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THE APPLICATION OF THE ADDITIVE MODELS FOR HEALTH CARE DEVELOPMENT IN THE REGENCIES OF KENDARI, AND KOLAKA, SOUTHEAST SULAWESI, INDONESIA

by

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The presentation, comments, and suggestions made in this research are the personal responsibility of the author. They are not in any way represent the policy and opinion of any of the sponsoring organizations. It is the hope of the author, however, that the findings could help the health planning works in the Regencies of Kendari, and Kolaka.

To all organizations and individuals that have supported this research to its completion the author would like to extend a sincere gratitude. The author believe, without such support the completion of this research is almost impossible.

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PREFACE

National health policy of Indonesia have considered her health problems as one aggregate for a long time. Statistics, estimations, assumptions and all parameters that have been used for planning are in aggregate of the whole country. Efforts to diversify the health planning activities have been made, but they are still limited to the establishment of a planning division in each provincial health offices. Each provincial health planning divisions probably has only one or two health professionals trained in statistics, epidemiology, economics, or survey research at the core of their planning team.

Development mis-matches have been realized at all sector. There has been an awareness to reduce them in the health sector. Organizing the planning activities at the lowest level of government, at least at the regency level, is expected to reduce some of these mis-matches.

This research is aimed at developing various alternatives for health care development of Southeast Sulawesi in general, and the transmigration area in the Regencies of Kendari, and Kolaka in particular, using the health household survey as data base, complemented by information about local health care facilities, and budget.

The technique for this research has been a refined version of similar research used previously for the Regency

of Bogor, West Java, Indonesia. Automatic Interaction Detector, and Multiple Classification Analysis techniques are used for the development of the utilization, and incapacitation models. These models are the generalization of the process of specific utilization and incapacitation characteristics in the Regencies of Kendari, and Kolaka. Therefore, it may not be valid for other regencies of Indonesia.

Based on these specific utilization and incapacitation models, the profile of utilization and incapacitation of the Regencies of Kendari, and Kolaka is developed. It is then combined with the one-way analysis of age specific incidence rate of several most observable and most incapacitating illnesses, the cost of services, and the estimates of resource availability. These information are used in the cost effectiveness analysis for selecting alternative health care development policy in these areas. The impact of different health care facility expansion, and health program intervention strategies are computed from the use of the additive model of utilization, the additive model of incapacitation, and the multiple regression model of percentage seeking care of he aggregate data.

Cost effectiveness analysis helps the computation of ordinal ranks of preference among different policy options. In the event of wide variation among the coefficients, sensitivity analysis is applied to test the consistency of these ordinal ranks of preference. Confirmation of the

ordinal ranks of preference through sensitivity analysis indicates the insensitivity of these preferred policy options to reasonable variation of the coefficients.

The use of computer simulation is a great help in narrowing down the number of reasonable policy options. Of course the human mind performs better in exploring the reasonableness of some preferred alternatives. The computer simulation however, helps the execution of large scale repetitive computations of each alternative. The combination of both approach is very useful.

The outcome of this research is unique for Regencies of Kendari, and Kolaka. As we will find out later, the difference between the outcome of this research from the outcome of similar research in Regency of Bogor confirms that the health planning of Indonesia should be conducted differently in each regency. The health planning of a particular regency can be replicated in other regencies, only if they have similar typology.

TABLE OF CONTENTS

ACKNOWLEDGEMENT ii

PREFACE iv

LIST OF TABLES ix

LIST OF ILLUSTRATIONS xii

LIST OF APPENDIX xiii

CHAPTER

I. INTRODUCTION 1

A. Rationale of Southeast Sulawesi Health Planning 2
B. Research Objectives 5
C. Plan of Analysis and Presentation . . . 7

II. REVIEW OF RESEARCH LITERATURE 11

A. Definition of Health. 11
B. Determinants of Health 12
C. Measurement of Indices of Health 15
D. Health Policy and Health Care 18
E. Model of Health Service Utilization . . 20
F. Model of Incapacitation due to Illness . 22

III. THE SAMPLE AND THE DATA 27

A. The Sampling Procedures 28
B. Data Collection 29
C. Quality and Reliability of the Data . . 33
D. The Disease's Pattern 34

IV. THE DEVELOPMENT OF THE ADDITIVE MODELS 67

A. The Process of Seeking Care 68
B. The Additive Model of Utilization . . . 73
C. The Additive Model of Incapacitation . . 79

V. MODELS APPLICATION FOR HEALTH CARE DEVELOPMENT 87

A. Reconsideration for Southeast Sulawesi Health Statistics 87
B. Computation of Utilization and Incapacitation 93
C. Health Policy Development in Southeast Sulawesi 113
D. The Feasible Policy Intervention 115
E. Cost of Several Development Policy Alternatives 131

F. Budget Projection 134
G. Cost Effectiveness Analysis 137
H. Social Cost Effectiveness Analysis . . . 145
I. Sensitivity Analysis 149

VI. SUMMARY AND CONCLUSIONS 162

APPENDICES 169

LIST OF TABLES

page

Tables

1. Comparison Between Federal Health Expenditure with The Allocation of Mortality in United States in 1974-1976. 19

2. The Estimated Annual Illness Rate, Number of Episodes, Number of Death and Case Fatality Rate in Southeast Sulawesi in 1980 36

3. Population Distribution of Kendari and Kolaka in 1980 as Compared to Indonesia in 1976 . . . 52

4. Distribution of Population of Kendari and Kolaka by their Regular Source of Care When Ill 54

5. Distribution of Episodes of Illness by Place of Treatment 56

6. Outcome of Treatment by Category 57

7. Distribution of Mortality by Cause of Death and Age Group 59

8. One-Way Analysis of Distance from Home to Place of Treatment 62

9. The Availability of Health Care Provider in the Village of Residence or in the Neighboring Villages 63

10. The Rank Order Correlation of Decision to Seek Care with Several Explanatory Variables . 69

11. Two-way Analysis of Decision to Seek Care by Sex of the Sick Persons 70

12. Two-way Analysis between the Decision to Seek Care and Individual Health Condition 73

13. Correlation Analysis between Utilization and its Potential Categorical Explanatory Variables 75

14. Correlation Analysis between Incapacitation and its Potential Categorical Explanatory Variables 81

15. Correlation Analysis between Incapacitation and its Potential Analytical Explanatory Variables 83

16. Recoding of Diagnostic Groups in the Regencies of Kendari, and Kolaka 88

17. Age-Specific Percentage Seeking Care by Place of Treatment 94

18. Multivariate Age Specific Distribution of Utilization across Different Place of Treatment 100

19. Multivariate Age Specific Distribution of Incapacitation Days Due to Illness across Different Place of Treatment 106

20. The Estimated Age-Specific Incapacitation Days Due to Illness in Southeast Sulawesi in 1980 . 111

21. The Types and Number of Health Care Facilities in Regencies of Kendari, and Kolaka in 1979 . 116

21. The Recommended Number of Health Care Facilities in Regencies of Kendari, and Kolaka in the Yeas 2001, Based on the Computation Using the National Guidelines 119

23. Village Classification Before and After the Addition of 280 Village Health Posts, Holding the Expansion of Other Health Care Providers Constant 121

24. Distribution of User's Perception About Out-of-Pocket Payment If Service Charge is Reduced by 18.2% 126

25. Cost of Nutrition Education and Food Supplementation Program 130

26. Summary of Effects of Policy Manipulable Variable 132

27. The Estimates of Investment and Operating Costs of One Unit of Hospital, Health Center, Subhealth Center, and Village Health Post in Regencies of Kendari, and Kolaka in 1980 . . . 133

28. Health Budget of Southeast Sulawesi from Fiscal Year 1974/1975 through Fiscal Year 1980/1981 135

29. The Projected Health Budget of Southeast Sulawesi from Fiscal Year 1980/1981 through Fiscal Year 2000/2001 136

30. Development Cost All Possible Combinations of Health Care Facility Expansion and Program Intervention 138

31. The Ordinal Ranks of Preference of Different Health Care Development Policy Options of the Regencies of Kendari, and Kolaka Under the Very Pessimistic Budgetary Projection 143

32. The Ordinal Ranks of Preference of Different Health Care Development Policy Options of the Regencies of Kendari, and Kolaka Under the Very Optimistic Budgetary Projection 144

33. The Ordinal Rank of Preference of Health Care Development Options of the Regencies of Kendari, and Kolaka, Based on Social Cost Effectiveness Analysis 148

34. Sensitivity Analysis Based on Different Budgetary Projection of the Alternative Options for Health Care Development of Regencies of Kendari, and Kolaka 151

35. Sensitivity Analysis on Ordinal Ranks of Preference among Different Policy Options for Health Care Development in Regencies of Kendari, and Kolaka from 1980-2001 153

LIST OF ILLUSTRATIONS

page

Maps

1. Map of Indonesia Showing Population Distribution by Provinces 3

2. Map of Sulawesi Showing Major Transmigration Settlements 30

3. Map of Regencies of Kendari, and Kolaka Showing Subdistrict Boundaries 51

Figures

1. The Health Behavioral Model of Individual Determinants of Medical Care Use 21

2. Dichotomous Split of Population by Illness and Process of Seeking Care 55

3. Tree Diagram of *SEARCH* Analysis of Utilization 76

4. Matrix of Multiple Classification Analysis of Utilization 78

5. Tree Diagram of *SEARCH* Analysis of Incapacitation 84

6. Matrix of Multiple Classification Analysis of Incapacitation 86

LIST OF APPENDICES

Page

Appendices

A. Profile Analysis Program and Output 170

B. Cost Effectiveness Analysis Program and Output 187

CHAPTER I

INTRODUCTION

Since 1974, the Government of Indonesia has tried to remedy social inequality by establishing a more redistributive policy through the extension of the social services. The health sector has gained in terms of significant increases in physical plant, personnel, equipment and vehicle availability in rural areas.

The government does this although lacking access to relevant data and appropriate analysis. The central government unavoidably must make decisions. Whatever the decisions will be, they bind and commit provincial and local governments. National level decisions are in many cases unable to accommodate local variation.

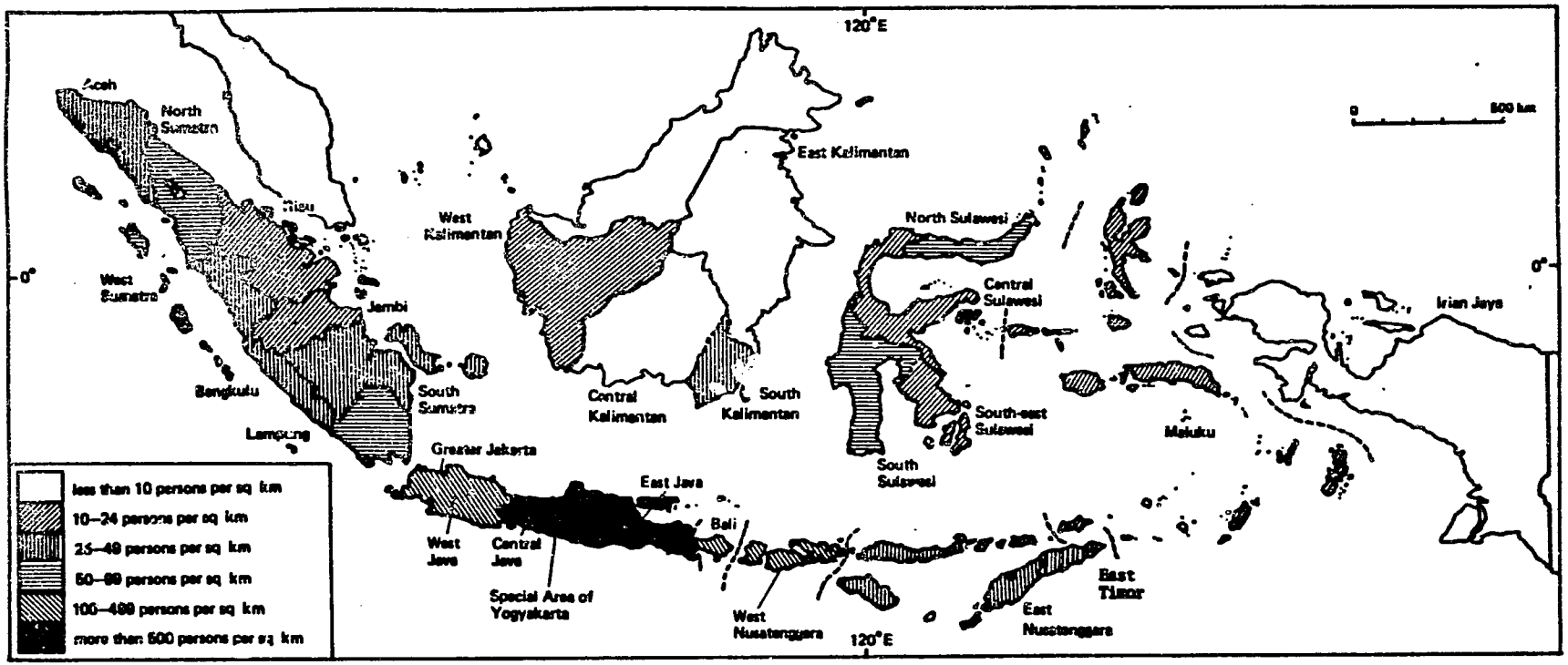
In 1978, the Alma Ata Declaration was signed by member countries of the World Health Organization. The Alma Ata Declaration accepted the principle of primary health care as the means to overcome shortages of health care services for all people throughout the world.[1] The Ministry of Health of Indonesia has been trying to capitalize on this declaration for the expansion of the primary health care model following Sumberlawang and Begajah.[2]

Primary health care includes activities such as basic medical care, sanitation, nutrition, health education, maternal and child health care, integrated with community development. Such comprehensive programs are good if they could be implemented. Knowledge and understanding about their implementation is insufficient. After several years, the replication of Begajah and Sumberlawang example has not reached a meaningful quantity. This fact leads to a speculation that the environment in many regencies does not suitable for the implementation of primary health care similar to the stereotype of Begajah and Sumberlawang. Therefore, for planning purposes, a different but more effective version of health care delivery system for each regency should be sought.

A. Rational of Southeast Sulawesi Health Planning

The basic principle of health planning is the development of health policy and health program to produce the best health outcome for the estimated resource availability in the future.

The diversity of Indonesia (see Map 1), makes the generally acceptable programs in other areas is not applicable in Southeast Sulawesi, because the difference in the characteristics of variables that influence health. The general tendency in health care delivery however, is to treat all provinces as equal, even though it is not



Map 1. MAP OF INDONESIA SHOWING POPULATION DISTRIBUTION BY PROVINCES

intentionally made. It is rather the legacy of the past. All top health professionals in Southeast Sulawesi are not trained in Southeast Sulawesi. After their assignment in Southeast Sulawesi, they just maintain the system as they used to, since there is no literature, or easily accessible raw data on Southeast Sulawesi that could be used for planning purposes. Therefore a research specifically designed to answer the health planning questions in this area is needed.

As a new province, Southeast Sulawesi is in an extreme scarcity of qualified manpower. The transmigration program makes the design of health care system in the area becomes more complex. The health care system does not only has to deal with the indigenous population, but also with the transmigrant. The transmigration programs have brought people with a diverse background. They have different health practice, and different expectation, but must live at the same place, served by the same public services. Lack of experience and knowledge about health care program within the context of transmigration programs have forced health professional to implement health services on trial and error basis. There has been occasional obstacles in program implementation. The problems may become larger, if national guidelines for health care delivery, which may fit well in regencies that fall in the general mode of Indonesia, is implemented without prior redefinition to the condition of this area. Planning for the future will be greatly assisted

if the planning process could be based on more reliable local information, therefore, planning could be designed to meet local needs.

Despite its weakness, Southeast Sulawesi has advantage over older regencies. For instance, implementation of an entirely new concept in this area does not have to deal with the deep rooted vested interest of the health care establisnment, as usually the case in more developed areas.

B. Research Objectives

The main objective this study is to select feasible alternative health care development strategies in the Regencies of Kendari, and Kolaka.

To achieved this objective, the first step that need to be done is to use the additive models to identify determinants of incapacitation days due to illness, and determinants of utilization of health services. Some of these determinants are policy manipulable variables, such as: Quality of care, coverage of health provider, cost of services, and improvement of the referral system.

It is not yet clear whether increasing hospital care in a regency will produce better or worse health than increasing health center or subhealth center care. Experience in the U.S. has shown that the neighborhood health centers did just as well as hospital OPDs in reducing hospital days, and two thirds of the neighborhood health

centers scored higher in quality than the average OPD. The centers, on the average scored equal to the OPD of university hospital while they were 10% to 20% lower in cost.[3] In Southeast Sulawesi, analogous alternatives still need to be tested.

In preparation for the future, Regencies of Kendari, and Kolaka also need their own primary health care. Its definition, forms, and operating characteristics may be different from the definition of primary health care in other places, but the general principles are the same. Its purpose is to bring as much primary care medicine to the population, for a given level of resources availability, and to get the most out of those activities.

Considering the political and administrative realities, four alternative course of actions for government sponsored health care in Southeast Sulawesi are suggested; they are:

1) The development and expansion of the village health post system beyond the transmigration villages, staffed by the locally recruited village health cadres, and/or;

2) Development and extension of the subhealth center system staffed by paramedics, and/or;

3) Development and extension of the health center system staffed by physician and para-medical personnel, and/or;

4) Development of the hospital-based health care to be able to cover more of the difficult cases, especially cases that are inappropriately treated by the health center, subhealth center and village health post because of lack of expertise and/or lack of equipment.

The growth oriented health care delivery policy in transmigration area of Kendari and Kolaka need to be advised. What particular type of facilities should be maintained or expanded from the existing chain of hospital - health center - subhealth center - village health post? Should we propose across the board expansion using the same ratio of hospital - health center - subhealth center - village health post, or should we propose more emphasis on the expansion of a particular type of facility? The answer is need to be explored.

C. Plan of Analysis and Presentation

The introduction explains the rational for a specific health planning works in the Regencies of Kendari, and Kolaka. The objective is to select health care development strategy in the area.

Chapter II explores recent research literatures on the subject. It explains the theory of determinant of health. How various measurement and indices of health work, and what it their strengths and weaknesses. Several models

of health service utilization are highlighted. These models are used as the basis for the strategy for the selection of relevant explanatory variables for the additive models.

Chapter III describes the health household survey that has been carried out, and the data are used as the baseline data in this study. This chapter explains how the sample was drawn, how the data collection was made, and how the quality control was done. At the end of the chapter, there is a descriptive age distribution of illness in the Regencies of Kendari, and Kolaka, by diagnosis.

