. 162 systems have been built or are under construction; another 43 are to be built under the second stage of the loan.

World Health Organization/Pan American Organization (PAHO). In the area of environmental health, PAHO is providing administrative and managerial advice to INAPA including the provision of scholarships for training personnel. In addition to assistance on improving the nation's water supply, it also is currently active in conjunction with SESPAS in a rural-based latrine construction program to build 30,000 facilities per year throughout a large portion of the South and South-west regions of the country.

United Nations (UN). In cooperation with INAPA, the United Nations Development Program (UNDP) has provided resources in coordination with the World Food Program to the rural aqueduct construction project. Initially to be operational from late 1969 for a 21-month period, the project was extended into a second phase to terminate April 1974. Since inception of the project, 2,612 tons of Title II food valued at \$446,857 have been distributed to local workforces during their participation in the construction of 90 rural aqueducts to provide water service to 126,000 persons.

Others. In addition to the outlined assistance programs, numerous programs are run by church groups and civic organizations with financial backing from their headquarters in the United States. The activities in which they are involved are diverse, ranging from arts and crafts and alcoholic counseling to nutrition, health services, and family planning. Several churches reportedly operate free clinics for small communities throughout the country. Although there is no information on the exact location of these facilities, their general area of concentration has been in the poorest rural areas. While their scope of work is necessarily concentrated in a few areas due to limited staff and physical resources, they have a positive impact on the health status of the people served and on the morale of their communities.

## APPENDIX III

### SUPPLEMENTARY FEEDING PROGRAM

#### Some General Consideration Concerning the Effectiveness of the Program

The supplementary feeding efforts in the Dominican Republic can be subdivided into two categories: the supplementation program supported by the U. S. Food for Peace (PL 480 Title II program), and, other GODR Supplementary Feeding Programs which include Economic Food Kitchen/Cafeterias and the Maternal/Child Health ("MCH") milk distribution program. These two efforts are estimated to reach 12 percent of the population with some type of food supplementation.

The basic, long-term goal for this country would be to insure that all nutritional needs are met either by normal production or food importation, for which there would be adequate distribution systems. Supplementary feeding programs are justified as being an intervention that can provide immediate but temporary food supplements to "at risk"<sup>1/</sup> recipients until such a time that they are no longer considered malnourished. It is the hope that by providing food while offering some nutrition education, the recipients will not be permanently dependent on the supplementary feeding program.

However, the operation of PL 480 Title II programs in the Dominican Republic has in practice become centered around food replacement rather than food supplement. The concept is supported by the very name of the program itself, "breakfast program," which leads parents to believe food distribution is a meal in itself. In addition, meals are frequently served so late in the morning -- around 10 or 11 a.m. -- that parents may be actually reducing the amount of the family's food available to the child because they feel he or she has already been fed.

Since 70 percent of the population is suffering in some degree from malnourishment,<sup>2/</sup> it is clear that supplementary feeding programs are needed now in the Dominican Republic. Young children, from before birth through the first two years of life, are a particularly

---

<sup>1/</sup> Because of limited services, concentration should be placed on those most in need. This is usually done on a comparison of weight to age as compared to an accepted norm.

<sup>2/</sup> Sebrell, W. H. et.al., "Nutritional Status of Middle and Low Income Groups in the Dominican Republic" Archivos Latinoamericanos de Nutrición, Vol. 22. Número Especial. (July 1972).

vulnerable segment of the population, as are pregnant and nursing women whose nutritional status is reflected in their offspring. Thus, in theory at least, the MCH program of PL 480 Title II and the GODR milk distribution program are devised to reach this group. Unfortunately, the women and young children most in need are the hardest to reach. Frequently they find it not possible to come to the feeding centers. Consequently, the majority of the recipients in these programs are older -- not of an age when a supplementary feeding program will provide most benefit.

Even if the programs were able to reach the desired target group, the very nature of the programs is not calculated to reach the desired goal, which is to provide an only temporary food supplement to "at risk" recipients until such a time as self-sufficiency is attained, while at the same time providing training in the most efficient use of available food resources. First, the foodstuffs used in the PL 480 Title II program are not available in the local market. Therefore, educating mothers in their use tends to create a permanent dependence upon these imported items. Second, foods are carried home in the majority of the programs, and the problem of intra-family food distribution arises. Experience suggests that foods may be shared among all members of the family, and consequently no one receives a sufficient amount to show measurable benefits. Finally, the Title II food commodities are not recognized as "baby food" since the same commodities are used for school feeding programs and food for work programs. Even though the Title II commodities are excellent for young child feeding, their appeal also reaches to the adults with the consequence that once the food is brought home, the entire family is likely to consume it.