Chapter IV identifies factors that may influence the process of seeking care, percentage seeking care, utilization rate, and incapacitation days due to illness. This chapter demonstrates the model fitting to obtain the additive models of utilization, as well as incapacitation.

In chapter V, new modification of classification of diseases specific to the condition of Southeast Sulawesi is suggested. This new coding system is used as the reference for the development of coefficients for cost effectiveness analysis. With consideration to the existing administrative and political constraints, several feasible alternative health policy options are identified, and ranked by order of preference

Chapter VI summarizes the health policy analysis for the Regencies of Kendari, and Kolaka, and suggest alternative health policy development strategy that best

serve this area.

Footnotes to Introduction

[1]International Conference on Primary Health Care, Primary Health Care: a joint report by the Director-General of the World Health Organization and the Executive Director of the United Nations Children's Fund, Geneva - New York, 1978, pp. 8-13.

[2]Nugroho,G., "A Community Development Approach to Raising Health in Central Java, Indonesia," in Health by the People, World Health Organization, Geneva, 1975, pp. 91-111.

[3]Sparer, G. and Johnson, J., "Evaluation of OEO Neighborhood Health Centers," American Journal of Public Health No. 61, 1971, pp. 931-942.

CHAPTER II

REVIEW OF RESEARCH LITERATURE

A. Definition of Health

The World Health Organization defined health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.[1] This definition has a deficiency when used for planning purpose. It does not describe quantitative measurement of correlates of health, to enable priority setting and selection among alternatives in health sector. In the scarcity of quantitative measurement tools, researchers have developed a variety of qualitative estimates of health to serve a specific purpose.

The earlier measurements of health were based on several parameters of illness, such as infant mortality rate, maternal mortality rate, crude death rate, and many more. Even so, none of these parameters fully reflect the illness status of the population from which we can infer the health status of the population.

In general, mortality information is a good indicator

of the outcome of health care and other social intervention in a country. For a regional level, mortality information has some weakness. In order to obtain sufficient variation in mortality data, there should be a large number of reported mortality data available. That could only be obtained from the survey if the sample size is very large, Which is way beyond the usual regency household surveys. Very large survey data is also prohibitively expensive for most regency. The moderately sized regency household survey is able to provide sufficient cases of ill health, such as incapacitation, complication of treatment and sequela. Therefore, in this study, the measurement of health will be based primarily on morbidity statistics.

B. Determinants of Health

The health status of the population is influenced by by various factors and at various levels of intensity. It begins from the socio-economic condition in general, factors at the community level, intra-familial characteristics, and individual traits.

The economic development factors

Health and healthy population is an essential prerequisite in development. This rationale had been the formal basis of the expansion of health system in Indonesia

since 1970[2], even though the causality relationship between health and development is not yet clear. It is difficult to tell which one comes first, will good health lead to high productivity or will high productivity lead to good health?[3]

Environmental and Social Determinant

U.S. Center for Disease Control had quantified the proportional allocation of the contributing factors of mortality from ten leading causes of death among the United States population age one year and older in 1975. According to this report, the most important factor is the life style, followed by human biology, then the environment, and finally the health care system. Life style is the most dominant factor that will lead to death in all age categories. The influence of life style increases with age, while the role of the least important factor, the health care system, decreases with age. In a scale from 1-101.4, life style scores 48.5, human biology scores 26.3, environment scores 15.8 and health care system scores 10.8[4], the least important of them all. If the purpose is to reduce death, investment in health care facilities is the least effective. Another U.S. Department of H.E.W. report has mentioned that residents of heavily polluted cities have much more emphysema, respiratory infection and lung cancer, than rural residents.[5]

According to Belloc, good health can also be obtained through a well balanced diet, maintenance of a harmonious body weight, enough sleep and regular exercise,[6] all of them are part of individual life style.

In Southeast Sulawesi, environment may have strong influence on the incidence of malaria, and filaria. The life style and habits on the incidence of enteric and skin diseases, and availability of food on the prevalence nutritional diseases.

Role of Health and Medical Sciences

The eighteen and nineteen century's health development in Western European countries took place prior to the revolution in health and medical sciences. The general improvement in method of production, living standards, and sanitation facilities took place before rapid development of medical and health technology. Those living standards and sanitation improvement, not the medical and health technology, changed the health profile of Western European countries.[7]

In the developing countries of today, however, substantial reduction in mortality and disability is the result of the application of an imported technology[8]. The efforts have shown good result in the control of malaria, in the eradication of smallpox, control of poliomyelitis, tuberculosis, and many others. The reduction of mortality

and morbidity of these communicable diseases take place before socio-economic changes similar to Western European countries in the 18th and 19th centuries has occurred. The classical example is Sri Lanka from 1945 to 1960, and more recent examples are found in many African countries'.

C. Measurement of Indices of Health

Health is a product of a complex social and biological processes. Their complexities make the measurement of health difficult.[10] The multifactorial and qualitative aspects of health and illness makes the use of simple technique in the measurement of health is impossible without sacrificing the quality of measurement. Most parameters of health are measurements of ill health or the measurement of diseases: Mortality, morbidity, disability, chronicity and progression. Chiang tried to measure the average duration of health, which means, the average duration of absence of illness, which he formulates as (1 - average duration of ill health).[11]

In their effort to develop health status index, Fanshel and Bush have developed eleven levels of health:

1. S_A - Well-being
2. S_B - Dissatisfaction
3. S_C - Discomfort
4. S_D - Disability, minor
5. S_E - Disability, major

6. S_F - Disabled
7. S_G - Confined
8. S_H - Confined, bedridden
9. S_I - Isolated
10. S_J - Coma
11. S_K - Death.

Fanshel and Bush proposed a Health Status Index (HSI) as a function of years of healthy life per person, which is equal to 90 years (in U.S.) less by time losses due to morbidity and mortality .[12]

The ideal parameter often times can not be constructed due to the complexities of health and the limitation of the data. Most health statistics provide two broad categories of indices:[13]

1) Indices of resources, such as man, manpower, facilities and organization, and
2) Indices of health and diseases, such as mortality, morbidity, disability rates and ratio, and level of health.

In the development of health policy model for rural Java, Grosse and de Vries used[14]:

1) Attack rate of various diseases,
2) Age-specific mortality rate with or without treatment, and
3) Age-specific days of incapacitation with and without treatment during illness.

Those variables, together with information on percentage

seeking care when ill, and resource availability are considered in the computation of the overall mortality and morbidity rates.

The preparation of all the parameters required for the computation in a health policy model is elaborate, but it is quite comprehensive. Again, the difficulties in using mortality data from a survey are the very large sample requirement. Moreover, in a society where there is a trend for rapidly declining mortality,[15] low mortality figures may mislead the interpretation of the measurement of health, especially if it is accompanied by high morbidity rate due to chronic diseases.[16]

An index of health for regency health planning should include :

1. Statistics of resource availability, which may consist of statistics of number and type of health facilities, number and type of health personnel, and budget for health,
2. Epidemiological information on rates, which will cover mortality and morbidity rates,
3. An indication of a set of diseases that could be used as surrogate of all diseases in the region,
4. Quality of care, which may include structural quality of care, quality of the process of care, perception of users about the quality of care in different health facilities,
5. Outcome of treatment, and

6. Cost of providing the services.

D. Health Policy and Health Care

Influential public figures may favor curative care, rather than preventive care. Government may over emphasize curative care, and be more concern with the visible accessibility. As a result, budgetary allocation and financing of curative health program is disproportionately favored. The government budget office also may find it is easier to deal with the formally structured health agency for accountability reasons, and hesitate to support the community health development approach. Improvement of accessibility to health service, especially to curative care, then is considered as the manifestation of the country commitment to human development and social justice.

Here is the dilemma! Do we want to improve health or do we want to improve use of services? In his "Epidemiological Model for Health Policy Analysis," Dever demonstrates that in the United States for instance, from 1974 to 1976, federal expenditure for system health care organization is 96.6% of Federal Health Expenditure. Percentage of allocation of mortality due to diseases preventable by health care services was 11.0%. Life style, which account for 43% of the mortality was allocated 1.2% of the federal health expenditure. Environment, which accounts for 19% of the mortality was allocated 1.5% of the

TABLE 1

COMPARISON BETWEEN FEDERAL HEALTH EXPENDITURE WITH THE ALLOCATION OF MORTALITY IN UNITED STATES IN 1974-1976.

COMPONENT OF EPIDEMIOLOGICAL VARIABLE	PERCENTAGE OF FEDERAL HEALTH EXPENDITURE (1974-1976)	PERCENTAGE ALLOCATION OF MORTALITY
System of Health Care Organization	96.6	11
Life Style	1.2	43
Environment	1.5	19
Human Biology	6.9	27
Total	100.2+	100

+rounding error

budget.'' Even if the political establishment realized the importance of good health for the country's development, in the political process however, Ministry of Health in most developing countries will not receive substantially higher share of the budget, even in the long term.''

Previous Indonesian experience shows that a combination of primary health care and community development approach worked well in subdistricts of Begajah and Sumberlawang near Solo. The principal approach to the community health program in Solo consists of :

1) Improvement of community resources availability,
2) Increase the community awareness about the benefit of good health, and
3) Improvement of the existing social organization for

mutual cooperation between health organization and the people, based on mutual trust.''

The outcome of the program in Solo was astonishing. However, we cannot anticipate whether similar program will produce similar outcome if implemented in Southeast Sulawesi. Therefore, there should be efforts to develop a system that will work in Southeast Sulawesi, or a system based on type of health care facility that has produced outcome on an empirical observation.

E. Model of Health Service Utilization

The new way of model building emphasizes the role of quantitative approaches, based on empirical analysis, with the application of more powerful statistical tools. High speed computers, which now become a common use, makes the development of causality model building using micro data obtained from large size survey. The rationale of the "Behavioral Model of Individual Determinant of Medical Care Use," is used as the principle in the development of the quantitative model in this study.

This Behavioral Model of Individual Determinant of Medical care Use, has been developed since 1968, and has been constantly revised since then. It sometimes published under different titles/names. It is called "The Behavioral Model of Health Service Use" (Andersen, 1968), or Family Life Cycle Models. Its further development can also be seen

in the works of others who had been working with Andersen.

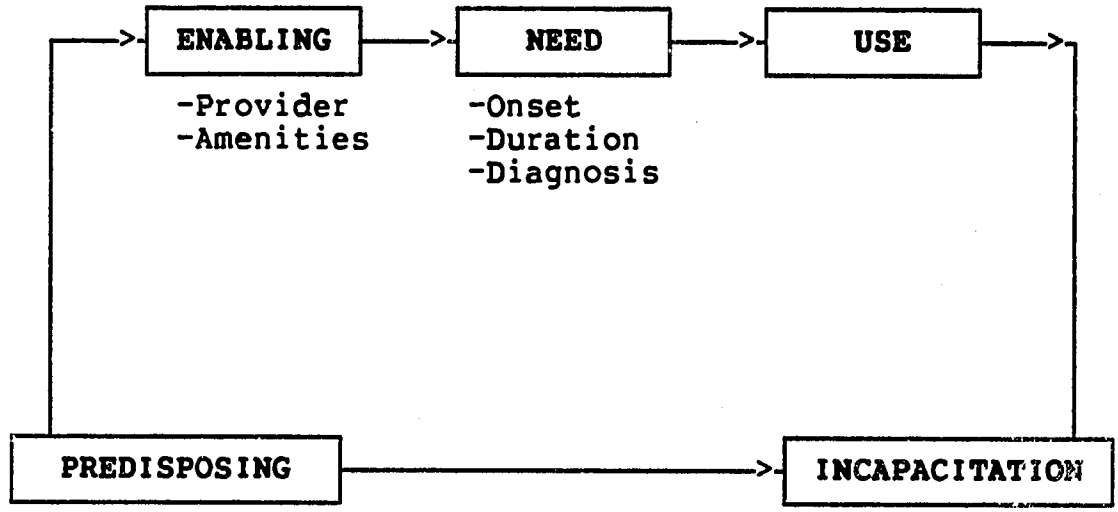


Fig. 1. THE HEALTH BEHAVIORAL MODEL OF INDIVIDUAL DETERMINANTS OF MEDICAL CARE USE

Some conclusions from model of The Health Behavioral Model of Individual Determinants of Medical Care Use is summarized as follow:[20]

Illness-level, which represents **need variables**, was the most important variable in explaining use of health services. Disability days and worrying about health were the best predictors of hospital use. The severity of diagnosis is the best predictor of number of physician visits and dental symptoms are the best predictors of dentist contact.

The enabling variables, are group of variables that represent factors enabling use of service. Availability of regular source of care influences the visits to

physician. Income, controlling for education, explains some of the variation in dental care received. Presence of health insurance coverage explained only a little of the variance in types of health care used. Hospital bed to population ratio explains some variance of length of stay, and M.D. to population ratio (instead of dentist to population ratio), which probably a good indicator of access to dentist, explains some of the variance of dental visits.

In general, **predisposing variables** including history of past hospitalizations, did not have any predictive value as far as who would be admitted to hospital. Age is the second best predictor of length of stay, after controlling for the severity of clinical symptoms. Older people are also more likely to see a physician and have more visits than any other group. Education of the head of the household and dental symptoms make modest contributions to explaining the variance in dental care use. Sex has virtually no impact on physician visits, hospitalization, or use use of dental services.

F. Model of Incapacitation due to Illness

The expected impact of health service expansion in developing region is not merely an increasing health service use. Of course, health service expansion increases the number of points of contact, which will result in increasing area of total coverage of the health services. The purpose

of health service however, is not to produce attendance to physicians, dentists, midwives or to improve bed occupancy rates in regency hospital, but to produce health.

The measurement of health using mortality has been around for a long time. The changing pattern of mortality from communicable diseases to chronic disease, disease of old age, requires changes in use of index of sickness and health from mortality to morbidity. Otherwise, the small death rate makes measurement of level of health using mortality as proxy, over time, become less sensitive.[21]

The incapacitation model that will be used here is developed through the use of multivariate model building. Based on the multivariate model, then incapacitation days due to illness is computed by disease, by age and by type of care received. These coefficients later become an input for the computer aided calculation of number of incapacitation days under several different setting, in a particular service area.[22] The mathematical formula used in the calculation will be as follow:

$$\text{Number of death} = \sum_{i=1}^{m} \sum_{j=1}^{n} \sum_{k=1}^{p} R_{ij} \cdot P_j \cdot [N_{ijk} \cdot F_{ijk} + \{(1 - \bar{N}_{ij}) \cdot \bar{F}_{ij}\}]$$

Number of days of incapacitation =

$$\sum_{i=1}^{m} \sum_{j=1}^{n} \sum_{k=1}^{p} R_{ij} \cdot P_j \cdot N_{ijk} \cdot D_{ijk} + \{(1 - \bar{N}_{ij}) \cdot \bar{D}_{ij}\}]$$

Where R_{ij} = attack rate per person in age cohort j of disease i
P_j = number of population in age cohort j
N_{ijk} = proportion of people in age cohort j

with disease i who seek care and receive care from medical care source k

$\bar{N}_{ij}$ = proportion of people in age cohort j with disease i and do not receive care

F_{ijk} = case fatality rate of disease i in age cohort j when utilizing medical care source k

$\bar{F}_{ij}$ = case fatality rate of disease i in age cohort j for those who do not use medical care

D_{ijk} = days of disability of disease i in age cohort j of those who seek care and receive care from medical care source k

$\bar{D}_{ij}$ = days of disability of disease i in age cohort j of those who do not use medical care.

Selection of alternatives proposed in the model was based on the effectiveness of alternative programs in reducing both mortality and days of incapacitation

Incapacitation as Measure of Outcome

The effort to reduce days of incapacitation is one way to improve the quality of life. In health sector, reduction of incapacitation is one goal of the health services. Health programs capable of reducing incapacitation, are undoubtedly able to reduce mortality, produce longevity, comfort, resilience and satisfaction. Of course the reduction of incapacitation is not merely the product of health services. Satisfaction about life is explained by many more variables, in which satisfaction about health is only one of them.

Footnotes to Chapter II

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CHAPTER III

THE SAMPLE AND THE DATA

The preparation of this research and the data collection is organized through the Directorate of Epidemiology and Quarantine of Directorate General of Communicable Disease Control of Ministry of Health Republic of Indonesia, with full assistance from the Provincial Health Office of Southeast Sulawesi, the Provincial Transmigration Office of Southeast Sulawesi and numerous other individuals. The basis of the field survey is the standard health household survey of randomly selected neighborhood in 30 villages, spread over eight subdistricts in the Regencies of Kendari, and Kolaka. The survey tools consist of a modified version of the Indonesian standard health household survey questionnaire. Modification was made to meet the particular characteristics of the Regencies of Kendari, and Kolaka. In addition to the household interview, all individuals in the sample, irrespective of their health condition, receive physical examination from an interviewing physician at their home. Blood specimens were taken from one fourth of the respondents, where the specimen were examined using thick blood film with Giemsa stain for detecting

malaria. It includes nocturnal blood specimens for detecting micro filaria. The blood film is diluted with distilled water, then stained with Giemsa stain. Stool specimens for intestinal parasites using direct methods, and rectal swab for later examination in Carry Blair agar for V. cholera, E. parahaemolytic, Salmonella, and Shigella. Sputum specimens are also taken for detection of acid fast bacilli using Tan Thiam Hok method.

A. The Sampling Procedures

A list of transmigration of subdistricts in the Regencies of Kendari, and Kolaka (see Map 2), together with the list of all villages, hamlets (RW) and neighborhood (RTs) is obtained. Then eight transmigration subdistricts are selected using the random number generator of programmable calculator TI 59. All RTs in the selected subdistricts are listed and each RT is assigned one number. Random number generator of TI 59 is used to select the RTs. The priority of selection is made by the order of the RTs appearance in the selection process. Number of households in each selected RTs were listed until 200 households per subdistrict were obtained. Additional 75 households were drawn per subdistricts, used as back up in case of error in the list of household or refusal for examination by some of the selected households. The number of the households were determined to obtain 10,000 to 12,000

people in the survey.

The final sample is as follow:

Regency(Kabupaten)

(2 out of 4)

|

Subdistrict (Kecamatan)

(8 out of 21)

|

Villages (Desa)

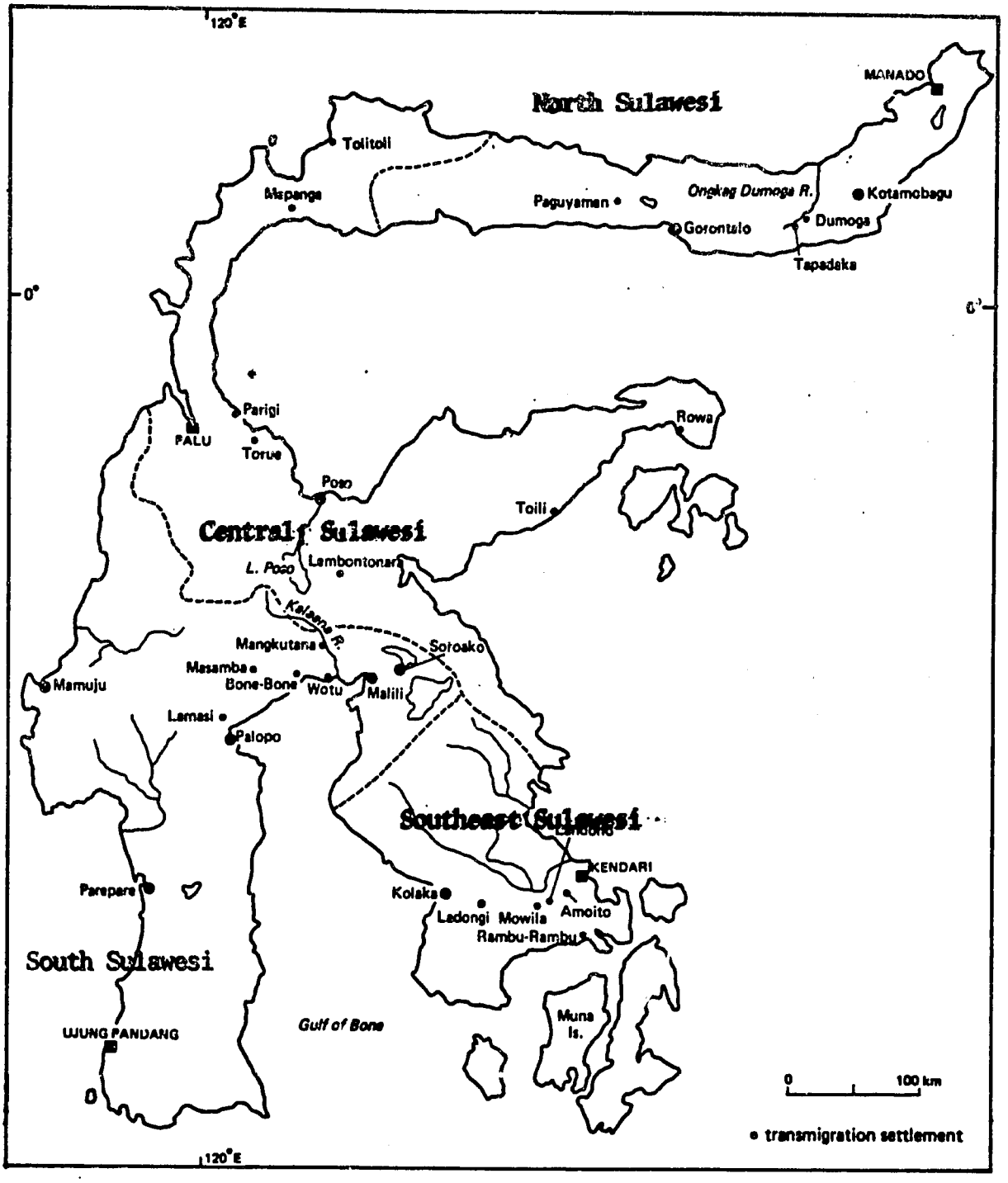
(30)

B. Data Collection

The design and the content of this survey is the modification of the Indonesian National Health Household Survey of 1980. It is also backed by laboratory examination to detect communicable and parasitic diseases, to measure blood hemoglobin and to detect worm egg in feces.

The health household survey consist of interview of all individuals. Children were represented by their parent or adult sibling. Each individual, irrespective of complaint receive complete physical examination. The physical examination is conducted by the interviewing physician in the respondent home.

Laboratory survey are conducted on one-fourth of the households in the sample. This subsample is drawn from the



Map 2. MAP OF SULAWESI SHOWING MAJOR TRANSMIGRATION SETTLEMENTS

existing sample using neighborhood as the sampling unit until the households in the subsample approximately one-fourth of total household in the sample. The laboratory specimens consist of blood film for malaria and nocturnal blood for filaria in Giemsa stain, sputum for acid fast bacilli in Kinyoun-Gabbet stain with Tan Thiam Hok method, feces for enterobacteraceae and intestinal worms, and blood hemoglobin using paper test.

Interviewers/physical examinators were recruited from the pool of physicians who had been trained previously to do the Indonesian health household survey of 1980. Instruction in class and field exercise were conducted to familiarize the interviewers/physical examinators to many aspects of field work in Southeast Sulawesi.

Laboratory personnel are recruited from the pool of professional laboratory technicians of the Communicable Disease Control Laboratory. The interviewers were divided into two groups. Each group was supervised by one field supervisor from our staff (M.D.'s with training in survey research). The interviewers and their supervisors interviewed and examined member of the household in the designated RTs.

Interviews took place in the respondent's homes. Characteristics of the home and demographic characteristics of all residents were recorded. All findings of morbidity and history of morbidity during a period of one month prior to the interview, and subsequent action, place

of treatment, type of health care provider, treatment outcome, and diagnosis of illness were recorded and coded onto the morbidity form. All pregnancy with uterine fundus above the pubic symphysis together with action taken during that pregnancy were recorded and coded onto the pregnancy form. All childbirths and action taken during pregnancy and delivery within the period of one year prior to the interview were recorded and coded onto childbirth forms. All mortality and symptoms and signs prior to mortality within the period of one year prior to the interview were recorded. Possible cause of death was determined by the interviewing physician and all information related to the mortality were coded into the mortality form. The forms were checked by field supervisor. At random, the field supervisor made confirmatory physical examinations and interviews in order to maintain reliability of the response. In the event of inconsistency with the recorded response, the supervisor asked the responsible interviewer to repeat the entire interview and physical examination.

The laboratory personnel are supervised by a CDC supervisor. They obtained their specimens from individual who has completed the sequences of interview and physical examination.

All questionnaires were edge coded, and checked in the field. The questionnaires were rechecked again in the office. All completed household and individual questionnaires were sent to computing center for punch and

verify and then directly entered to magnetic tape.

C. Quality and Reliability of the Data

The preparation, training , selection of personnel, and supervision followed by a series of quality control techniques.

The quality of history taking and diagnosis is about the best we can get. It is understandable that only one fourth of the cases are diagnosed with laboratory back up, since our concern is about major diseases which can be diagnosed without laboratory test, our conclusion is not very far off. Even in the hospital, laboratory diagnostics is not compulsory. A good diagnosis could be made by a good common sense.

Interviewing and coding errors were minimal, since most of the answers were printed in the form. Data transformation from the edge coded questionnaire to machine readable form was done with code and verify technique to minimize punching error.

D. The Disease's Pattern

Survey based data collection presents more accurate information about disease's pattern of a region than service based data. The selection process prior to the utilization of the health service facilities creates bias. Most service based data provide statistics of visits to out patient clinic, hospital admissions and hospital discharges, not the actual health condition of the population.

Availability of information about the age specific duration of illness from the health household survey data enable the estimation of incidence rates, prevalence rates and "Annual Illness Rate". New grouping of diseases is suggested for Southeast Sulawesi. This new grouping is made based on the pattern of diseases in the area. It is the simplification of the W.H.O.'s "A-List" of International Classification of Diseases.[1] The calculation of Estimated Annual Illness Rate of disease i in age group j, Estimated Annual Number of Episode of disease i in age group j, Estimated Annual Death Rate per 1,000 population of disease i in age group j, Estimated Number of Death due to disease i in age group j and Case Fatality Rate due to disease i in age group j, use the following formulas:

$$\text{Est. A.I.R.}_{ij} = \frac{\#\text{Cases}_{ij} \times 1{,}000}{\text{Sample}_j} \times \frac{365}{\text{Duration}_{ij}}$$

$$\text{Ann. }\#\text{Episode}_{ij} = \frac{\#\text{Cases}_{ij} \times \text{Pop}_{ij}}{\text{Sample}_j} \times \frac{365}{\text{Duration}_{ij}}$$

$$\text{Est. Ann. Death Rate}_{ij} = \frac{\#\text{Death}_{ij} \times 1{,}000}{\text{Sample}_j}$$

$$\text{Est. Ann. Death}_{ij} = \frac{\#\text{Death}_{ij} \times \text{Pop}_{ij}}{\text{Sample}_{ij}}$$

$$\text{Case Fatality Rate}_{ij} = \frac{\#\text{Annual Death}_{ij} \times 1{,}000}{\text{Annual }\#\text{Episode}}$$

The computation of estimated annual illness rates based on number of cases found, duration of illness, sample size, and population size produce result which is presented in table 2.

TABLE 2

THE ESTIMATED ANNUAL ILLNESS RATE, NUMBER OF EPISODES, NUMBER OF DEATH, CASE FATALITY RATE IN SOUTHEAST SULAWESI IN 1980

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
1. Typhoid Fever								
< 1 yr	0	0.0	0.	0	0	0.	0	0.
1- 4 yrs	0	0.0	0.	0	0	0.	0	0.
5-14 yrs	6	12.7	56.	9,246	0	0.	0	0.
15-44 yrs	3	18.2	14.	3,116	0	0.	0	0.
≥45 yrs	1	43.7	8.	495	0	0.	0	0.
2. Dysentery								
< 1 yr	2	6.6	277.2	5,930	0	0.	0	0.
1- 4 yrs	12	7.7	370.8	30,499	0	0.	0	0.
5-14 yrs	9	61.1	17.3	2,883	0	0.	0	0.
15-44 yrs	18	17.6	86.8	19,336	0	0.	0	0.
≥45 yrs	8	95.3	31.0	1,816	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
3. Enteritis/Diarrhea								
< 1 yr	12	51.3	214.0	4,578	5	12.53	268	58.56
1- 4 yrs	57	7.1	1,910.2	157,114	13	8.47	697	4.44
5-14 yrs	20	11.2	209.8	34,947	1	.32	54	1.53
15-44 yrs	35	30.2	98.3	21,912	1	.23	52	2.36
≥45 yrs	11	4.8	847.5	49,587	1	1.01	59	1.20
4. Tuberculosis								
< 1 yr	1	16.5	55.4	1,186	0	0.	0	0.
1- 4 yrs	13	184.2	17.	1,381	0	0.	0	0.
5-14 yrs	9	234.9	5.	750	0	0.	0	0.
15-44 yrs	97	481.3	23.	5,024	1	.23	52	10.31
≥45 yrs	101	509.3	102.	5,987	2	2.03	119	19.8
5. Measles								
< 1 yr	5	7.6	602.	12,875	0	0.	0	0.
1- 4 yrs	24	9.2	621.	51,053	2	1.3	107	2.10
5-14 yrs	19	9.8	228.	37,942	0	0.	0	0.
15-44 yrs	0	0.	0.	0	0	0.	0	0.
≥45 yrs	0	0.	0.	0	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
6. Malaria								
< 1 yr	1	25.	37.	783	1	2.51	54	68.49
1- 4 yrs	10	31.9	119.	9,816	0	0.	0	0.
5-14 yrs	95	13.0	858.	143,013	0	0.	0	0.
15-44 yrs	177	82.2	183.	40,711	1	.23	52	1.27
≥45 yrs	49	89.2	203.	11,886	0	0.	0	0.
7. Filarial Infection								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	7	365.	2.	375	0	0.	0	0.
15-44 yrs	28	365.	7.	1,450	0	0.	0	0.
≥45 yrs	11	365.	11.	652	0	0.	0	0.
8. Intestinal Worms								
< 1 yr	11	60.	168.	3,588	0	0.	0	0.
1- 4 yrs	217	60.	861.	70,779	0	0.	0	0.
5-14 yrs	243	150.	190.	31,704	0	0.	0	0.
15-44 yrs	82	50.	139.	31,007	0	0.	0	0.
≥45 yrs	13	50.	96.	5,626	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
9. Dermatophytosis/moniliasis								
< 1 yr	4	103.7	35.	755	0	0.	0	0.
1- 4 yrs	16	123.6	31.	2,533	0	0.	0	0.
5-14 yrs	74	209.3	42.	6,919	0	0.	0	0.
15-44 yrs	338	268.1	107.	23,836	0	0.	0	0.
≥45 yrs	91	495.	92.	5,395	0	0.	0	0.
10. Malignant Neoplasm								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	0	0.	0.	0	0	0.	0	0.
15-44 yrs	6	433.0	1.	311	1	.23	52	166.67
≥45 yrs	5	96.6	19.	1120	0	0.	0	0.
11. Benign Neoplasm								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	2	365.	1.	107	0	0.	0	0.
5-14 yrs	2	365.	1.	107	0	0.	0	0.
15-44 yrs	10	365.	2.	518	0	0.	0	0.
≥45 yrs	7	365.	7.	415	1	1.01	59	142.86

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
12. Mineral/Vitamin Deficiency								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	13	172.	18.	1,479	0	0.	0	0.
5-14 yrs	21	200.	12.	2,055	0	0.	0	0.
15-44 yrs	15	200.	6.	1,418	0	0.	0	0.
≥45 yrs	3	200.	6.	325	0	0.	0	0.
13. Protein/Calorie Malnutrition								
< 1 yr	4	47.	73.	1,056	0	0.	0	0.
1- 4 yrs	35	172.	48.	3,982	0	0.	0	0.
5-14 yrs	21	200.	12.	2,055	0	0.	0	0.
15-44 yrs	9	200.	4.	851	0	0.	0	0.
≥45 yrs	10	200.	18.	1,082	0	0.	0	0.
14. Anemia								
< 1 yr	4	60.	61.	1,305	0	0.	0	0.
1- 4 yrs	37	60.	147.	12,068	0	0.	0	0.
5-14 yrs	58	184.5	37.	6,152	0	0.	0	0.
15-44 yrs	281	181.3	131.	29,304	0	0.	0	0.
≥45 yrs	69	360.0	71.	4,147	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
15. Diseases of the Brain								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	3	75.	10.	783	2	1.30	107	136.99
5-14 yrs	1	60.	2.	326	1	.32	54	164.38
15-44 yrs	3	30.	8.	1,891	1	.23	52	27.40
≥45 yrs	0	0.	0.	0	0	0.	0	0.
16. Eye Infection								
< 1 yr	12	5.8	1,893.	40,490	0	0.	0	0.
1- 4 yrs	71	31.4	538.	44,251.	0	0.	0	0.
5-14 yrs	110	39.8	325.	54,089	0	0.	0	0.
15-44 yrs	89	22.6	334.	74,455	0	0.	0	0.
≥45 yrs	17	168.4	37.	2,184	0	0.	0	0.
17. Other Eye Infections								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	6	31.4	45.	3,740	0	0.	0	0.
5-14 yrs	12	39.8	35.	5,901	0	0.	0	0.
15-44 yrs	52	22.6	135.	43,502	0	0.	0	0.
≥45 yrs	32	168.4	70.	4,112	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
18. Cataracts								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	0	0.	0.	0	0	0.	0	0.
15-44 yrs	10	695.8	2.	518	0	0.	0	0.
≥45 yrs	61	555.5	62.	3,616	0	0.	0	0.
19. Otitis Media/Mastoiditis								
< 1 yr	4	77.0	48.	1,017	0	0.	0	0.
1- 4 yrs	31	182.1	41.	3,332	0	0.	0	0.
5-14 yrs	37	328.	13.	2,208	0	0.	0	0.
15-44 yrs	9	144.1	5.	1,181	0	0.	0	0.
≥45 yrs	4	54.3	27.	1,594	0	0.	0	0.
20. Other Diseases of C.N.S.								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	4	365.	3.	214	0	0.	0	0.
5-14 yrs	8	365.	3.	429	0	0.	0	0.
15-44 yrs	22	365.	5.	1,140	0	0.	0	0.
≥45 yrs	10	365.	10.	593	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REP'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
21. Migraine/Headache								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	8	2.	470.	78,281	0	0.	0	0.
15-44 yrs	76	4.	1612.	359,224	0	0.	0	0.
≥45 yrs	15	7.	792.	46,367.	0	0.	0	0
22. Heart/Vascular Diseases								
< 1 yr	0	0.	0.	0	1	?	?	?
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	1	202.	1.	97	0	0.	0	0.
15-44 yrs	16	269 9	5.	1,121	1	.23	52	46.22
≥45 yrs	13	538.9	13.	771	2	2.03	119	153.85
23. Hypertension								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	2	269.3	1.	145	0	0.	0	0.
15-44 yrs	96	269.3	30.	6,725	0	0.	0	0.
≥45 yrs	51	449.2	52.	3,023	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
24. Hypotension								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	0	0.	0.	0	0	0.	0	0.
5-14 yrs	0	0.	0.	0	0	0.	0	0.
15-44 yrs	71	150.	40.	8,949	0	0.	0	0.
≥45 yrs	30	150.	74.	4,328	0	0.	0	0.
25. Lymphadenitis								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	11	25.	105.	8,611	0	0.	0	0.
5-14 yrs	80	25.	376.	62,625	0	0.	0	0.
15-44 yrs	118	25.	400.	89,239	0	0.	0	0.
≥45 yrs	35	25.	518.	30,293	0	0.	0	0.
26. Upper Respiratory Infection								
< 1 yr	99	17.8	5088.	108,845	0	0.	0	0.
1- 4 yrs	550	6.4	20448.	1,681,825	0	0.	0	0.
5-14 yrs	498	5.2	11251.	1,874,223	0	0.	0	0.
15-44 yrs	277	15.6	1506.	335,712	0	0.	0	0.
≥45 yrs	83	32.4	947.	55,430	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
27. Influenza								
< 1 yr	24	7.1	3092.	66,152	0	0.	0	0.
1- 4 yrs	120	6.7	4262.	350,513	0	0.	0	0.
5-14 yrs	72	10.2	829.	138,143	0	0.	0	0.
15-44 yrs	129	14.1	776.	172,975	0	0.	0	0.
≥45 yrs	29	19.2	559.	32,682	0	0.	0	0.
28. Pneumonia								
< 1 yr	3	24.1	114.	2,436	5	12.53	268	110.05
1- 4 yrs	12	5.6	510.	41,936	5	3.26	268	6.39
5-14 yrs	6	6.8	104.	17,268	0	0.	0	0.
15-44 yrs	2	30.	6.	1,260	0	0.	0	0.
≥45 yrs	0	0.	0.	0	0	0.	0	0.
29. Bronchitis/Emphysema/Asthma								
< 1 yr	5	38.3	119.	2,555	0	0.	0	0.
1- 4 yrs	30	132.4	54.	4,434	0	0.	0	0.
5-14 yrs	31	160.	23	3,792	0	0.	0	0.
15-44 yrs	43	265.7	14.	3,060	0	0.	0	0.
≥45 yrs	53	443.9	54.	3,142	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
30. Hypertrophy of Tonsils and Adenoids								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	37	7.0	1,258.	103,443	0	0.	0	0.
5-14 yrs	244	92.	312.	51,904	0	0.	0	0.
15-44 yrs	38	202.5	16.	3,548	0	0.	0	0.
≥45 yrs	2	202.5	4.	214	0	0.	0	0.
31. Dental Disease								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	13	29.3	106.	8,683	0	0.	0	0.
5-14 yrs	70	62.9	131.	21,779	0	0.	0	0.
15-44 yrs	108	22.3	411.	91,565	0	0.	0	0.
≥45 yrs	39	26.5	544.	31,844	0	0.	0	0.
32. Ulcers								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4 yrs	1	0.	0.	0	0	0.	0	0.
5-14 yrs	10	20.2	58.	9,688	0	0.	0	0.
15-44 yrs	122	186.2	56.	12,388	0	0.	0	0.
≥45 yrs	44	329.5	49.	2,889	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
33. Acute Abdominal Disease								
< 1 yr	2	30.	61.	1,305	1	2.51	54	41.10
1- 4yrs	3	30.	24.	1,957	0	0.	0	0.
5-14yrs	2	30.	8.	1305	0	0.	0	0.
15-44yrs	1	30.	3.	630	1	.23	52	82.19
≥45yrs	1	30.	12.	721	0	0.	0	0.
34. Liver/Biliary Diseases								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4yrs	0	0.	0.	0	1	?	?	?
5-14yrs	2	45.	5.	870	0	0.	0	0.
15-44yrs	12	75.	14.	3,025	1	.23	52	17.12
35. Other Digestive Diseases								
< 1 yr	0							
1- 4yrs	10							
5-14yrs	19							
15-44yrs	24							
≥45yrs	2							
≥45yrs	4	75.	20.	1,154	2	2.03	119	102.74