It has also been argued that the other feeding programs (Title II School Feeding and Food for Work, and the GODR Economic Food Kitchen/Cafeterias) are not nutrition interventions at all since they do not reach the most nutritionally vulnerable groups. The supplementary feeding programs are presented and budgeted as nutritional interventions, therefore, they should serve direct nutritional goals in the most effective way possible given the limited resources available. It is frequently said that school feeding programs increase school attendance, improve learning capacity, etc. This is undoubtedly true, but nutrition can only be regarded as a secondary effect, the primary one being an educational. The same argument holds true for Food for Work programs -- in their case, the goal is community development and again the intervention is not primarily nutritional. This is not to say that these interventions are not important but that they should be recognized for what they are and ought not to be justified on nutritional grounds.

Aside from the nutritional value of these programs, these existing feeding programs are well-established. Répercussions might well result if the present supplementary feeding programs were discon-

tinued abruptly. Thus, even if it were decided to shift all food supplement resources to MCH where cost/benefit would be greater, it would appear difficult if not impossible to do so.

#### The PL 480 Title II Program in the Dominican Republic

The Dominican food supplement program is a joint, cost-sharing effort of the Dominican and U.S. Governments. The USG provides food donations under PL 480 Title II, administered by CARE, Catholic Relief Services ("CRS") and its local counterpart, CARITAS, and Church World Service ("CWS") and its local counterpart "Servicio Social de Iglesias Dominicanas" ("SSIS"). The Nutrition Division in the Secretariat of Health and Social Assistance ("SESPAS") is assigned the responsibility of acting as the coordinating body. The program is justified as improving the nutritional status of the lower income segment of the population. It provides a temporary food supplement while conducting nutritional education programs to enable the participants and their families to improve their dietary intake. However, as noted in the Nutrition Chapter V, food intake is in fact limited by availability and cost. Education alone will not solve the problem.

There are four general food supplement program categories. The Mother Child Health Program is directed towards pre-school children and pregnant and nursing women. The School Feeding Program (SCH) is the only school lunch program in the country, and covers the primary grades. The Food for Work Program (ECD) provides food for workers in community development projects, and the Other Child Feeding Programs (OCH) provides food for institutions such as hospitals, orphanages, etc.

The PL 480 Title II Program and the GODR contributions to the food supplement program have been reduced during the last four years (see Table 59). At present, 659,452 persons are receiving some Title II commodities. This coverage drop is due to a considerable percent decrease in U.S. donated commodities which has not been compensated by an increase in the GODR contributions.

During 1974, the GODR contributed a total of \$935,887 to the volagencies to defray administrative and logistic expenses. A breakdown of the Title II into program categories and the cost to the U.S. Government and the GODR are given in Table 60.

This financial input does not, however, fully meet the CWS, CRS, and CARE "prepared food" programs cost of condiments, food, labor, etc. Therefore, supplementary funds are generated by contributions from recipients. In the case of the CARE/MCH programs operating in sugar mills, agrarian reform projects, and the Secretariat of Health's milk posts, the major operating expenses are met by

Table 59

DOMINICAN REPUBLIC  
PL 480, TITLE II PROGRAM  
FY 1970-FY 1974

FY	No. of Benefic.	PROGRAM APPROVED 1/			COMMODITIES SHIPPED 2/			COMMODITIES DISTRIBUTED			Average No. of Recipients Reached	GDDR RD\$ Contribution
		Total Pounds	CCC Cost	CCC Cost & O.F.	Total Pounds	CCC Cost	CCC Cost & O.F.	Total Pounds	CCC Cost	CCC Cost & O.F.		
1970	921,200	76,480,000	7,893,065	9,422,065	60,364,032	6,464,949	7,575,995	60,709,361	6,299,274	7,513,424	-	868,168
1971	977,875	75,035,000	8,700,632	10,388,920	54,060,050	5,744,570	6,471,388	55,176,720	6,178,757	7,547,378	-	1,045,598
1972	878,500	48,541,000	5,945,717	6,950,030	44,021,228	5,321,858	5,614,797	49,433,798	5,811,754	6,870,914	716,278	1,005,413
1973	664,000	43,702,000	4,454,714	5,512,795	48,081,133	5,310,040	6,370,486	43,255,753	5,376,765	6,404,593	697,395	1,004,396
1974 <sup>3/</sup>	711,000	36,325,000	2,758,571	3,532,294	30,927,809	2,519,574	3,219,276	26,708,459	2,456,188	3,041,466	559,458	935,387

1/ Line 17 of AER.

2/ According to Bills of Lading.

3/ Commodities shipped and distributed, average recipients reached, and GDDR contribution calculated for the period July 1 - December 31, 1973

SOURCE: Compiled by USAID/DR

Estimated Ocean Freight

1970 - \$10.00 Short Ton  
1971 - \$49.61 " "  
1972 - \$48.12 " "  
1973 - \$48.45 " "  
1974 - \$45.22 " "