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL ILLNESS RATE PER 1000 POP	ESTIMATED ANNUAL NUMBER OF EPISODES	NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL DEATH RATE PER 1,000 POP	ESTIMATED ANNUAL NUMBER OF DEATHS	CASE FATALITY RATE PER 1,000 CASES
36. Diseases of Pregnancy and Birth								
< 1 yr	2	280.	7.	140	14	35.09	751	5369.86
1- 4yrs	0	0.	0.	0	0	0.	0	0.
5-14yrs	0	0.	0.	0	0	0.	0	0.
15-44yrs	16	153.2	9.	1,975	1	.23	52	26.23
≥45yrs	0	0.	0.	0	0	0.	0	0.
37. Skin Infection								
< 1 yr	8	15.9	460.	9,847	0	0.	0	0.
1- 4yrs	77	48.3	379.	31,199	0	0.	0	0.
5-14yrs	72	66.5	127.	21,189	0	0.	0	0.
15-44yrs	40	68.1	50.	11,105	0	0.	0	0.
≥45yrs	14	138.8	37.	2,182	0	0.	0	0.
38. Skin Mycosis								
< 1 yr	9	103.7	79.	1,698	0	0.	0	0.
1- 4yrs	69	123.6	133.	10,925	0	0.	0	0.
5-14yrs	92	209.3	52.	8,602	0	0.	0	0.
15-44yrs	95	268.1	30.	6,699	0	0.	0	0.
≥45yrs	19	489.	19.	1,126	0	0.	0	0.

TABLE 2 (continued)

DIAGNOSIS / AGE GROUP	MONTHLY NUMBER OF CASES FOUND	AVERAGE DURATION OF ILLNESS (in days)	ESTIMATED ANNUAL		NUMBER OF REPT'D DEATHS	ESTIMATED ANNUAL		CASE FATALITY RATE PER 1,000 CASES
			ILLNESS RATE PER 1000 POP	NUMBER OF EPISODES		DEATH RATE PER 1,000 POP	NUMBER OF DEATHS	
39. Bone and Joint Diseases								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4yrs	4	90.	11.	870	0	0.	0	0.
5-14yrs	3	90.	4.	652	0	0.	0	0.
15-44yrs	102	90.	96.	21,427	0	0.	0	0.
≥45yrs	82	90.	337.	19,714	0	0.	0	0.
40. Congenital Anomalies								
< 1 yr	3	365.	8.	161	3	7.52	161	1000.
1- 4yrs	11	365.	7.	590	0	0.	0	0.
5-14yrs	8	365.	3.	429	0	0.	0	0.
15-44yrs	7	365.	2.	363	0	0.	0	0.
≥45yrs	2	365.	2.	119	0	0.	0	0.
41. Fractures								
< 1 yr	0	0.	0.	0	0	0.	0	0.
1- 4yrs	8	64.7	29.	2,420	1	.65	54	22.16
5-14yrs	19	6.2	360.	59,973	1	.32	54	.89
15-44yrs	17	46.5	31.	6,912	1	.23	52	7.49
≥45yrs	7	178.6	14.	848	0	0.	0	0.

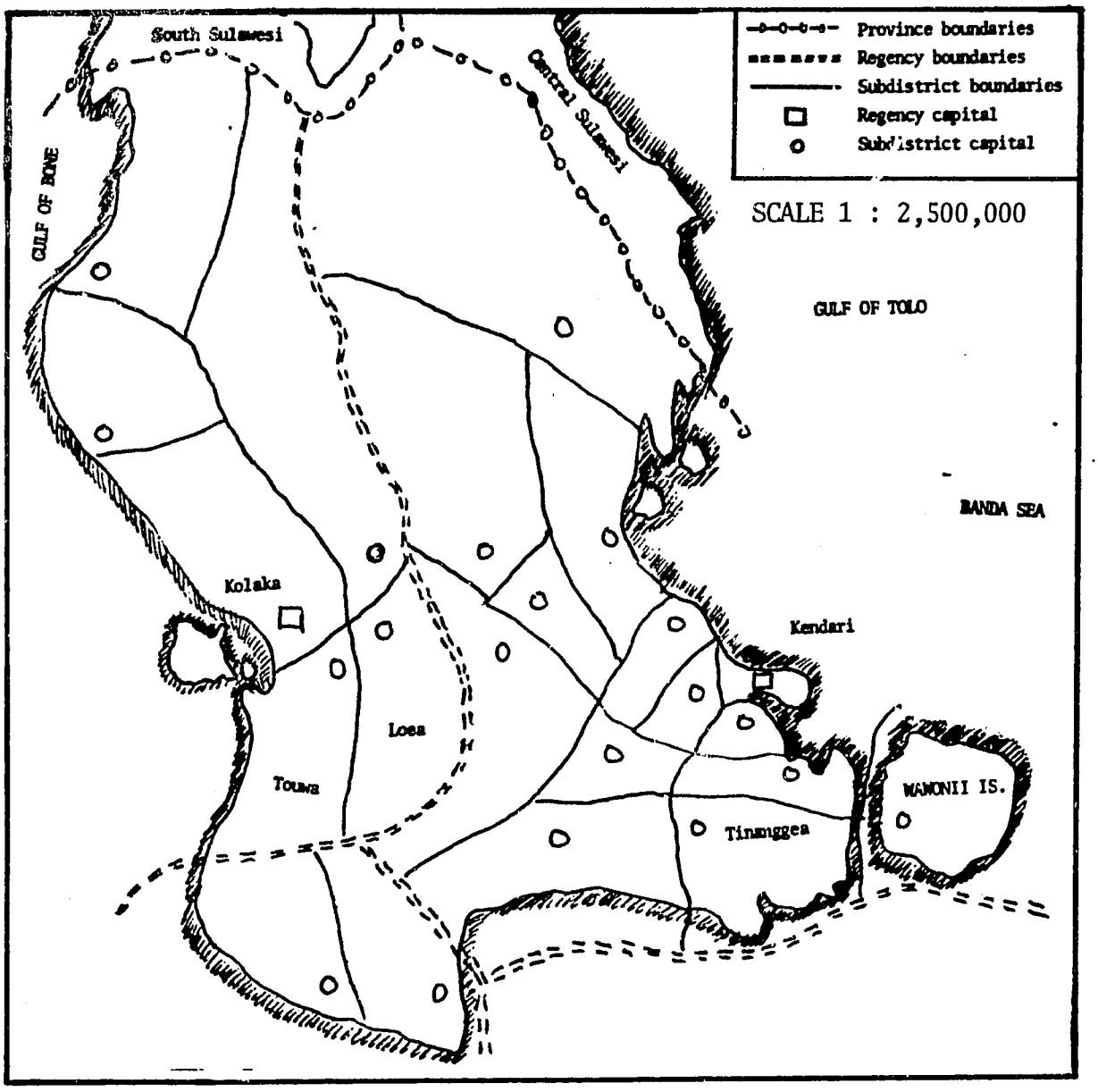
E. Basic Survey Statistics

One-way analysis of basic statistics collected through the survey data is presented by variables of age group, sex, source of care when ill, outcome of treatment and distance from home to place of treatment.

In addition, there will be descriptive statistics of variables of distance from home to place of treatment and out of pocket payment for treatment received.

1. Population and Age Distribution

The land territory of the Province of Southeast Sulawesi is 26,686 km^2 and the estimated population in 1980 was 852,100 people, and the average density is 34 persons per km^2.[2] The land territory of the Regencies of Kendari, and Kolaka, where the study take place is 19,400 km^2 (see Map 3). The population is growing at a fast rate. The growth rate estimate recorded by the population census between 1961 to 1971 is 2.5% per annum[3]. This rapid growth rate is also increased further by the inflow of transmigrants, either spontaneous or government sponsored. They come from densely populated Java, Madura, and Bali. The main location of the transmigration areas are in the Regencies of Kendari and Kolaka. The major inflow or organized transmigration has taken place since mid 1970's.



Map 3. MAP OF REGENCIES OF KENDARI, AND KOLAKA SHOWING SUBDISTRICT BOUNDARIES

The sampled population in Regencies of Kendari, and Kolaka have higher dependency ratio than the population of Indonesia. The life expectancy is also shorter in Kendari and Kolaka than the population of Indonesia in general.[4] The population distribution of the sample is 3.9% in age 0-1 year, 14.8% in age 1-4 years, 30.1% in age 5-14 year, 41.7% in age 15-44 year and 9.6% in age 45 + year. The population distribution fcr Indonesia in 1976 is 42.1% in age 0-14 years, 42.3% in age 15-44 years and 15.1% in age 45+ years (see table 3).

TABLE 3

POPULATION DISTRIBUTION OF KENDARI AND KOLAKA IN 1980 AS COMPARED TO INDONESIA IN 1976

AGE GROUP	KENDARI & KOLAKA		INDONESIA	
	Number	Percent	Number	Percent
0 - 1 year	21,393	3.9%		
1 - 4 years	82,249	14.8%		
5 - 14 years	166,588	30.1%	54.3 m	42.6%[1]
15 - 44 years	222,890	41.7%	53.9 m	42.3%
45 + years	58,511	9.6%	19.2 m	15.1%
Total	551,631	100.0%	127.4 m	100.0%

[1]for age group 0-14 years
m = million.

2. Sex

The sex ratio of Kendari and Kolaka is 107. It means there are 107 males for every 100 females. In Indonesia, there were 75.1 million males and 76.8 females in 1980; then the sex ratio is 98. In many part of Indonesia with history of large outflow of young males, the sex ratio is less than 98. In other part of Indonesia, where many development projects are carried out, the inflow of male newcomers and job seekers increased the sex ratio above 98. The sex ratio of Southeast Sulawesi is 94. It means in many part of Southeast Sulawesi there were many out-migration of male population, while in the Regencies of Kendari and Kolaka it was the opposite. In Kendari and Kolaka there were many in-migration of males, through development projects or transmigration.

3. Source of Care When Ill

When asked about the regular source of care when ill, 31.9% of the survey population mentioned health centers as their main source of care, 33.6% mentioned subhealth centers, 11.4% mentioned self care and 10.0% mentioned medicine men (**dukun**), and only 0.3% mentioned physician. There are 3.3% without any regular source of treatment. Their response should be compared to the action

taken in their last illness. The response about their regular source of care and their action in the last illness is somewhat different (see table 4).

TABLE 4

DISTRIBUTION OF POPULATION OF KENDARI AND KOLAKA BY THEIR REGULAR SOURCE OF CARE WHEN ILL

SOURCE CARE WHEN ILL	NUMBER OF RESPONDENTS	PERCENT
Health Center	3,292	31.9%
Subhealth Center	3,459	33.6%
Private Physician	36	0.3%
Male Nurse	506	4.9%
Midwife	16	0.2%
Medicine Man	1,027	10.0%
Self Care[1]	1,175	11.4%
Others	449	4.4%
No Care	347	3.4%

[1]Includes all type of care given by the member of the household or other relative who does not belong to any category of health personnel

Out of 10,330 people examined in the survey, there are 2,756 episodes of illness found within one month recall period, or 267 episodes per 1,000 population. Out of these number, 1,392 episodes or 50.5% of them admit has received treatment. When asked to name the place of treatment however, only 917 cases able to name the place of treatment,

a "loss" of one-third of the episodes. The dichotomy of the population to those who were found ill and those who were healthy. Those were found ill were divided into those who perceived their illnesses and those who did not. Those who perceived their illness were divided into those who had received treatment and those who had not. Those who had received treatment were divided into those who had received treatment from an identifiable source of care and those who had received treatment from an unidentifiable source of care. The dichotomous split is presented in figure 2.

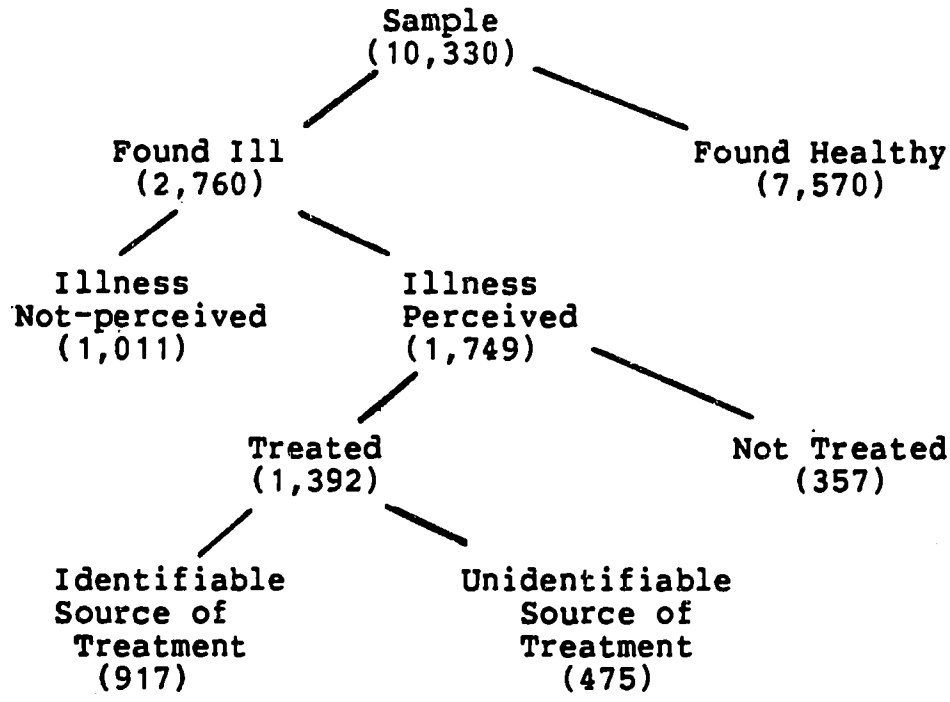


Fig. 2. DICHOTOMOUS SPLIT OF POPULATION BY ILLNESS AND PROCESS OF SEEKING CARE

Among those who seek care, 33.% of them are seeking care from health centers, 23.8% from subhealth centers, 2.1% from village health post, and 4.7% to hospital. The

remaining 19.7% are treated at home (see table 5).

TABLE 5

DISTRIBUTION OF EPISODES OF ILLNESS BY PLACE OF TREATMENT

PLACE OF TREATMENT	NUMBER OF EPISODES	PERCENT
1. Bazaar	9	1.0%
2. Medicine Man	140	15.3%
3. Village Health Post	19	2.1%
4. Subhealth Center	218	23.8%
5. Health Center	303	33.0%
6. Hospital	43	4.7%
7. Home	185	20.2%

It is apparent that the straight forward question to respondents about their source of care is answered with something they thought as a socially acceptable response. It is explained by the difference in the percentage of responses who accept that they seek care to medicine men (10.0%) with the actual share of the medicine men in the market (15.3%). The actual share of health center is equal to what the response of the respondent about the regular source of treatment for them. Seeking care from health center is a "socially acceptable" responses. There is a special treatment made to check this bias in the interview toward socially acceptable response, in the questionnaire design, as well as in the analysis.

4. Outcome of Treatment

Treatment intervention produces a certain result, ranging from complete cure to death after treatment. In the survey there are death reported during one month prior to the interview, but there is no death after treatment intervention. A small number of cases become worse after treatment (1.2%). Most cases are either getting better or completely healed (80.7%), while 18.0% do not show any improvement after treatment (see table 6).

TABLE 6

OUTCOME OF TREATMENT BY CATEGORY

OUTCOME OF TREATMENT	NUMBER OF CASES	PERCENT
1. Completely Healed	575	42.9%
2. Better or Improving	507	37.8%
3. Just the Same	41	18.0%
4. Getting Worse	15	1.1%
5. Permanent Impairment	1	0.1%
6. Do not Know	1	0.1%
7. Death	-	-

The response suggests that treatment intervention, however simple has been very good. Partly because there is

no death occur after treatment among the member of the sampled household, while the reported number of death in one year prior to the interview were 85 cases. Among those death 68 cases (80.0%) were caused by illness, but not receiving any treatment. One (1.2%) was related to childbirth, three (3.8%) were related to accident/trauma, seven (8.2%) were stillbirth, and six (7.1%) were caused by unspecified nature (see table 7).

5. Mortality and Morbidity Rate

The small number of death discloses minimal information about mortality (see table 7). The reported number of death with one month recall period was 12 cases. If there was no seasonal variation in mortality, then the estimated annual number of death would be 144 cases. The reported number of death per year however was 85 cases, an underreporting of 41.0%. Even though it was a large scale underreporting, it is still below the underreporting of mortality in Bogor, which was estimated at 56.3%.[5]

Since recall error is a common phenomena in morbidity and mortality reporting, the minimization of this error is done through shorter recall period. The disadvantage of shorter recall period is the number of cases and the number of death reported from a manageable sample size, become very small. Therefore in the computation of crude death rate, a one month recall period will be used, while in the

TABLE 7

DISTRIBUTION OF MORTALITY BY CAUSE OF DEATH AND AGE GROUP

AGE GROUP	CAUSE OF DEATH					TOTAL
	ILLNESS	CHILDBIRTH	ACCIDENT	STILLBIRTH	OTHERS	
< 1 year	26	0	0	7	6	39
Row%	66.7%			17.9%	15.4%	100.0%
Col.%	38.2%			100.0%	100.0%	45.9%
1 - 4 years	24	0	1	0	0	25
Row%	96.6%		4.0%			100.0%
Col.%	35.3%		33.3%			29.4%
5 -14 years	2	0	1	0	0	3
Row%	66.7%		33.3%			100.0%
Col.%	2.9%		33.3%			3.5%
15 -44 years	8	1	1 10.0%	0	0	10
Row%	80.0%	10.0%	33.3%			100.0%
Col.%	11.8%	100.0%				11.8%
45 + years	8	0	0	0	0	8
Row%	100.0%					100.0%
Col.%	11.8%					9.4%
	68	1	3	7	6	85
	80.0%	1.2%	3.5%	8.2%	7.1%	100.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

χ^2 = 35.378 N = 85 df = 16 Contingency Coefficient = .5421 p < .01

establishment of association between variable of mortality and other variables, a one year recall period will be used.

If recall error decreases in linear fashion, the actual death rate is {(12x12/10330-85/10330)}/12 + 12x12/10330 = 15.79 per thousand population. This crude death rate is lower than crude death rate in more develop regency such as Bogor,[6] and to our surprise, it is lower than the crude death rate in many other parts of Indonesia.[7] Since the establishment of health care facilities are just beginning in this area, this low crude death rate cannot be explained by variation in the effectiveness health care facilities is in favor of Southeast Sulawesi, but rather, by the difference in demographic characteristics between Kendari & Kolaka and Bogor. In relative term there are more adult, especially adult male in Kendari & Kolaka than in Bogor. The χ^2-test shows that the cause of death is different across each age group. The main causes of death in infant and toddler are illness and stillbirth, where variation in the effectiveness of health care facilities could make the difference. However, accident and non-illness are the important cause of death in this area, and they are increasing with increasing age.

6. Distance from Home to Place of Treatment

The distance from home to place of treatment could

become an important determining factor in the decision to seek care. Experience from East Java ten years earlier indicates that the users of health care facilities are coming from the neighboring area. Approximately 80.0% come from within radius of 10 km.[8] In Kendari & Kolaka, description of the variable of distance in qualitative term indicates the reported distance from home to place of treatment is near, or treatment has taken place at home in about 69.1% of the cases. It is rather far for 17.4%, far for 10.4% and very far for 3.2% of the cases. The users of services still heavily dominated by people who live close to the place of treatment. The scarce population density has made the users of service smaller. Many facilities are unreachable for the population who live in the same subdistrict (see table 8).

There are only 917 cases able to tell the distance between home and place of treatment out of the 1392 cases who admit receiving treatment. The remaining cases do not able to tell how far the place of treatment from their home. It make us guessing about what has happened to the remaining 475 cases. Do they really seek care or not. They probably do not seek care, therefore unable to tell the distance from their home to place of treatment, or they misunderstood the concept of distance.

A multiple check question about the availability of health care provider in the respondent's village or in the neighboring villages, tells about the knowledge,

TABLE 8

ONE-WAY ANALYSIS OF DISTANCE FROM HOME TO PLACE OF TREATMENT

DISTANCE	NUMBER	PERCENT
At Home	197	21.5%
Near	435	47.5%
Rather Far	159	17.4%
Far	95	10.4%
Very Far	29	3.2%
Total	917	100.0%

There are 181 cases of those who have received treatment at home as self care or treated by member of the household or relative which is does not belong to any category of health care provider. The remaining 16 were those who had been attended at their home by health care provider

accessibility and the market process about the health care delivery (see table 9).

It is clear that 20.4% of the population do not have health care provider in their villages, or in the neighboring villages. Given the fact that the Ministry of Health has been expanding the primary health care service in great quantity to the rural area since 1974, it does not reach many parts of Southeast Sulawesi.' There are 42.4% of the population have only one type of health care provider, 19.1% have two and only 18.0% have three or more. The low proportion of the seeking care is related to the inaccessibility of the health care provider to them However,

TABLE 9

THE AVAILABILITY OF HEALTH CARE PROVIDER IN THE VILLAGE OF RESIDENCE OR IN THE NEIGHBORING VILLAGES

AVAILABILITY OF HEALTH CARE PROVIDER	NUMBER OF RESPONDENTS	PERCENT
Not Available	2,107	20.4%
One Provider	4,374	42.4%
Two Providers	1,972	19.1%
Three or More	1,861	18.0%

the solution could not be reached simply by adding health care facilities. Adding more health care facilities does not always solve the problem. The low population density and the scattered place of residence, poor road and insufficient public transportation imposes greater obstacle to access to health care. Adding more facilities may only increase a small number of patient to health care facility.

7. Out of Pocket Payment

The people in the area receive health care from private and public sector. They usually pay in-full for treatment received from private practitioners. Public facilities are partially subsidized by the government and allowed to assess service charge, not exceeding the standard

Rp. 150 for out patient care in heath center, subhealth center and village health post, and Rp. 300 for service provided in the outpatient department of a government hospital. In transmigration villages, the provincial transmigration office provides some drugs, primarily anti malaria, anti diarrheal and drug for skin diseases. The transmigrants are not required to pay for any treatment using the transmigration drug subsidy, but they must pay for drug obtained from other sources. The boundary is not clear and the survey does not have any way of telling whether a particular patient has been treated with the drug supplied by the transmigration office or supplied through other sources, but still asked to pay for their treatment, or the opposite. The investigation of the incidence of cost is very difficult, and what could be obtained is a small increase in precision. What was recorded in the survey was the amount of out-of-pocket payment made for service received from any types of sources of care.

In general, the out-of-pocket payment made for one episode of illness is Rp. 2,670.90 (US$ 4.27). However the distribution of the out of pocket payment is very skewed to the right (skewness =21.238), with several cases pay an extremely high cost (kurtosis=449.53). Log transformation improves the distribution. The average out of pocket payment after log transformation is Rp $e^{3.6309}$ or equivalent of Rp. 37.75 per episode of illness. This is a very low figure. The use of median statistics provides more

reasonable estimates than mean statistics. The median of out of pocket payment among those who seek care is Rp. 175. per episode of illness. In five levels ordinal scale, the out of pocket payment ranges from very cheap to very expensive. The medium statistics concludes that the out-of-pocket payment is cheap.

Footnotes to Chapter III

[1]International Classification of Diseases, Manual of Diseases, Injuries, and Cause of Death, Vol. I, Geneva: World Health Organization, 1967, pp. 447-449.

[2]Biro Pusat Statistik, Buku Saku Statistik Indonesia (Statistical Pocketbook of Indonesia) 1978/1979, Jakarta, Biro Pusat Statistik, 1979, pp. 4, 34-37.

[3]Cho, Lee-Jay, Suharto, Sam, McNicoll, Geofrey, and Made Mamas, S.G., Population Growth in Indonesia: An Analysis of Fertility and Mortality Based on the 1971 Population Census, Honolulu, The University Press of Hawaii, 1980, p. 10.

[4]Cho, Lee-Jay, Suharto, Sam, McNicoll, Geofrey, and Made Mamas, S.G., Perkiraan Angka Kelahiran dan Kematian di Indonesia Berdasarkan Sensus Penduduk 1971 (Estimates of Fertility and Mortality in Indonesia based on the 1971 Population Census), Jakarta, Biro Pusat Statistik, Series: Sensus Penduduk 1971, SP76-L02, table 9.1 - 9.3.

[5]Siagian, Berlian T.P., Quantitative Techniques for A Health Care Development Model: The Case of The Regency of Bogor, West Java, Indonesia., PhD dissertation, The University of Michigan, Ann Arbor, 1982, pp. 141-142.

[6]Siagian, Berlian, T.P., Ibid, p. 142.

[7]Cho, Lee-Jay, et al., op cit. pp. 17-21.

[8]Soetopo, M.H.W., Soemana, P., "An Analysis of the Utilization of Two General Hospitals in Pasuruan Regency," Bulletin Penelitian Kesehatan Vol. 1, No. 1, 1973, pp. 24-31.

[9]Petunjuk Pelaksanaan Instruksi Presiden Republik Indonesia, No. 5 tahun 1975, 17 April 1974 (Guidelines for Implementation of the Presidential Instruction of Republic Indonesia), Departemen Kesehatan RI, Jakarta 1974.

CHAPTER IV

THE DEVELOPMENT OF THE ADDITIVE MODELS

In the development of the additive model of utilization and the additive model of incapacitation, it is important to understand the process of seeking care. What factors influence the process of seeking care. How these factors determine the utilization of the health care provider, and to what direction it may influence incapacitation. The basic information obtained from the analysis of the process of seeking care will be used to build the additive models. The additive models in turn will be used to quantify age specific utilization rates and age specific incapacitation rates. Both groups are combined with information on illness rate and percentage seeking care to different type of health care provider when ill. All those coefficients are the major inputs in calculating incapacitation days due to illness, and will be used to performed cost effectiveness analysis. The development of alternative health care development strategy will be based on the result of cost effectiveness analysis.

A. The Process of Seeking Care

As has been mentioned earlier, the decision to seek care when ill is influenced by many factors. Correlation analysis between the decision to seek care and other variables demonstrate the degree and the direction of those associations.

The variable of treatment is coded 1 = **Treated** and 2 = **Not Treated.** Dummy transformation of treatment variable was done by assigning value 1 if treated, and value 0 if not treated.

The variable of decision to seek care has significant correlation with sex, distance from home to place of treatment, motivation to seek care, practice to boil drinking water, ordinal rank of value of household assets, health care provider availability in the area, type of health care provider, place of treatment, personal health condition at the time of the interview and diagnosis of illness (see table 10).

The dummy variable of treatment has significant correlation with the floor size of the place of residence, number of bedrooms in the house and the estimated value of household assets. The product moment correlation Pearson's r, between dummy variable of treatment and these variables listed below are:

1) Floor size of place of residence (in m^2) = .0532,

$p \leq .05$

2) Number of bedrooms in the house = .0543, $p \leq .05$

3) Estimated value of household assets = .0907, $p \leq .01$.

TABLE 10

THE RANK ORDER CORRELATION OF DECISION TO SEEK CARE WITH SEVERAL EXPLANATORY VARIABLES

EXPLANATORY VARIABLES	GOODMAN KRUSKAL γ	SPEARMAN'S ρ	Significancy (p)
Sex	.0876	.0439	.0703
Distance from Home to Place of Treatment	-1.0	-.0833	.0118
Motivation to Seek Care	-.8530	-.0843	.0110
Boiling Drinking Water	-.3279	-.0888	.0610
Ordinal Rank of Household Assets	-.1579	-.0952	.0001
Health Care Provider Availability	-.1730	.1139	.0000
Type of Health Care Provider	.9941	.9277	.0000
Place of Treatment	.9955	.9556	.0000
Personal Health Condition	.4806	.2469	.0000
Diagnosis of Illness	.1024	.0816	.0004

Interpretation of the correlation analysis suggests several explanations for the variation in the utilization of

health care facilities. They could be classified as the precipitating factors, the enabling factors, and the need factors.

1. The Precipitating Factors

In general we understand that female has higher illness rate and lower mortality rate. They also have higher proportion who seek care when ill. In Kendari & Kolaka the chances of women to seek care is less than the chances of male ($P < .1$). It could be due to the restraint put by the local custom on women. It will then prevent adult female from seeking care from male health care provider, while males do not have such restraint (see table 11).

TABLE 11

TWO-WAY ANALYSIS OF DECISION TO SEEK CARE BY SEX OF THE SICK PERSONS

SEX		DECISION		TOTAL
		SEEKING CARE	NOT SEEKING CARE	
Male	Obs.	749	675	1424
	Row%	52.6%	47.4%	100.0%
	Col.%	53.8%	49.6%	51.7%
Female	Obs.	643	687	1,330
	Row%	48.3%	51.7%	100.0%
	Col.%	46.2%	50.4%	48.3%

$\chi^2 = 4.9749$ df = 1 N = 2,754 Cont. Coeff. = .0425
$p = .0257$

The treatment process is also more likely to take

place if the person is well motivated in seeking care and not forced by anybody else in the process.

People with better health practice, such as boiling their drinking water before drinking are more often seeking care when ill. The precipitating factor can stimulate as well as inhibit the process of seeking care. It could be the factor representing cluster of variables measuring custom and habit, knowledge, and awareness about a good health practice.

2. The Enabling Factors

Once there is an awareness of the need to seek care, the process of seeking care is also influenced by enabling factors. The enabling factors makes the the implementation of the decision to seek care possible. They are basically representing physical availability of the health care provider near respondent's place of residence and the respondent's ability to pay for the health consultation and its associated costs.

Closer distance will stimulate the process of seeking care ($p < .05$). Similarly, provider availability stimulate the process of seeking care. Consultation would be easier to take place if the person lives in a place where there are many alternatives in selecting health care providers ($p < .0001$). High estimate of household assets have association with the decision to seek care ($p < .001$), while

the availability of physical amenities in the household, represented by variables of floor space, number of bedroom, has association with the decision to seek care ($p < .05$).

3. The Need Factors

The decision to seek care could be stimulated by individual perception about an impending threat to health. A particular illness could be perceived as a serious threat and should be brought to health care provider for immediate treatment. The good examples for this are febrile convulsion and infantile diarrhea. Other illnesses, such as coughing due to chronic bronchitis in old age and skin diseases are considered normal and do not require special attention. The importance of diagnostic variable is confirmed at $p < .001$.

The respondent behavior in dealing with the threat to health could be seen also from the comparison in the process of seeking care among people who perceived their illnesses, among those who do not perceived their illnesses and among those who have been classified as hypochondriac. Hypochondriacs have greater chance to seek care (67.2%), then followed by those who perceived their illness (41.1%), and the least is the consultation made by those who do not perceived their illness, but seeking care for other reason, and also received treatment for their unperceived illnesses (33.3%) (see table 12).

TABLE 12

TWO-WAY ANALYSIS BETWEEN THE DECISION TO SEEK CARE AND INDIVIDUAL HEALTH CONDITION

HEALTH CONDITION		DECISION		TOTAL
		SEEKING CARE	NOT SEEKING CARE	
Healthy	Obs.	3	4	7
	Row%	42.9%	57.1%	100.0%
	Col.%	0.2%	0.3%	0.3%
Hypo-Chondria	Obs.	671	328	999
	Row%	67.2%	32.8%	100.0%
	Col.%	48.2%	24.1%	36.3%
Un-Perceived Illness	Obs.	1	2	3
	Row%	33.3%	66.7%	100.0%
	Col.%	0.1%	0.1%	0.1%
Perceived Illness	Obs.	716	1,025	1,741
	Row%	41.1%	58.9%	100.0%
	Col.%	51.5%	75.4%	63.3%

$\chi^2 = 172.74$ df = 2,750 Cont. Coeff. = .2431
$p < .001$

B. <u>The Additive Model of Utilization</u>

There are only eleven cases out of 917 who have received inpatient care. These inpatient cases had also used used outpatient care facility. Therefore, utilization variable is measured by the number of outpatient consultation made. The smallness of the inpatient cases had been expected, therefore, the duration of hospital stay was not asked in the survey.

Correlation analysis between variable of utilization

with several potential explanatory variables was meant to identify variables which have significant association with variable of utilization. Location of place of residence by regencies or by subdistricts, family ordinal of the person in the household, recognition of illness, distance from home to place of treatment, motivation to seek care, hospitalization, result of treatment, health care provider availability, type of health care provider, out of pocket payment for treatment received, age group, place of treatment and individual health condition, all have significant associations with variable of utilization (see table 13).

The SEARCH analysis employed here identified nine variables as the best predictors of utilization in Southeast Sulawesi. These variables are out of pocket payment, source of treatment, diagnosis, distance to place of treatment, age group, subdistrict, place of treatment, type of provider and result of treatment. Altogether, these variables explained 37.2 percent of the variation in utilization. The full results of the search on utilization are illustrated in the tree diagram in Figure 3.