TABLE 60

INDICATORS OF COVERAGE AND COST OF PL 480 TITLE II FOOD DISTRIBUTION  
FY 1974

Program Category	Recipients Reached <u>1/</u>	Pounds of Food Distributed	Total USG Contribution <u>2/</u> (in U.S.\$)	GODR Direct Financial Contrib. <u>3/</u> (in U.S. \$)	Decentralized GODR Agencies Contribution <u>4/</u> (in U.S. \$)	Recipient Contrib. <u>5/</u> (in U.S.\$)	Total GODR Contribution <u>6/</u> (in U.S. \$)
MCH	203,393	11,945,000	1,567,227	430,503	88,600 <u>7/</u>	270,000 <u>8/</u>	729,108
OCH	6,468	427,000	50,071	18,718	--	--	18,718
ECD	70,299	5,074,000	949,654	308,842	12,000	280,000 <u>9/</u>	600,842
SCH Feed.	260,955	2,762,000	473,091	177,819	177,819	--	177,819
<b>TOTAL</b>	<b>546,066</b>	<b>26,228,000</b>	<b>3,040,043</b>	<b>935,887</b>	<b>100,000</b>	<b>550,000</b>	<b>1,586,487</b>

1/ According to USAID statistics, these levels represent only 77% of the total recipients approved for FY 1974, and 60% of the Title II food resources earmarked for distribution.

2/ Sum of U.S. food costs and ocean freight charges.

3/ GODR direct allocations to Vol Ags.

4/ Allocations from State Sugar Council (CLA) and the Agrarian Institute.

5/ Estimated contributions by recipients for food received.

6/ Sum of GODR direct financial decentralize GODR agencies and recipient contributions.

7/ CARE/MCH 246 centers at \$30,000 monthly for 12 months = 88,600

8/ CRS/MCH 60,000 mothers at .015 daily for 300 days = 270,000

9/ SCH 4,000 schools at \$0.40 per school per day for = 280,000

contributions or allocations from the agencies having direct administrative responsibility, such as the National Sugar Council. The funds needed to prepare food for the school lunch distribution system are generally obtained by daily classroom collections (usually \$0.01 per recipient per day). Because large schools require more sophisticated arrangements for food preparation, they have been assigned monthly subsidies from the Secretariat of Education, which has a budget allocation of \$120,000 a year for this purpose. It is estimated that only 10 percent of those funds are actually disbursed by the Secretariat of Education in direct support of the School Lunch Program. Consequently, many schools go into debt by purchasing condiments and food on credit at local grocery stores. Eventually, the schools must temporarily suspend their feeding program until they accumulate sufficient capital to pay their debts.

As shown, food costs of the PL 480 Title II Program account for 64 percent of the total cost of the program. (This includes the participants' contribution, most of which, as noted, is used for sugar and condiments). The GODR pays for handling charges, transportation costs within the country, administrative costs to meet wages, overhead for program officials, cooks, warehousemen, inspectors, operating expenses for facilities, fuel (in some cases), cooking utensils, and very often eating utensils. One of the costs that is very real but has not been shown is the time required for the preparation and serving of the food and the inventory and record keeping by school teachers and inspectors.

#### Other Supplementary Feeding Programs of the GODR

The supplementary feeding programs of the GODR are the Economic Food Kitchen/Cafeterias and the MCH milk distribution programs. The Economic Food Kitchen/Cafeterias program consists of four feeding centers which distribute both prepared and raw foodstuffs. In the feeding centers approximately 6,900 rations of prepared food are distributed six days a week. Each ration is sold for \$0.25. Since the estimated value is \$0.45, this represents a GODR subsidy of \$430,560 annually.

Unprepared foods are distributed through the Economic Kitchens, and also in various locations throughout the country. The estimated GODR subsidy for these foods which consist of 4 lbs. of rice, 1/2 lb. of beans, and 2 lbs. of meat per recipient per week, is valued at RD\$3,311,830 annually.

The GODR whole fresh milk distribution program is administered by the Division of Maternal Child Health of the Secretariat of Health. Its annual budget is \$1.5 million and it reaches approximately 35,665 children daily. Currently, there are 190 centers in operation nation-wide. The whole milk distribution program is aimed at children

less than one year of age; however, actual recipients may be 2 years of age or older. The lack of absolute identification of food recipients is an inherent problem of all programs of this type where food is distributed for home consumption. The unpasteurized milk that is distributed is said to be diluted with water whose purity is doubtful. This would increase the danger of contamination to the program recipients. Quality control would seem to require substantial improvement.

In addition, "Cruzada del Amor" distributes an additional 3,000 free rations a week. These consist of 4 lbs. of rice, 1/2 lb. of beans, 1 lb. of pasta, and 1 lb. of sausage per recipient with a total value of RD\$249,600 annually.

#### Evaluation of Programs

Program coordination by the GODR has been a major weak point. The Nutrition Division of the Secretariat of Health is not involved in the day-to-day operation nor is it involved in program planning, development, and implementation of the supplementary feeding programs. In fact, in the case of two of the voluntary agencies, SESPAS has little direct knowledge of their activities and there is a general lack of coordination by the GODR or the three voluntary agencies.