Once the important predictor variables for utilization were identified in the search analysis, these nine variables were examined for interrelationships within the context of an additive model, using the Multiple Classification Analysis technique (MCA). The MCA examines the relationship between several categorical independent variables and a

TABLE 13

CORRELATION ANALYSIS BETWEEN UTILIZATION AND ITS POTENTIAL CATEGORICAL EXPLANATORY VARIABLES

EXPLANATORY VARIABLES	GOODMAN-KRUSKAL *gamma*	SPEARMAN'S *rho*	Significancy (p)
Regency	.1777	.0868	.0091
Subdistrict	.0905	.0784	.0186
Family ordinal of respondent	-.1111	-.0903	.0064
Sex	-.0002	-.0001	.9979
Perception of illness	.2176	.0130	.6976
Recognition of illness	.1475	.0832	.0124
Distance to place of treatment	-.0868	-.0629	.0581
Perception of quality of care	.0106	.0065	.8423
Motivation to seek care	-.2384	.0736	.0267
Advised for hospitalization	-.1556	-.0224	.5016
Result of treatment	.1423	.0992	.0038
Nutritional status	-.0678	-.0373	.2779
Provider availability	-.0894	-.0662	.0469
Age group	.1273	.0950	.0046
Type of provider	-.2335	-.1373	.0000
Place of treatment	.0868	.0682	.0417
Out of pocket payment	.2954	.2148	.0000
Individual health status	.1496	.0845	.0111
Diagnosis of illness	-.0619	-.0570	.1075

Any $p < .1$ have significant association with utilization

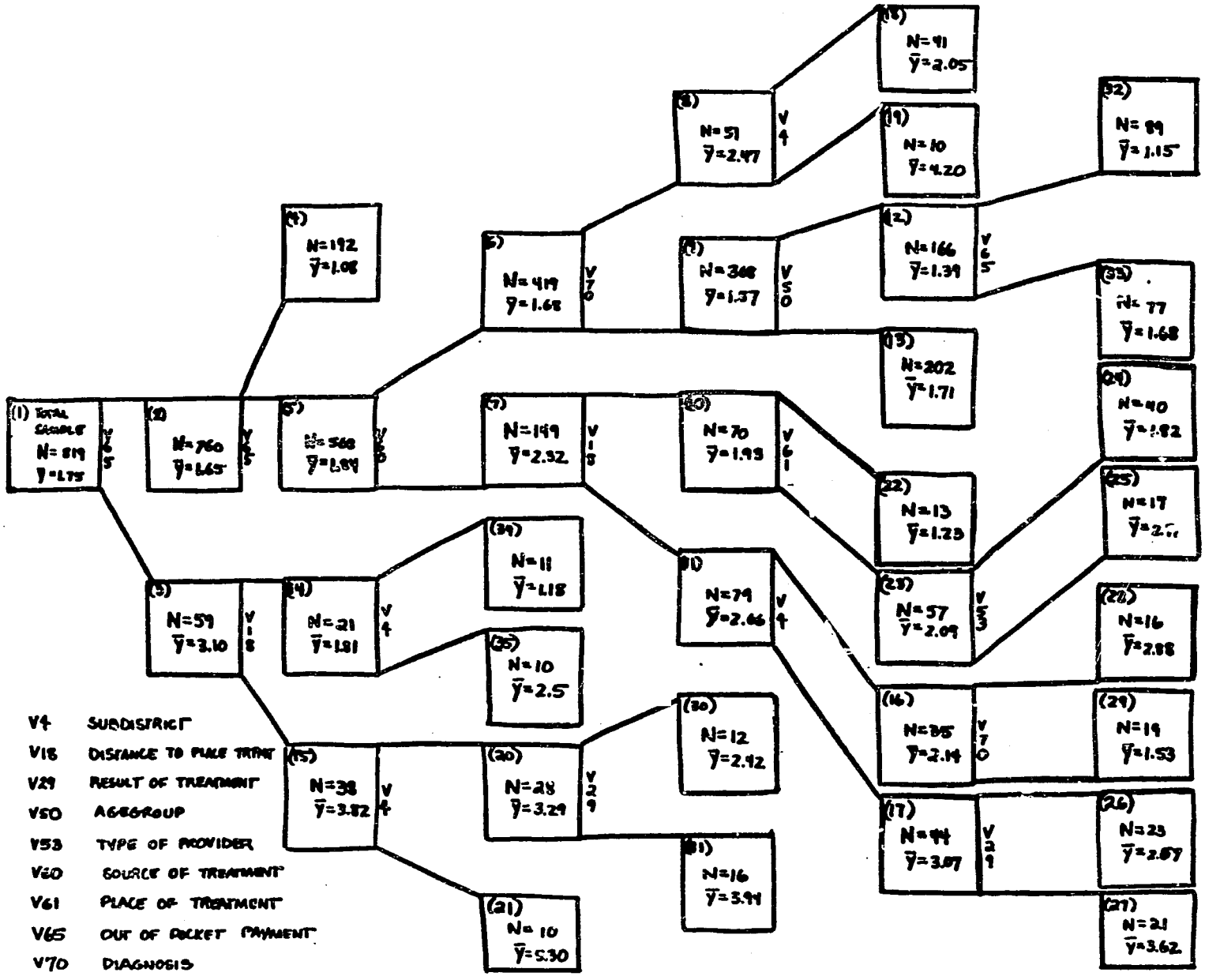


Fig. 3. Tree Diagram of *SEARCH* Analysis of Utilization

single dependent variable and determines the effects of each predictor before and after adjustment for its intercorrelations with other predictors in the analysis.

Using utilization as the dependent variable, these nine selected independent variables above were fitted into an additive model. The proportion of variation of the utilization explained by the fitted model was 31.26 percent. These nine predictor variables and their corresponding beta coefficient in the model are as follows:

Out of pocket payment	.384955
Type of health care provider	.297044
Diagnosis of illness	.220187
Place of treatment	.179497
Distance to place of treatment	.141470
Subdistrict of residence	.114673
Outcome of treatment	.102921
Market availability of provider	.072292
Age group	.071504

Each of these variables consists of categories or classes. For example, there are twenty-nine diagnoses, six results of treatment and five age groups. In the MCA, it was possible to determine a beta coefficient for each variable by subcategory. These weights are illustrated in the matrix in Figure 4. Of course these variables may represent some other phenomena in explaining variation of utilization. Those other variables have been deleted from

CATEGORY

VARIABLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. SUBDISTRICT	-.173	.103	-.246	.081	-.088	.147	.148	.116																							
2. DISTANCE	-.053	.075	.215	-.412	-.438																										
3. RESULT OF TRTMT	-.162	.138	.060	.055	.246																										
4. AGE GROUP	-.327	-.014	-.006	.088	-.033																										
5. PROVIDER	.003	.038	.097	-.177																											
6. SOURCE OF TRMT		.976	-.132	-.160	-.179	.134																									
7. PLACE OF TRTMT	-1.142	-.414	.002	-.045	.239	-.188	.054																								
8. OUT OF POCKET PAY.		-.0[illegible]	-.640	.217	1.451	1.185																									
9. DIAGNOSIS	.0003	.065	.729	-.327	.099		.002	-.372	.127	-.310	-.096	-.122	-.267	.335	1.733	-.099	.510		-.185	-.042	-.09[illegible]	-.320	.003	-.561	-.207	.461	-.029	.067	.345	.049	-.158

GRAND MEAN = 1.762

Fig. 4. MATRIX OF MULTIPLE CLASSIFICATION ANALYSIS OF UTILIZATION

the model in order to avoid redundancy in their explanatory power with those seven variables above.

The computation of age specific utilization rate by different type of health care provider is done through the computation of variation across diagnosis, age group and type of health care provider, while holding other significant explanatory variables constant. The coefficients obtained from the computation as the inputs for the computation of estimates of incapacitation days due to illness per capita per year, and for the subsequent cost effectiveness analysis.

C. The Additive Model of Incapacitation

While the need for health services and the demand for care are important inputs into regency health planning, a third component, outcome of treatment, must also be considered. Decision-makers need to be knowledgeable about the resulting level of illness or mortality from alternative modes of treatment. In the health field, the common measure of outcome is mortality or case fatality for a specific disease. Morbidity or days lost per case is less often measured. In developing countries like Indonesia, where mortality is rapidly dropping, levels of illness may be a more appropriate indicator for policy makers to consider.

The incapacitation variable is measured by the number of incapacitation days due to illness suffered by individual

from one episode of illness. Incapacitation days due to illness is not identical with duration of illness. Incapacitation days could be shorter or longer than duration of illness.

In this analysis, the availability of consistent morbidity data enable the quantification of an incapacitation model for Southeast Sulawesi. It is important to keep in mind that like utilization, incapacitation is also a function of many environmental and physical factors. To determine the relative impact of different explanatory variables on incapacitation and to obtain a controlled measure of incapacitation, bivariate and multivariate analyses were undertaken. Similar to those used for describing utilization, correlation analysis between variable of incapacitation with several potential explanatory variables was meant to identify variables which have significant association with variable of incapacitation (see table 14 and 15).

All these variables simultaneously explain the variation of incapacitation days due to illness with much redundancy in their explanatory power. Meanwhile, they also explain other phenomena, such as, what has been demonstrated in the explanation of variation of utilization.

Ten variables are identified by the correlation analysis. They are variables of recognition of illness, decision to seek care, nutritional status, outcome of treatment, age group, type of health care provider, place of

TABLE 14

CORRELATION ANALYSIS BETWEEN INCAPACITATION AND ITS POTENTIAL CATEGORICAL EXPLANATORY VARIABLES

EXPLANATORY VARIABLES	GOODMAN-KRUSKAL *gamma*	SPEARMAN'S *rho*	Significancy (p)
Regency	-.0310	-.0138	.6690
Subdistrict	.0168	.0135	.5878
Perception of illness		.0010	.9968
Recognition of illness	-.2556	-.1369	.0000
Decision to seek care	-.4480	-.2382	.0000
Distance to place of treatment	-.0433	-.0348	.2945
Perception of cost	.0713	.0530	.1090
Perception of quality of Care	-.0216	-.0157	.6593
Motivation to seek care	-.1602	-.0511	.1231
Hospitalization	-.6000	-.5318	.1139
Outcome of treatment	-.0995	-.0682	.0082
Nutritional status	-.1858	-.0944	.0021

Any p < .1 have significant association with incapacitation

T A B L E 14 (continued)

EXPLANATORY VARIABLES	G-K *gamma*	SPEARMAN'S *rho*	Significancy (p)
Provider availability	-.0173	-.0117	.6341
Age group	.1641	.1119	.0000
Type of provider	-.2784	-.1986	.0000
Place of treatment	-.3502	-.2462	.0000
Individual health condition	-.2546	-.1373	.0000
Out of pocket payment	.1504	.1174	.0004
Housing condition	.1611	.0268	.7760
Drug availability at home	.1297	.0276	.7066
Waste disposal	-.0062	-.0044	
Latrine utilization	.0255	.0142	.6103
Source of drinking water	-.0580	-.0386	.1576
Drinking water is always boiled	-.1234	-.0372	.4919
Latrine availability at home	.0210	.0129	.6393
Diagnosis of illness	-.1953	-.1620	.0000

Any p < .1 have significant association with incapacitation

TABLE 15

CORRELATION ANALYSIS BETWEEN INCAPACITATION AND ITS POTENTIAL ANALYTICAL EXPLANATORY VARIABLES

EXPLANATORY VARIABLES	PEARSON'S r	Signif. (p)
Number of visits	.0849	?
Cost of treatment	.0185	n.s.
Household size	.0185	n.s.
Household floor in m^2	.0027	n.s.
Distance from latrine to source of water	.0006	n.s.
Number of bedrooms in the house	.0049	n.s.
Estimated value of household assets	-.0358	n.s.
^{e}Log of out of pocket payment	.0798	< .01

treatment, individual health condition, out-of-pocket payment, diagnosis of illness, and outcome of treatment. Further analysis explore the determinants of incapacitation using the *SEARCH* technique. The *SEARCH* analysis selects the most important predictors of incapacitation, and estimates of the variation of incapacitation explained by by these factors. The best predictors of incapacitation then are nutritional status, result of treatment, out-of-pocket payment, place of treatment and age group. Together these variables explain 13.2 percent of the variation in incapacitation. The tree diagram in figure 5 illustrates the partitioning among the

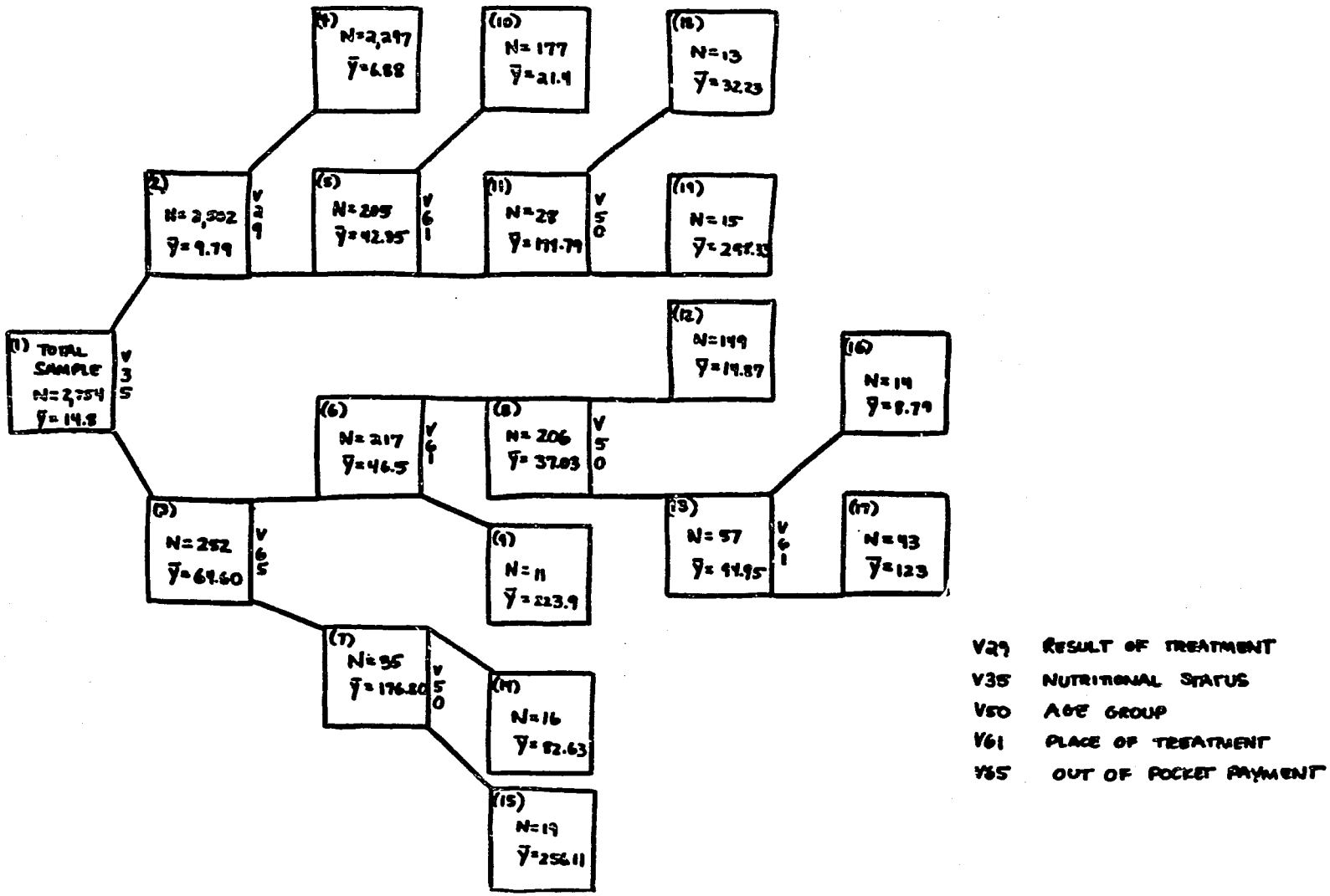


Fig. 5. Tree Diagram of *SEARCH* Analysis of Incapacitation

variables predicting incapacitation. When the five variables identified in the SEARCH analysis were used as independent variables in the MCA, 13.9 percent of the variation in incapacitation was explained. The weights or beta coefficients for the five variables are as follows:

Result of treatment	.213726
Nutritional status	.147561
Age group	.115817
Place of treatment	.102971
Out of pocket payment	.100547

A matrix of the coefficients for each of the subcategories or classes of these variables is given in Fig. 6.

The computation of age specific incapa itation rate by different type of health care provider is done through computation across age group and type of health care provider, while holding other significant explanatory variables constant. The coefficients obtained from the computation are inputs for the computation of the estimated incapacitation days due to illness. They will also be used in the subsequent cost effectiveness analysis.

VARIABLE	CATEGORY 1	2	3	4	5	6	7	8	9	10
RESULT OF TREATMENT	-11.783	-10.877	34.35	81.115	333235					
NUTRITIONAL STATUS	49.089	-4.233	-13.303							
AGEGROUP	-15.086	-10.476	-10.481	-1.324	25.53					
PLACE OF TREATMENT	-45.805	-2.878	5.617	-1.611	-10.873	17.052	18.141			
OUT OF POCKET PAYMENT		-7.371	-8.794	12.077	28.04	19.448				

GRAND MEAN = 22.973

Fig. 6. MATRIX OF MULTIPLE CLASSIFICATION ANALYSIS OF INCAPACITATION

CHAPTER V

MODELS APPLICATION FOR HEALTH SECTOR DEVELOPMENT

A. Reconsideration for Southeast Sulawesi Health Statistics

The use of "A-List of the International Classification of Disease,"[1] without modification is found to be too elaborate for the illness pattern of Southeast Sulawesi. Therefore, modification of the A-List is suggested and applied in this study. The diseases listed in the modified list contains all of the most common diseases in Southeast Sulawesi, while the other rare diseases are grouped.