Weaknesses of these programs at the implementation stage include

(a) inadequate participant selection procedures to insure selection of "at risk" recipients. Observations at feeding centers revealed that older children (above 5 years of age) frequently outnumber the preschool children. Rarely do you see children under two years of age. Of course, in the majority of the centers the foods are carried home by an older child, but when questioned about who will eat the food, the common response is the entire family or all the children;

(b) lack of participant follow-up procedures which should include weight records of children and nutrition education inputs. Records of height and weight are presently the only possible way to measure the effectiveness of the program. Without these records, the center has no way of knowing if the child is benefitting from the food supplement and if the child's family is improving his total dietary intake. Presently, very few centers keep these records;

(c) insufficient nutrition/health education -- almost all centers function solely as food distribution centers;

(d) insufficient control over end-use of food commodities. Although the Dominican Republic has a record of having a very low loss rate, the control over end-use of the commodities is an almost impossible task given the nature of the program. People are poor and when they are tempted with the possibility of selling foodstuffs which are left in their care, some may do so. Under the present conditions,

improvements over end-use of foods are limited;

(e) the possibility of overlapping of recipients among the three voluntary agencies. This could be resolved by using the agencies in different regions of the country. Given the prospective phaseover, there would seem to be relatively advantage to such an approach at this time.

Table 61 represents the percent of the Recommended Daily Allowance (RDA) met by the food distributed by each of the voluntary agencies. It should be noted that these amounts reflect the assumption that all foodstuffs received are consumed by the intended target groups. Actually, food losses and intra-family food distribution customs seem to reduce the actual amount of food.

The MCH program is directed toward the target group previously described. However, it would be more effective if the participation were restricted to children under 2 years of age (instead of pre-school children or older) and pregnant and nursing women. Program effectiveness is difficult to measure since adequate records of weight, height, and length of enrollment in the program are not kept. However, based on the assumption that 100 percent of the foods reach their intended recipients, Table 62 makes some comparisons.

It can be observed that the caloric input per day per person is more than double with CRS and CWS than it is with CARE, and the cost per calorie is less. CRS and CWS are also providing more protein per day per person and are distributing the foods in cooked form in the majority of the MCH centers, while CARE distributes its MCH rations in a "ready to cook" form. It is presumed that cooked foods are more likely to be consumed by the intended recipient. Of course, this must be weighed against the added danger of carrying the prepared food home in dirty containers, thereby increasing the chances of introducing diseases.

As stated previously, the selection process of MCH food distribution, does not use the "at risk" concept to identify recipients in the program. To do so would greatly increase the program effectiveness.

With the possible exception of CWS, opportunities to incorporate health care and family planning services into the Supplementary Feeding Program are not optimized, nor are the majority of the program recipients encouraged into entering self-help activities such as home food production, etc. This is particularly due to lack of numbers of instructional personnel. The educational element of all the programs is weak with a few exceptions where qualified people are working in small communities. Educational impact could be much greater if the voluntary agencies more closely worked together and with the GODR at using mass media techniques. Of primary importance would be to encourage breast feeding.

TABLE 61

Percentage of RDA of Calories and Protein in Food  
Distributed by Voluntary Agencies to Children

	C A L O R I E S				P R O T E I N			
	CARE	CRS	CWS	Ave.	CARE	CRS	CWS	Ave.
MCH	17.5	38.2	43.8	27.3	48.1	59.7	73.8	53.8
OCH	19.3	29.8	N/A	23.9	38.9	53.6	N/A	45.4
SCH	9.1	N/A	N/A	9.1	16.8	N/A	N/A	16.8
	M O T H E R S							
MCH	6.9	15.0	17.2	10.7	14.1	17.6	21.7	15.8

Note: Food for Work has been omitted since its primary goal is to encourage local community development projects rather than improve nutrition status per se, although nutrient input is a side effect.

Source: USAID/DR

TABLE 62

PROGRAM EFFECTIVENESS

	Recipient	Food Delivery lbs.	Proteins Per Day/person (gr)	Calories Per Day/person	*Grams of Protein Per/\$ .01	*Calories Per/\$ .01
CARE	375,633	4,594,000	12.02	192.24	6.05	96.7
CRS	161,923	6,986,000	14.93	420.39	5.85	166.9
CWS	8,510	363,000	18.47	482.13	4.18	109.1
<b>TOTAL</b>	<b>546,066</b>	<b>11,945,000</b>				

\* Calculation based on total contributions and nutrients value of PL 480 Title II foods.

SOURCE: Food for Peace USAID/DR

The GODR milk program is a program of limited value because of difficulty of instituting and maintaining quality standards. It was the precursor of the current CARE/MCH program. Initially at many centers, fresh milk was mixed with water and Non-Fat Dried Milk (NFDM) supplied by CARE to extend the coverage. The NFDM was phased out in the early part of FY 1974, but the milk posts continued to distribute milk to recipients. This milk is purchased locally and is believed to be diluted and highly contaminated. Little official attention is given to verification of hygienic aspects of the program. There is a common assumption that mothers boil the milk before giving it to their children. The ill effects from contaminated milk would probably offset any nutritional benefit the supplementary milk is providing. This distribution of milk may also adversely affect breast feeding practices.