The modification of the A-List has been made on the basis of the findings from the survey. All major diseases have their own code. Similarly, rare diseases with observable incapacitating or debilitating effect are classified individually. Rare diseases with limited incapacitating or debilitating effect are grouped into several appropriate diagnostic groups. The proposed grouping for Southeast Sulawesi health statistics, together with the modified W.H.O. A-list and the field survey code is

TABLE 16

RECODING OF DIAGNOSTIC GROUPS IN THE REGENCIES OF KENDARI, AND KOLAKA

DIAGNOSIS OR DIAGNOSTIC GROUP	COMPARABLE W.H.O. MODIFIED "A-LIST"	COMPARABLE SURVEY DIAGNOSES OR DIAGNOSTIC GROUP
Typhoid Fever	Typhoid Fever	Typhoid Fever
Dysentery	Bacillary Dysentery/Amoebiasis	Dysentery
Enteritis-Diarrhea	Enteritis and other Diarrheal Diseases	Enteritis; G.E.D.
Tuberculosis	Tuberculosis of the Respiratory System	Respiratory Tuberculosis Other System Tuberculosis
Lepra	Leprocy	Lepra
Tetanus	Tetanus	Tetanus
Other Bacterial Diseases	Other Bacterial Diseases	Botulism
Measles	Measles	Measles
Other Viral Diseases	Other Viral Diseases	Rabies Trachoma
Malaria	Malaria	Malaria
Venereal Diseases	Syphilis Gonococcal Infection	Syphilis; Gonorrhea Other Venereal Diseases
Filariasis	Filarial Infection	Filariasis
Intestinal Worms	Ascariasis; Ancylostomiasis; Other Helminthiasis	Worms
Mycosis	Dermatophytosis; Moniliasis	Dermatophytosis; Moniliasis

TABLE 16 (continued)

DIAGNOSIS OR DIAGNOSTIC GROUP	COMPARABLE W.H.O. MODIFIED "A-LIST"	COMPARABLE SURVEY DIAGNOSES OR DIAGNOSTIC GROUP
Malignancy	Malignancy of the Buccal Cavity Neoplasm of the Gastrointestinal Neoplasma of the Respiratory System Neoplasma of the Bone Neoplasma of the Breast Neoplasma of the Genital Neoplasma of the Hepatobilliary System Other Neoplasm	Neoplasma of the Mouth Neoplasma of the Pharynx Neoplasma of the Gastro Intestinal Tract Neoplasma of the Respiratory Tract Neoplasma of the Bone Neoplasma of the Breast Neoplasma of the Genital Neoplasma of the Billiary System Other Neoplasm
Benign Tumor	Benign Neoplasma Neoplasma of Unspecified Nature	Benign Neoplasma
Disease of the Metabolic System	Thyrotoxicosis with or without Goitre Diabetes Mellitus Disease of other Endocrine System	Thyrotoxicosis Diabetes Mellitus Disease of Other Endocrine System
Mineral and Vitamin Deficiency	Deficiency Vitamin A Deficiency Vitamin B Deficiency Minerals and Other Vitamins	Vitamin A Deficiency Vitamin A Deficiency Other Minerals and Vitamin Deficiency
P.C.M.	Protein Calory Malnutrition	P.C.M.
Anemia	Anemias	Anemia
Mental Illness and Disorder	Psychosis Neurosis	Psychosis Neurosis
Diseases of the Brain	Viral Encephalitis; Meningitis Epilepsy	Viral Encephalitis; Meningitis Epilepsy
Eye Infection	Inflammatory Disease of the Eye	Eye Infection
Other Diseases of the Eye	Other Diseases of the Eye Glaucoma	Other Eye Diseases Glaucoma

TABLE 16 (continued)

DIAGNOSIS OR DIAGNOSTIC GROUP	COMPARABLE W.H.O. MODIFIED "A-LIST"	COMPARABLE SURVEY DIAGNOSES OR DIAGNOSTIC GROUP
Cataract	Cataract	Cataract
Otitis Media Mastoiditis	Otitis Media and Mastoiditis	Otitis Mastoiditis
Other Disease of the CNS	Other Disease of the Central Nervous System and Sense Organ	Blindness; Otitis Externa; Deaf; Encephalitis-Bacterial; Paraplegia; Sciatica
Migraine and Headache	Migraine and Headache	Migraine; Headache
Disease of the Heart & Vascular	Active Rheumatic Fever Chronic Rheumatic Heart Disease Ischemic Heart Disease Other Forms of Heart Disease Cerebrovascular Disease Disease of the Arteries, Arterioles and Capillaries	Rheumatic Heart Diseases Chronic Rheumatic Heart Disease with Valvular Involvement; Ischemic Heart Disease Non-Rheumatic Pericarditis Cerebrovascular Disease Arteritis Other Disease of the Heart
Hypertension	Hypertensive Disease	Hypertensive Heart Disease Essential Hypertension; Renal Hypertension
Hypotension	Systemic Hypotension	Hypotension
Phlebitis and Varices	Venous Thrombosis and Embolism Other Disease of Circulatory System	Phlebitis; Varices; Hemorrhoid Other Vascular Diseases
Lymphadenitis	Lymphadenitis and Lymphangitis	Lymphadenitis and Lymphangitis
Acute U.R.I.	Acute Upper Respiratory Infection	Acute U.R.I.
Chronic U.R.I.	Chronic Upper Respiratory Infection	Chronic U.R.I
Flu	Influenza	Flu
Pneumonia	(Viral) Pneumonia	Pneumonia
Bronchitis & Asthma	Bronchitis, Asthma, and Emphysema	Bronchitis, Asthma, Emphysema

TABLE 15 (continued)

DIAGNOSIS OR DIAGNOSTIC GROUP	COMPARABLE W.H.O. MODIFIED "A-LIST"	COMPARABLE SURVEY DIAGNOSES OR DIAGNOSTIC GROUP
Tonsil/Adenoid Hypertrophy	Hypertrophy of Tonsils and Adenoids	Tonsil/Adenoid Hypertrophy
Other Respiratory Diseases	Other Diseases of Respiratory System	Diseases of the Nasal Cavity
Dental Illness	Diseases of the Teeth and Supporting Structures	Tooth Abnormality; Dental Calculus Caries Dentis; Dental Pulpitis Periodontitis
Gastritis & Peptic Ulcer	Peptic Ulcer Gastritis and Duodenitis	Ulcus Pepticum Gastritis
Acute Abdominal Illness	Appendicitis Intestinal Obstruction and Hernia	Appendicitis; Ileus Hernia
Disease of the Liver and Billiary System	Cirrhosis of the Liver Cholelithiasis and Cholecystitis Infectious Hepatitis	Liver Necrosis; Cirrhosis Hepatis Other Diseases of the Liver Cholelithiasis; Cholecystitis; Hepatitis
Other Diseases of the Digestive System	Other Diseases of the Digestive System	Parotitis; Other Intestinal Diseases Glossitis; Colon Malfunction Other Peritonitis; Stomatitis
Disease of the Genital and Urinary System	Acute Nephritis Other Diseases of the Genito-urinary System	Nephritis; Cystitis; Ureteritis Prostate Hypertrophy; Hydrocele; Phymosis Other Diseases of the Genital;Adnexitis Diseases of the Womb; Menstrual Dysfunction Diseases of the Female Genital
Urinary Stone	Calculus of the Urinary System	Urinary Stone
Disease related to Maternity and Childbirth	Abortion Induced for Legal Indication Other Complication of Pregnancy and Childbirth, Birth Injury and Difficult Labor	Problems during Pregnancy Problems during Childbirth, Problems during Postpartum, Problems during Prenatal Abortion

TABLE 16 (continued)

DIAGNOSIS OR DIAGNOSTIC GROUP	COMPARABLE W.H.O. MODIFIED "A-LIST"	COMPARABLE SURVEY DIAGNOSES OR DIAGNOSTIC GROUP
Skin infection (bacterial)	Infection of the Skin and Subcutaneous Tissue	Furunculosis; Cellulitis Ulcus Tropicum
Skin infection (mycotic)	All Other Infective and Parasitic Diseases Other Diseases of the Skin and Subcutaneous Tissue	Paronychia; Other Skin Lesion Seborrhoic Dermatitis; Eczema Allergic Dermatitis; Herpetiform Pruritus Callus; Other dermatosis Acneiform Dermatitis; Urticaria; Scabies Trachoma; Other Diseases of the Skin Other Parasitic Diseases
Disease of the Bone/Joint	Arthritis and Spondylitis Non-articular Rheumatism and Rheumatism Unspecified; Osteomyelitis and Periostitis; Ankylosis and Acquired Musculoskeletal Deformities Other Diseases of Musculoskeletal System and Connective Tissue	Arthritis; Rheumatism Osteomyelitis; Osteochondrosis Ankylosis; Dysarthrosis Other Diseases of the Joint Synovitis Other Diseases of the Ligament Kyposcoliosis
Congenital Anomaly	Congenital Anomalies of the Heart Cleft Palate and Cleft Lip All Other Congenital Anomalies	Hydrocephalus; Congenital Anomaly of the Heart Cleft Palate; Cleft Lip Other Congenital Anomaly Congenital Anomaly of the Gastrointestinal Tract Congenital Anomaly of the Genital Congenital Anomaly of the Urinary System Club-foot
All Other Diseases	Symptoms of Other Ill Defined Conditions	Undefined Illness Vaccinia
Trauma	Motor Vehicle Accidents Accident Mainly of Industrial Type Homicide and Injury purposely inflicted by Other Persons, Legal Intervention	Skull Fracture; Back Fracture Ribs Fracture; Pelvic Fracture Upper Extremity Fracture Lower Extremity Fracture Tissue Contusion; Burns; Cuts
Accident	All Other and Unspecified Effects of External Causes	Accident

presented in table 16. Further computation of incapacitation days due to illness and utilization of the health services was based on this modified classification. The application of the health planning model to Southeast Sulawesi uses the new classification. Twenty nine diseases are selected, based on their prevalence, incapacitation and their share in the mortality, and morbidity statistics. These twenty-nine diseases have been selected as the marker in the development of the additive models of utilization, and incapacitation. They are consistently used throughout the analysis. Other diseases that do not show noticeable incidence, or diseases without incapacitation days are excluded from further analysis.

B. Computation of Utilization and Incapacitation

Percentage Seeking Care Coefficients

Percentage seeking care is the proportion of cases who have been diagnosed as sick, and have sought treatment to any type of health care provider. The age-specific percentage seeking care is compiled in table 17.

Simple bivariate analysis of incapacitation and utilization is insufficient due to multiple determinants of utilization and incapacitation. Therefore, any attempt to measure the pure effect of any of the explanatory variables should control the effect of other explanatory variables.

TABLE 17

AGE SPECIFIC PERCENTAGE SEEKING CARE BY PLACE OF TREATMENT

DIAGNOSIS OF ILLNESS	PLACE OF TREATMENT						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
1. Dysentery							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	12.5	0.0	0.0	0.0
5 - 14 yrs	25.0	0.0	0.0	0.0	25.0	0.0	0.0
15 - 44 yrs	0.0	9.1	0.0	27.3	36.4	0.0	9.1
≥ 45 yrs	25.0	50.0	0.0	0.0	25.0	0.0	0.0
2. Enteritis-Diarrhea							
0 - 1 yr	0.0	22.2	0.0	0.0	22.2	11.1	11.1
1 - 4 yrs	0.0	0.0	4.9	4.9	9.8	0.0	7.3
5 - 14 yrs	0.0	27.3	0.0	0.0	9.1	9.1	9.1
15 - 44 yrs	0.0	21.1	0.0	0.0	15.8	0.0	15.8
≥ 45 yrs	0.0	0.0	0.0	0.0	25.0	0.0	0.0
3. Tuberculosis							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	1.0
1 - 4 yrs	0.0	0.0	0.0	33.3	0.0	33.3	0.0
5 - 14 yrs	0.0	0.0	0.0	33.3	0.0	0.0	0.0
15 - 44 yrs	0.0	7.0	1.8	7.0	28.1	3.5	3.5
≥ 45 yrs	3.0	9.0	0.0	6.0	13.4	3.0	16.4
4. Measles							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	33.3
1 - 4 yrs	0.0	0.0	18.8	31.3	0.0	0.0	31.1
5 - 14 yrs	0.0	0.0	0.0	0.0	16.7	0.0	66.7
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Malaria							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	14.3	14.3	14.3	14.3	0.0	14.3
15 - 44 yrs	0.0	4.3	2.1	8.5	12.8	0.0	14.9
15 - 44 yrs	0.0	8.0	2.0	18.0	16.0	1.0	13.0
≥ 45 yrs	0.0	9.1	4.5	13.6	0.0	4.5	22.7

TABLE 17 (continued)

DIAGNOSIS OF ILLNESS	PLACE OF TREATMENT						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
6. Intestinal Worms							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	4.0	0.0	8.0	16.0	0.0	4.0
5 - 14 yrs	4.5	9.1	0.0	0.0	0.0	4.5	4.5
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	50.0	50.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. Dermatophytosis/Moniliasis							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	25.0	0.0
≥ 45 yrs	0.0	0.0	0.0	12.5	12.5	0.0	12.5
8. Mineral/Vitamin Deficiency							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	16.7	0.0	0.0	33.3	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	33.3	0.0	0.0
9. Protein Calory Malnutrition							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	50.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	50.0	25.0	0.0	25.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	33.3	0.0
10. Anemia							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	33.3	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	25.0	0.0	25.0	0.0	0.0	25.0
15 - 44 yrs	0.0	5.2	0.0	10.3	19.0	3.4	3.4
≥ 45 yrs	0.0	0.0	0.0	0.0	12.5	0.0	37.5
11. Diseases of the Brain							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 17 (continued)

DIAGNOSIS OF ILLNESS	PLACE OF TREATMENT						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
12. Eye Infection							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	10.3	0.0	0.0	10.3	0.0	0.0
5 - 14 yrs	0.0	7.5	0.0	10.0	12.5	0.0	5.0
15 - 44 yrs	0.0	13.2	0.0	10.5	21.1	0.0	5.3
≥ 45 yrs	0.0	0.0	0.0	20.0	0.0	0.0	80.0
13. Cataract							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	25.0	0.0	0.0	0.0	25.0	25.0
14. Disease of the C.N.S.							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	20.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	50.0	0.0	0.0	0.0
15. Migraine/Headache							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	16.7	0.0	0.0	0.0
15 - 44 yrs	0.0	10.0	0.0	15.0	7.5	0.0	5.0
≥ 45 yrs	0.0	14.3	0.0	28.6	0.0	14.3	0.0
16. Heart and Vascular							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	9.1	0.0	18.2	9.1	9.1	9.1
17. U.R.I.							
0 - 1 yr	0.0	2.4	14.6	14.6	0.0	4.9	63.4
1 - 4 yrs	0.0	8.3	0.0	6.9	12.4	0.0	8.3
5 - 14 yrs	0.9	3.5	0.0	4.4	7.9	0.0	2.6
15 - 44 yrs	0.0	2.5	2.5	8.6	7.4	1.2	6.2
≥ 45 yrs	0.0	0.0	4.0	8.0	4.0	0.0	12.0

T A B L E 17 (continued)

DIAGNOSIS OF ILLNESS	PLACE OF TREATMENT						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
18. Influenza							
0 - 1 yr	0.0	6.7	0.0	26.0	0.0	0.0	0.0
1 - 4 yrs	0.0	2.5	0.0	16.5	12.7	2.5	10.1
5 - 14 yrs	0.0	0.0	0.0	11.8	11.8	0.0	3.9
15 - 44 yrs	0.0	4.3	0.0	13.8	12.8	2.1	7.4
≥ 45 yrs	0.0	0.0	0.0	22.7	4.5	0.0	13.6
19. (Viral) Pneumonia							
0 - 1 yr	0.0	50.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	20.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20. Bronchitis/Emph./Asthma							
0 - 1 yr	0.0	0.0	0.0	0.0	25.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	18.2	36.4	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	4.8	19.0	0.0	4.8
15 - 44 yrs	0.0	12.5	0.0	12.5	20.8	8.3	4.2
≥ 45 yrs	0.0	3.6	0.0	7.1	35.7	0.0	10.7
21. Tonsils and Adenoid Hypertrophy							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22. Dental Illness							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	6.7	0.0	0.0	26.7	0.0	6.7
15 - 44 yrs	0.0	4.3	0.0	4.3	8.7	4.3	0.0
≥ 45 yrs	0.0	11.1	0.0	11.1	0.0	0.0	0.0
23. Peptic Ulcer							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	100.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	12.5	0.0	0.0	0.0
15 - 44 yrs	0.0	9.0	0.0	7.7	12.8	3.8	3.8
≥ 45 yrs	0.0	8.3	0.0	8.3	20.8	8.3	12.5

T A B L E 17 (continued)

DIAGNOSIS OF ILLNESS	PLACE OF TREATMENT						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
24. Liver/Billiary Diseases							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	50.0	50.0	0.0
15 - 44 yrs	0.0	0.0	0.0	11.1	44.4	11.1	0.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25. Disease of Pregnancy/Childbirth							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	0.0	0.0	0.0	50.0
≥ 45 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26. Skin Infection							
0 - 1 yr	0.0	16.7	0.0	0.0	16.7	0.0	16.7
1 - 4 yrs	0.0	5.3	0.0	5.3	10.5	0.0	15.8
5 - 14 yrs	0.0	0.0	0.0	11.8	41.2	0.0	5.9
15 - 44 yrs	4.2	4.2	0.0	25.0	16.7	0.0	4.2
≥ 45 yrs	0.0	0.0	0.0	12.5	12.5	0.0	37.5
27. Skin Mycosis							
0 - 1 yr	0.0	0.0	0.0	50.0	0.0	0.0	50.0
1 - 4 yrs	0.0	5.6	0.0	16.7	5.6	0.0	5.6
5 - 14 yrs	0.0	0.0	0.0	7.7	15.4	0.0	0.0
15 - 44 yrs	0.0	3.4	0.0	17.2	6.9	3.4	0.0
≥ 45 yrs	0.0	16.7	0.0	16.7	0.0	0.0	16.7
28. Bone/Joint Disease							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	50.0	0.0	0.0	0.0	0.0	0.0
15 - 44 yrs	0.0	7.0	1.4	5.6	9.9	0.0	4.2
≥ 45 yrs	0.0	7.0	1.8	7.0	15.8	3.5	5.3
29. Bone Fractures							
0 - 1 yr	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 - 4 yrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 - 14 yrs	0.0	0.0	14.3	0.0	14.3	0.0	0.0
15 - 44 yrs	0.0	0.0	0.0	11.1	22.2	0.0	22.2
≥ 45 yrs	0.0	0.0	25.0	0.0	0.0	0.0	25.0

Utilization Coefficients

The multivariable estimates of utilization takes into account all variables included in the explanatory variables of the additive model. They are variables of out-of-pocket payment, type of health care provider, diagnosis of illness, place of treatment, distance from home to place of treatment, subdistrict of residence, outcome of treatment, degree of availability of health care provider, and age group. Utilization coefficients are required as the inputs for the computation of estimates of utilization per capita per year. The additive model of utilization indicates that utilization varies by age group, diagnosis, and place of treatment. Therefore, we can build multivariate coefficients following the additive models using these three variables:

1) Diagnosis of illness,
2) Age group of the respondent, and
3) Place of treatment.