The milk program costs the Government approximately \$42 per recipient per year, which is roughly six times that spent for the Title II MCH Program and three times that of the MCH program were it to use comparable alternate sources of local food.

Income redistribution would effect changes in nutritional status. Supplementary feeding programs are thus one way of achieving this if viewed in terms of real income. As has been discussed earlier supplementary feeding programs directed to the most nutritionally vulnerable group would provide the greatest benefits of Dominican investment. Given the specific problems outlined, especially the problem of dependence on food items not locally produced, the present programs do not make the best use of food resources. Alternatives for future spending on the part of the GODR in the area of supplementary feeding must be considered, such as:

1. The production and distribution of a locally-produced weaning food and dietary supplement for pregnant and nursing mothers through commercial channels and also through such programs as a coordinated SANAR, MCH, stamp program. (See Nutrition, Chapter V)

2. The conversion of present MCH resources into Nutritional Rehabilitation Centers (Mothercraft Centers)<sup>3/</sup>, which would work directly with the children and their mothers using locally available foods. The Nutritional Rehabilitation Centers relieves hospital beds, and has been shown to have a "spill over" beneficial effect on the neighbors of participating families.

3. Continuation of a MCH supplementary feeding program with an increased nutrition/health education component which would be coordinated with the preventive health care program.

---

3/ A Practical Guide to Combating Malnutrition in the Pre-School, Research Corporation, 1970.

Of the three alternatives presented above, the distribution of a locally produced weaning food and dietary supplement for pregnant and nursing mothers promises to be the most cost-effective. (See Nutrition, Chapter V).

## APPENDIX IV

### ANALYSIS OF HEALTH SECTOR LEGISLATION

The basic law for the provision of health services in the Dominican Republic is the Health Code, or Law 4471, dated June 3, 1956 (Official Gazette #7999). As a complement to this law, there are several "organic laws" and "organic regulations" which detail the internal functioning of health related governmental institutions, such as the administrative duties and rules for personnel. Among these are:

- The Organic Law of Secretaries of State, Number 4378 of February 10, 1956. (Official Gazette No. 7947)
- The Organic Regulation of SESPAS Number 1312 of November 25, 1955. (Official Gazette No. 7919)
- Decree Number 1489 regarding functions for Secretaries of State of February 11, 1956. (Official Gazette No. 7949)
- Law Number 175 of August 31, 1957, changing the name of the Secretariat of Health. (Official Gazette No. 9049)

In addition to these basic laws, decrees, and regulations, the Constitution of November 28, 1966, states that the State will oversee the improvement of nutrition, sanitary services, and hygiene and will seek to prevent and treat epidemic and endemic diseases as well as other ailments. The State is also obliged to provide medical and hospital assistance free of charge to those who cannot afford them because of poverty.

Other legislation regarding health care matters include the following:

- Decree No. 2830 of September 23, 1968, (Official Gazette No. 9113) which created the National Health Council to coordinate the various health institutions, to utilize better health resources, and to provide advice to SESPAS and the Office of the Presidency.

Decree No. 55, Article 9 of November 22, 1965, which established the Office of Programming and Technical Consulting in SESPAS as part of the law creating the Technical Office of the Presidency. Its basic functions are to prepare plans and programs and to evaluate existing activities of SESPAS.

Law 511 of May 24, 1964, which provides for the regulation of manufacturing, preparing, bottling, storing, importing, and selling of all insecticides.

Decree Number 2091 of February 14, 1968, (Official Gazette No. 9083) which created the National Council of Population and Family Planning.

Law 5994 of August 11, 1962, (Official Gazette No. 8680) which created the National Institute of Potable Water and Sewerage Systems (INAPA).

Law 498 of April 13, 1973, (Official Gazette #9293) which created the Corporation of Aqueducts and Sewerage of Santo Domingo (CAASD).

The Public Health Code of 1956 states that the State is responsible for maintaining public health by adopting adequate sanitary and social measures. This law governs all matters related to public health and hygiene in the Dominican Republic. The Secretariat of Health is designated as the agency responsible for the enforcement of this law; however, the National Health Service, which was established within the Secretariat of Health as the technical organization within the Secretariat, is responsible for the implementation of programs, the study and solution of health problems, sanitation activities and medical attention.

Among the more important functions for which the National Health Service is responsible are the following:

- 1) Propose to the Secretary measures to adequately protect the public health.
- 2) To orient and coordinate through establishment of standards its own agencies, as well as other governmental services, municipal authorities, and private institutions providing medico-social services.

- 3) To submit to the Secretary regulations and draft legislative to improve health services.
- 4) To carry out research with its own personnel or with the cooperation of other organizations, official or private, local or international, on different aspects of public health and the health problems of the country.
- 5) To publish and keep current a National Pharmacopoeia.
- 6) To provide health education.
- 7) To evaluate periodically the effects of its activities and services.
- 8) To generate whatever action is considered appropriate for the improvement of public health and quality of life of the population.
- 9) To control preventable acute and chronic diseases as well as non-preventable chronic diseases; prevention of accidents. It is in charge of immunizing the population against contagious diseases.
- 10) To be responsible for environmental sanitation in aspects: potable water, sewage and treatment plants, housing and buildings for public or private use, control of disease vectors, elimination of waste, pollution and other environmental nuisances, municipal sanitation services, rural sanitation, control of importation, manufacture, distribution and sale of foods and drinks, occupational medicine, and hygiene.
- 11) Sanitary surveillance of airports, seaports, and boundaries; international health matters.
- 12) Sanitary policing:
  - a) regulation and control of the practice of medicine and related professions (dentistry, veterinary medicine, pharmacy, nursing, etc.). The secretariat is to maintain a register of these professionals.
  - b) Regulation and control of medications, pharmaceutical and biological products, chemical and cosmetic compounds.

- c) Policing the operation of mortuaries.
  - d) Sanitary control of animals.
- 13) Maternal-Child Hygiene - prenatal, postnatal, preschool, and school health services in all their aspects. The employment of children and adolescents is also to be controlled by SESPAS.
  - 14) Preparation and implementation of a national nutrition program in cooperation with the Secretariat of Agriculture, focusing on national production and nutrition education. The Secretariat of Health, through the National Health Service is in charge of establishing and enforcing standards for the production, manufacturing, warehousing, importation, packaging, analysis, registration, distribution, and sale of foods and beverages and of the locale in which such articles are manufactured, warehoused, distributed, or sold.
  - 15) Creation of adequate dental services for the general population with specific emphasis of services for pregnant women and children.
  - 16) Development and organization of preventive treatment and rehabilitation programs for mental problems, including problems of alcoholism and drug addiction.
  - 17) Responsibility for the medical attention and adequate health care of the entire population in hospitals or similar facilities, as well as any such establishments developed in the future. This includes location, architecture, equipment, and personnel planning, standard setting, coordination of service to avoid duplication and/or dispersion of efforts, technical and administrative procedures, compilation, analysis and control of data.
  - 18) The construction, equipping, and functioning of private institutions is to be authorized by the Secretary of Health. The development of private medical services is to be encouraged in areas which lack health services.
  - 19) Responsibility for the organization of rehabilitation centers including promotion of the development of these services in the private sector.

- 20) The Secretariat is responsible for the collection, classification, tabulation, interpretation, and publication of vital statistics and any other data which may bear on preventive or recuperative services.
- 21) Health education programs for the entire community using any appropriate communication media, as well as continuing education for health professionals.
- 22) Development and regulation of the nursing profession as well as schools of nursing; development of salary scale of nurses.
- 23) Maintenance of a National Public Health Laboratory, and training of its personnel; provision of bacteriologic, serologic, parasitologic, chemical, and nutritional laboratory tests free of charge for the diagnosis of infectious diseases; control of all laboratories in the country.
- 24) Provision of scholarships for studies in public health and any areas related to the health needs of the country. Additionally, the Secretariat is to stimulate the creation of relevant courses through the State University.
- 25) Responsibility for maintaining appropriate relationship with international agencies; planning, international conferences.

While the basic health law of the country is all inclusive, the country has neither the resources, facilities nor the programs to carry out this comprehensive mandate. In fact its mandate is far broader than can be reasonably expected for one organization to carry out efficiently. With respect to its relationship with other sectors and agencies (such as private health personnel and municipal authorities facilities, IDSS, Secretariat of Education, Secretariat of Agriculture, Secretariat of Public Works), it is stated that the SESPAS should "orient" and "coordinate" and maintain relationships and ties with these agencies in technical administrative matters related to health. This has not been undertaken except in a limited context.

There have in practice been a number of modifications in program responsibilities of SESPAS. For example, the National Service for the Eradication of Malaria was created by a tripartite agreement between the GODR, PAHO and UNICEF to carry out the malaria campaign. The National Health Council was established as a coordinating agency for health planning. The National Planning Office of the Technical Secretariat of the Office of the President also has responsibilities for planning and evaluation in health. INAPA and then CAASD were created to be responsible for providing water and sewage systems.

Even these new institutions appear to have difficulties fulfilling the functions assigned to them. The National Institute of Potable Water and Sewage (INAPA) was created in 1962 as an autonomous organization, subject to the regulations of the Presidency and under the authority of the National Planning Office. This entity was given by law complete authority for the planning, research, construction, administration, operation, and delegation of functions of both rural and urban water supply and sewage systems. Although the Secretary of Health presides over the Administrative Council of INAPA, there is no provision in its organic law requiring coordination with the Secretariat of Health.

The INAPA legislation has not been fully implemented. Other governmental bodies presently have legal authority to manage water and sewerage systems and are under no legal compulsion to turn over functions to INAPA. Several other organizations construct and operate water and sewage systems as well.

International organizations have further complicated the organization picture. PAHO is to provide advice to INAPA. The IDB has assisted both INAPA and the more recently created CAASD (the Corporation for Water and Sewage of Santo Domingo). This latter organization became operational in July 1974.

There therefore exists in addition to the present Health Code an uncorrelated series of amendments, other laws, administrative regulations and procedures evolved over time. While there may be no legal obstacles to cooperative program activity, the Health Sector could benefit from an updating and codification of laws and regulations.

With respect to the particular areas covered by this Assessment, the following legal situations appear to prevail:

Nutrition Assistance. The Secretariat of Health is the organization with principal responsibility for the implementation of measures for the adequate nutrition of the population.

The Division of Nutrition of SESPAS created by an administrative act on November 8, 1961, is the responsible executing agency for all study, planning, implementation, and evaluation of nutrition programs -- preventive, curative, and social. Although formed in 1961, this Division remained essentially dormant prior to the 1967 seminar on Child and Family Nutrition, the assignment of a PAHO/WHO full-time nutrition consultant to the program, and the reorganization of the Division in 1971. Nevertheless, specific goals, plans, and targets to meet population needs have not yet been identified. Its principal activity is said to be distribution of supplementary PL 480 Title II foods.

In 1972, a National Nutrition Council under the auspices of SESPAS was authorized by the President. Its stated purpose is to perform research, set standards, coordinate, plan, and evaluate nutrition programs. This council has never been activated. Malnutrition is one of the main health problems of the Dominican Republic. There is no functioning organization providing leadership. The Dominican Assessment team considered, without reaching a conclusion, alternative institutions to locate the governmental nutritional responsibility, i.e. the Secretariat of Agriculture and the Office of Price Control (INESPRE).

The Secretary of Agriculture has legal responsibility to develop its production policies according to the nutritional needs of the population, to develop a national nutritional program in cooperation with SESPAS, and to study the social and economic aspects of production, distribution, and consumption of agricultural products. If primary responsibility were to be vested in an institution other than SESPAS, Article 153 of Law 4471 should be amended. If INESPRE were to assume responsibility for nutrition assistance Law 526 of December 10, 1969 should be amended. INESPRE, however, has legal authority to set maximum selling prices on essential food items based on a prior study of production costs. Thus INESPRE would have legal responsibility for setting maximum price for any weaning food distributed in the market.

Population Assistance. One of the alternatives for increasing the access of the population to contraceptive supplies is the distribution of these supplies through commercial outlets. The Public Health Code 4471, Article 114 establishes that in communities of no more than 2,000 people or those which are five or more kilometers from a pharmacy, commercial establishments may be authorized to sell pharmaceutical products or supplies. Although Article 115 states that all places which distribute these items must have a graduate pharmacist present, Article 114 appears to be an exception to this rule. In practice most pharmacies do not have graduate pharmacists present. There is no legislation to prevent commercial outlets from selling drugs, the exception being that the State is to provide medical attention free of charge to those who cannot afford to pay.

Personal Health Services. The Dominican Health Assessment Team concludes that the present system of delivery of health services is basically not reaching the majority of the population. The team has been highly critical of the Secretariat of Health as being inefficient and ineffective in its delivery of health services to the poor.

In looking for alternative solutions to provide effectively health care to the rural population, the Assessment recommends utilizing the services of SNEM, the autonomous Malaria Eradication Service.

There appear to be no legal restrictions which would prevent the use of SNEH for purposes of providing medical outreach services using paramedicals. Article 117 provides that paramedical personnel may practice medicine if they do so under the supervision and responsibility of a duly recognized professional and it is presently anticipated that the SNEH will employ several medical doctors in order to comply with this supervisory provision. Moreover, the law provides that the Secretariat of Health may also issue permits for persons without the above degrees if there are insufficient professional graduates to practice medical professions and to be appointed to official positions when such persons are trained and have a good reputation. Although no legal prohibition appears to exist, the legal adviser to the Secretariat has taken the position that auxiliary personnel may not charge for their services. Further research on this question is necessary.

Since SNEH was created by a tripartite agreement and functions with internal administrative regulations, any change in the nature of their activities may require amendment of these agreements and regulations, but not to any known law.

LIST OF ABBREVIATIONS

ADPBR (or ADBF)	Asociación Dominicana Pro-Bienestar de la Familia. Dominican Association for Family Welfare.
AID	Agency for International Development.
CAASD	Corporación Autónoma de Acueductos de Santo Domingo. Corporation of Aqueducts and Sewerage Systems of Santo Domingo.
CARE	Cooperativa Americana de Remesas al Exterior. Cooperative Assistance for Relief Everywhere.
CEA	Consejo Estatal del Azúcar. National Sugar Council.
CEPCIES	Comisión Económica Permanente del Consejo Inter- americano Económico y Social. Permanent Economic Commission of the Inter- american Economic and Social Council.
CFOIE	Comisión de Fiscalización de Obras e Inversiones. Public Works Investment Commission of the Technical Office of the Presidency.
CONAPAPA	Consejo Nacional de Población y Familia. National Council on Population and the Family.
CRS	Catholic Relief Service.
CURAR	Cuidado Urbano por Medio de una Red de Asisten- cia y Remisión. Health Services for the Urban Poor.
CWS	Church World Service.
DIAGNOSTICO	El Diagnóstico de Salud en la República Dominicana. The Diagnosis of Health in the Dominican Repub- lic, i.e. the Dominican Health Sector Assessment.
ECD	Economic and Community Development (Food for Work Programs).
FAO	Food and Agriculture Organization.
FIDE	Fondo de Inversiones para el Desarrollo Económico. Private Investment Funds.
GDP	Gross Domestic Product.

GNP	Gross National Product.
GODR	Government of the Dominican Republic.
IBRD	International Bank for Reconstruction and Development, i.e. World Bank.
IDB	Inter-American Development Bank.
IDSS	Instituto Dominicano de Seguros Sociales. Dominican Social Security Institute.
ILO	International Labor Organization.
INAPA	Instituto Nacional de Aguas Potables y Alcantarillados. National Water Supply and Sewerage Institute.
INESPRE	Instituto Nacional de Estabilización de Precios. Price Stabilization Institute.
IPPF	International Planned Parenthood Federation.
IUD	Intrauterine Device.
LMD	Liga Municipal Dominicana. Dominican Municipal League.
MAP	Medical Assistance Program.
MCH	Maternal and Child Health.
PAHO	Pan American Health Organization.
P.L. 480 TITLE II	Public Law 480 Title II. U.S. food donation programs, provided in the Dominican Republic through CARE, CRS and CWS.
PLANAR	Plan Nacional de Acueductos Rurales. National Plan for Rural Aqueducts.
PLANURBE	National Urban Water Plan, developed by INAPA but not sanctioned or approved.
RDA	Recommended Daily Allowance
SANAR	Sanitación, Atención Médica y Nutrición para el Area Rural. Basic Health Services for Rural Area.

SEA	Secretaría de Estado de Agricultura. Secretariat of Agriculture.
SESPAS	Secretaría de Estado de Salud Pública y Asistencia Social. Secretariat of Public Health and Social Assistance.
SNEM	Servicio Nacional de Erradicación de la Malaria. National Service for the Eradication of Malaria.
SPA	Servicio Popular de Salud. Popular Health Service.
SSID	Servicio Social de Iglesias Dominicanas. Dominican Church Social Service.
UASD	Universidad Autónoma de Santo Domingo. Autonomous University of Santo Domingo.
UNFPA	United Nations Fund for Family Planning.
UNPHU	Universidad de Pedro Henriques Ureña. Pedro Henriques Ureña University.
USAID	United States Agency for International Develop- ment Mission.

## GLOSSARY

### Accessibility

The ease with which a service can be used, particularly with reference to entry into that service or systems; factors involved include cost, hours of operation, waiting time, etc.

### Availability

The existence of a health service or resource in a form which can be used by the population; primarily a geographic reference.

### Barrio

Slum.

### Birth Rate

A measure of fertility, usually referring to the crude birth rate, which is defined elsewhere under crude birth rate.

### Crude Death Rate

The number of children born in a given year divided by the population of the society at mid-year and multiplied by one thousand. Expressed somewhat more simply: the number of children born annually per 1,000 inhabitants.

### Death Rate

A measure of mortality, usually a reference to the number of deaths per year divided by the population of the society at mid-year and multiplied by one thousand, which is the crude death rate. The latter expressed somewhat more simply is the number of deaths per thousand inhabitants per year.

### Effectiveness

The degree of success of achieving a goal such as reduction in disease incidence, reaching a target population with services, etc.; measured in terms of man-years, births averted, and the like.

### Efficiency

The degree to which an activity can be conducted with the least waste of resources (time, money, manpower, etc.); usually measured in terms of cost.

### Environmental Sanitation

The science and practice of affecting healthful and hygienic conditions, especially as related to the physical environment or surroundings.

### Fertility

In demographic terminology, fecundity refers to the biologic capacity to bear children. Fertility refers to actual performance with regard to child bearing. The most common measure of fertility is the crude birth rate: the number of children born in a given year divided by the population of the society at mid-year and multiplied by one thousand.

### Growth Rate

The rate at which a given population increases. Frequently this is a reference to the crude rate of natural increase: the crude birth rate minus the crude death rate. A more accurate measurement of the growth rate also includes the effect of international migration.

### Immaturity

The state of being immature, usually a reference to infants. An immature infant is a live born infant, which weighs less than five and a half pounds (or 2,500 grams) at birth.

### Kwashiorkor

An extreme form of protein-caloric malnutrition disease of early childhood.

### Morbidity

The state of being ill or diseased.

### Mortality

The proportion of deaths to the population of a region or nation, etc. This is usually a reference to the crude death rate, which is defined in this glossary.

### Perinatal

Refers to the period between the 28th week of gestation (pregnancy) and the 7th day of life. This is usually a reference to the perinatal mortality rate, which is the number of fetal deaths 28 weeks or more and infant deaths under 7 days of age divided by the number of live births and fetal deaths 28 weeks or more during the same year.

Utilization

The use of services by consumers; usually in terms of deriving the most effective and efficient outcome.