TABLE 18

MULTIVARIATE AGE SPECIFIC DISTRIBUTION OF UTILIZATION ACROSS DIFFERENT PLACE OF TREATMENT

DIAGNOSIS OF ILLNESS	UTILIZATION WHEN PLACE OF TREATMENT IS IN:						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
1. Dysentery							
0 - 1 yr	0.29	1.02	1.44	1.39	1.67	1.25	1.49
1 - 4 yrs	0.55	1.27	1.69	1.64	1.93	1.50	1.74
5 - 14 yrs	0.61	1.34	1.76	1.71	2.00	1.57	1.81
15 - 44 yrs	0.71	1.44	1.85	1.81	2.09	1.66	1.90
≥ 45 yrs	0.59	1.32	1.73	1.68	1.97	1.54	1.78
2. Enteritis/Diarrhea							
0 - 1 yr	0.36	1.09	1.50	1.46	1.74	1.31	1.55
1 - 4 yrs	0.61	1.34	1.76	1.71	1.99	1.57	1.81
5 - 14 yrs	0.68	1.41	1.82	1.78	2.06	1.63	1.88
15 - 44 yrs	0.77	1.50	1.92	1.87	2.15	1.73	1.97
≥ 45 yrs	0.65	1.38	1.80	1.75	2.03	1.61	1.85
3. Tuberculosis							
0 - 1 yr	1.02	1.75	2.17	2.12	2.40	1.98	2.22
1 - 4 yrs	1.28	2.00	2.42	2.37	2.66	2.23	2.47
5 - 14 yrs	1.34	2.07	2.49	2.44	2.72	2.30	2.54
15 - 44 yrs	1.44	2.17	2.58	2.53	2.82	2.39	2.63
≥ 45 yrs	1.32	2.04	2.46	2.41	2.70	2.27	2.51
4. Measles							
0 - 1 yr	0.69	1.11	1.06	1.35	0.92	1.16	
1 - 4 yrs	0.22	0.95	1.36	1.32	1.60	1.17	1.42
5 - 14 yrs	0.29	1.02	1.43	1.38	1.67	1.24	1.48
15 - 44 yrs	0.38	1.11	1.53	1.48	1.76	1.34	1.58
≥ 45 yrs	0.26	0.99	1.40	1.36	1.64	1.21	1.46
5. Malaria							
0 - 1 yr	0.39	1.12	1.54	1.49	1.77	1.35	1.59
1 - 4 yrs	0.65	1.37	1.79	1.74	2.03	1.60	1.84
5 - 14 yrs	0.71	1.44	1.86	1.81	2.09	1.67	1.91
15 - 44 yrs	0.81	1.54	1.95	1.90	2.19	1.76	2.00
≥ 45 yrs	0.69	1.41	1.83	1.78	2.07	1.64	1.88

TABLE 18 (continued)

DIAGNOSIS OF ILLNESS	UTILIZATION WHEN PLACE OF TREATMENT IS IN:						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
6. Intestinal Worms							
0 - 1 yr	0.30	1.02	1.44	1.39	1.68	1.25	1.49
1 - 4 yrs	0.55	1.28	1.69	1.65	1.93	1.50	1.74
5 - 14 yrs	0.62	1.34	1.76	1.71	2.00	2.57	1.81
15 - 44 yrs	0.71	1.44	1.85	1.81	2.09	1.66	1.91
≥ 45 yrs	0.59	1.32	1.73	1.69	1.97	1.54	1.79
7. Dermatophytosis/Moniliasis							
0 - 1 yr	0.0	0.65	1.07	1.02	1.30	0.88	1.12
1 - 4 yrs	0.17	0.90	1.32	1.27	1.56	1.13	1.37
5 - 14 yrs	0.24	0.97	1.39	1.34	1.62	1.20	1.44
15 - 44 yrs	0.34	1.06	1.48	1.43	1.72	1.29	1.53
≥ 45 yrs	0.22	0.94	1.36	1.31	1.60	1.17	1.41
8. Mineral/Vitamin Deficiency							
0 - 1 yr	0.42	1.15	1.56	1.52	1.80	1.37	1.62
1 - 4 yrs	0.67	1.40	1.82	1.77	2.05	1.63	1.87
5 - 14 yrs	0.74	1.47	1.89	1.84	2.12	1.70	1.94
15 - 44 yrs	0.84	1.56	1.98	1.93	2.22	1.79	2.03
≥ 45 yrs	0.71	1.44	1.86	1.81	2.10	1.67	1.91
9. Protein Calory Malnutrition							
0 - 1 yr	0.0	0.71	1.12	1.08	1.36	0.94	1.18
1 - 4 yrs	0.24	0.96	1.38	1.33	1.62	1.19	1.43
5 - 14 yrs	0.30	1.45	1.40	1.69	1.26	1.26	1.50
15 - 44 yrs	0.40	1.13	1.54	1.50	1.78	1.35	1.59
≥ 45 yrs	0.28	1.01	1.42	1.37	1.66	1.23	1.59
10. Anemia							
0 - 1 yr	0.20	0.93	1.34	1.29	1.58	1.15	1.39
1 - 4 yrs	0.45	1.16	1.59	1.55	1.83	1.40	1.65
5 - 14 yrs	0.52	1.25	1.66	1.62	1.90	2.47	1.71
15 - 44 yrs	0.61	1.34	1.76	1.71	1.99	1.57	1.81
≥ 45 yrs	0.49	1.22	1.64	1.59	1.87	1.45	1.69
11. Diseases of the Brain							
0 - 1 yr	0.17	0.90	1.32	1.27	1.55	1.13	1.37
1 - 4 yrs	0.42	1.18	1.57	1.52	1.81	1.38	1.62
5 - 14 yrs	0.49	1.22	1.64	1.59	1.87	1.45	1.69
15 - 44 yrs	0.59	1.31	1.73	1.68	1.97	1.54	1.78
≥ 45 yrs	0.47	1.19	1.61	1.56	1.85	1.42	1.66

TABLE 18 (continued)

DIAGNOSIS OF ILLNESS	UTILIZATION WHEN PLACE OF TREATMENT IS IN:						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
12. Eye Infection							
0 - 1 yr	0.03	0.75	1.17	1.12	1.41	0.98	1.22
1 - 4 yrs	0.28	1.01	1.42	1.38	1.66	1.23	1.46
5 - 14 yrs	0.35	1.08	1.49	1.44	1.73	1.30	1.54
15 - 44 yrs	0.44	1.17	1.59	1.54	1.82	1.40	1.64
≥ 45 yrs	0.32	1.05	1.46	1.42	1.70	1.27	1.52
13. Cataract							
0 - 1 yr	0.63	1.36	1.77	1.73	2.01	1.58	1.82
1 - 4 yrs	0.88	1.61	2.03	1.98	2.26	1.84	2.08
5 - 14 yrs	0.95	1.68	2.09	2.05	2.33	1.90	2.15
15 - 44 yrs	1.04	1.77	2.19	2.14	2.42	2.00	2.24
≥ 45 yrs	0.92	1.65	2.07	2.20	2.30	1.88	2.12
14. Disease of the C.N.S.							
0 - 1 yr	2.03	2.76	3.17	3.13	3.41	2.98	3.23
1 - 4 yrs	2.28	3.01	3.43	3.38	3.66	3.24	3.48
5 - 14 yrs	2.35	3.08	3.50	3.45	3.73	3.31	3.55
15 - 44 yrs	2.45	3.17	3.59	3.54	3.83	3.40	3.64
≥ 45 yrs	2.32	3.05	3.47	3.42	3.71	3.28	3.52
15. Migraine/Headache							
0 - 1 yr	0.24	0.97	1.39	1.34	1.63	1.20	1.44
1 - 4 yrs	0.50	1.23	1.64	1.59	1.88	1.45	1.69
5 - 14 yrs	0.57	1.29	1.71	1.66	1.95	1.52	1.76
15 - 44 yrs	0.66	1.39	1.80	2.76	2.04	1.61	1.86
≥ 45 yrs	0.54	1.27	1.68	1.64	1.92	1.49	1.73
16. Heart and Vascular							
0 - 1 yr	0.80	1.53	1.95	1.90	2.18	1.76	2.00
1 - 4 yrs	1.06	1.78	2.20	2.15	2.44	2.01	2.25
5 - 14 yrs	1.12	1.85	2.27	2.22	2.51	2.08	2.32
5 - 14 yrs	1.22	1.95	2.36	2.32	2.60	2.17	2.41
≥ 45 yrs	1.10	1.83	2.24	2.19	2.48	2.05	2.29
17. U.R.I.							
0 - 1 yr	0.00	0.84	1.25	1.21	1.49	1.06	1.30
1 - 4 yrs	0.36	1.09	1.51	1.46	1.74	1.32	1.56
5 - 14 yrs	0.43	1.16	1.57	1.53	1.81	1.38	1.63
15 - 44 yrs	0.52	1.25	1.67	1.62	1.90	1.48	1.72
≥ 45 yrs	0.40	1.13	1.55	1.50	1.78	1.35	1.60

TABLE 18 (continued)

DIAGNOSIS OF ILLNESS	UTILIZATION WHEN PLACE OF TREATMENT IS IN:						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	N.C.	HOSPITAL	HOME
18. Influenza							
0 - 1 yr	0.20	0.93	1.35	1.30	1.58	1.16	1.40
1 - 4 yrs	0.45	1.18	1.60	1.55	1.84	1.41	1.65
5 - 14 yrs	0.52	1.25	1.67	1.62	1.90	1.48	1.72
15 - 44 yrs	0.62	1.34	1.76	1.71	2.00	1.57	1.81
≥ 45 yrs	0.50	1.22	1.64	1.59	1.88	1.45	1.69
19. (Viral) Pneumonia							
0 - 1 yr	0.20	0.93	1.35	1.30	1.58	1.16	1.40
1 - 4 yrs	0.46	1.18	1.60	1.55	1.84	1.41	1.65
5 - 14 yrs	0.52	1.25	1.67	1.62	1.90	1.48	1.72
15 - 44 yrs	0.62	1.35	1.76	1.71	2.00	1.57	1.81
≥ 45 yrs	0.50	1.22	1.64	1.59	1.88	1.45	1.69
20. Bronchitis/Emph./Asthma							
0 - 1 yr	0.00	0.70	1.12	1.07	1.35	0.93	1.17
1 - 4 yrs	0.23	0.95	1.37	1.32	1.61	1.18	1.42
5 - 14 yrs	0.29	1.02	1.44	1.39	1.68	1.25	1.49
15 - 44 yrs	0.39	1.12	1.53	1.49	1.77	1.34	1.58
≥ 45 yrs	0.27	1.00	1.41	1.36	1.65	1.22	1.46
21. Tonsils and Adenoid Hypertrophy							
0 - 1 yr	0.30	1.02	1.44	1.39	1.68	1.25	1.49
1 - 4 yrs	0.55	1.26	1.69	1.65	1.93	1.50	1.75
5 - 14 yrs	0.62	1.35	1.76	1.71	2.00	2.57	1.81
15 - 44 yrs	0.71	1.44	1.86	1.81	2.08	1.67	1.91
≥ 45 yrs	0.59	1.32	1.73	1.69	1.97	1.54	1.79
22. Dental Illness							
0 - 1 yr	0.00	0.46	0.88	0.83	1.11	0.69	0.93
1 - 4 yrs	0.00	0.71	1.13	1.05	1.37	0.94	1.18
5 - 14 yrs	0.05	0.78	1.20	1.15	1.43	1.01	1.25
15 - 44 yrs	0.15	0.88	1.29	1.24	1.53	1.10	1.34
≥ 45 yrs	0.03	0.75	1.17	1.12	1.41	0.98	1.22
23. Peptic Ulcer							
0 - 1 yr	0.09	0.81	1.23	1.18	1.47	1.04	1.28
1 - 4 yrs	0.34	1.07	1.48	1.44	1.72	1.29	1.54
5 - 14 yrs	0.41	1.14	1.55	1.50	1.79	1.36	1.60
15 - 44 yrs	0.50	1.23	1.65	1.60	1.88	1.46	1.70
≥ 45 yrs	0.38	1.11	1.52	1.48	1.76	1.33	1.58

T A B L E 18 (continued)

DIAGNOSIS OF ILLNESS	UTILIZATION WHEN PLACE OF TREATMENT IS IN:						
Age Group	BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
24. Liver/Billiary Diseases							
0 - 1 yr	0.75	1.46	1.90	1.85	2.14	1.71	1.95
1 - 4 yrs	1.01	1.74	2.15	2.10	2.39	1.96	2.20
5 - 14 yrs	1.08	1.80	2.22	2.17	2.46	2.03	2.27
15 - 44 yrs	1.17	1.90	2.31	2.27	2.55	2.12	2.37
≥ 45 yrs	1.05	1.78	2.19	2.15	2.43	2.00	2.24
25. Disease of Pregnancy/Childbirth							
0 - 1 yr	0.26	0.99	1.41	1.36	1.65	1.22	1.46
1 - 4 yrs	0.52	1.25	1.66	1.61	1.90	1.47	1.71
5 - 14 yrs	0.59	1.31	1.73	1.68	1.97	1.54	1.78
15 - 44 yrs	0.68	1.41	1.82	1.78	2.06	1.63	1.88
≥ 45 yrs	0.56	1.29	1.70	1.66	1.94	1.51	1.75
26. Skin Infection							
0 - 1 yr	0.36	1.09	1.50	1.46	1.74	1.31	1.56
1 - 4 yrs	0.61	1.34	1.76	1.71	1.99	1.57	1.81
5 - 14 yrs	0.68	1.41	1.83	1.78	2.06	1.64	1.88
15 - 44 yrs	0.78	1.50	1.92	1.87	2.16	1.73	1.97
≥ 45 yrs	0.65	1.38	1.80	1.75	2.04	1.61	1.85
27. Skin Mycosis							
0 - 1 yr	0.64	1.37	1.78	1.74	2.02	1.59	1.83
1 - 4 yrs	0.89	1.62	2.04	1.99	2.27	1.85	2.09
5 - 14 yrs	0.96	1.69	2.10	2.06	2.34	1.91	2.16
15 - 44 yrs	1.05	1.78	2.20	2.15	2.43	2.01	2.25
≥ 45 yrs	0.93	1.66	2.08	2.03	2.31	1.89	2.13
28. Bone/Joint Diseasa							
0 - 1 yr	0.34	1.07	1.49	1.44	1.72	1.30	1.54
1 - 4 yrs	0.60	1.32	1.74	1.69	1.98	1.55	1.79
5 - 14 yrs	0.66	1.39	1.81	1.76	2.04	1.62	1.86
15 - 44 yrs	0.73	1.49	1.90	1.85	2.14	1.71	1.95
≥ 45 yrs	0.64	1.36	1.78	1.73	2.02	1.59	1.83
29. Bone Fractures							
0 - 1 yr	0.14	0.86	1.28	1.23	1.52	1.09	1.33
1 - 4 yrs	0.39	1.12	1.53	1.49	1.77	1.34	1.58
5 - 14 yrs	0.46	1.18	1.60	1.55	1.84	1.41	1.65
15 - 44 yrs	0.55	1.28	1.69	1.65	1.93	1.50	1.73
≥ 45 yrs	0.43	1.16	1.57	1.53	1.81	1.38	1.63

Incapacitation Coefficients

The multivariable estimates of incapacitation takes into account all variables mentioned in the additive model of incapacitation. They are variables of treatment result, nutritional status, age group, place of treatment, and out-of-pocket payment.

Incapacitation coefficients are a set of input for the computation of estimates of incapacitation days due to illness per capita per year. The additive model of incapacitation indicates that age specific incapacitation rate by place of treatment is best explained by explanatory variables of the additive model. The model includes approximately 60.0% of the cases who seek care. Therefore, for computation purposes, the incapacitation coefficients presented in table 19 should be adjusted to the number of cases seeking care.

The age specific incapacitation days due to illness, which has been computed through the utilization of the coefficients of illness rate, utilization and incapacitation is presented in appendix A, and its summary is presented in table 20.

The present level of incapacitation due to illness is 52.4 days per capita per year, with the following breakdown by age group:

TABLE 19

MULTIVARIATE AGE SPECIFIC DISTRIBUTION OF INCAPACITATION DAYS DUE TO ILLNESS ACROSS DIFFERENT PLACE OF TREATMENT

DIAGNOSIS OF ILLNESS / Age Group	NO TREATMENT	INCAPACITATION DAYS WHEN PLACE OF TREATMENT IS IN:						
		BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
1. Dysentery								
0 - 1 yr	1.50	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
2. Enteritis/Diarrhea								
0 - 1 yr	0.67	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.37	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.11	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.33	1.65	27.92	33.11	28.67	23.02	40.11	40.77
3. Tuberculosis								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.14	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	13.75	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	99.76	1.65	27.92	33.11	28.67	23.02	40.11	40.77
4. Measles								
0 - 1 yr	4.50	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	2.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	3.50	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
5. Malaria								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	2.50	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	2.63	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	5.69	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	11.60	1.65	27.92	33.11	28.67	23.02	40.11	40.77

T A B L E 19 (continued)

DIAGNOSIS OF ILLNESS Age Group	NO TREATMENT	INCAPACITATION DAYS WHEN PLACE OF TREATMENT IS IN:						
		BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
6. Intestinal Worms								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.41	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
7. Dermatophytosis/Moniliasis								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
8. Mineral/Vitamin Deficiency								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
9. P.C.M.								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	450.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
10. Anemia								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.21	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
11. Brain Diseases								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77

TABLE 19 (continued)

DIAGNOSIS OF ILLNESS / Age Group	NO TREATMENT	INCAPACITATION DAYS WHEN PLACE OF TREATMENT IS IN:						
		BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
12. Eye Infection								
0 - 1 yr	0.40	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.30	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.77	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.66	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	1.25	1.65	27.92	33.11	28.67	23.02	40.11	40.77
13. Cataract								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	997.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
14. Other Diseases of CNS								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	997.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	15.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
15. Migraine/Headache								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.40	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	1.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
16. Heart/Vascular Diseasa								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
15 - 44 yrs	75.80	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	20.67	1.65	27.92	33.11	28.67	23.02	40.11	40.77
17. U.R.I.								
0 - 1 yr	0.54	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.51	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	1.61	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.83	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	5.50	1.65	27.92	33.11	28.67	23.02	40.11	40.77

T A B L E 19 (continued)

DIAGNOSIS OF ILLNESS Age Group	NO TREATMENT	INCAPACITATION DAYS WHEN PLACE OF TREATMENT IS IN:						
		BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
18. Influenza								
0 - 1 yr	0.40	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.16	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.89	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	1.21	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	3.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
19. (Viral) Pneumonia								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	2.50	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	23.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
20. Bronchitis/Asthma/Emphy.								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.47	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	3.90	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.32	33.11	28.67	23.02	40.11	40.77
21. Tonsil/Adenoid Hyper.								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.32	33.11	28.67	23.02	40.11	40.77
22. Dental Illness								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.11	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.17	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	3.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
23. Peptic Ulcer								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	21.25	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.50	1.65	27.92	33.11	28.67	23.02	40.11	40.77

TABLE 19 (continued)

DIAGNOSIS OF ILLNESS Age Group	NO TREATMENT	INCAPACITATION DAYS WHEN PLACE OF TREATMENT IS IN:						
		BAZAAR	PHYSICIAN	V.H.P.	S.H.C.	H.C.	HOSPITAL	HOME
24. Liver/Billiary Disease								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	0.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
25. Pregnancy/Childbirth								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	1.50	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
26. Skin Infection								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.42	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.43	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	91.64	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	10.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
27. Skin Mycosis								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	0.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	68.45	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77
28. Bone/Joint Diseases								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	30.00	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	997.00	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	60.64	1.65	27.92	33.11	28.67	23.02	40.11	40.77
29. Bone Fracture								
0 - 1 yr	0.00	0.00	2.90	7.82	3.62	0.00	14.44	15.07
1 - 4 yrs	0.00	0.00	5.09	9.58	5.74	0.86	15.63	16.21
5 - 14 yrs	1.20	0.00	4.44	8.37	5.01	0.75	13.65	14.15
15 - 44 yrs	67.50	0.00	10.06	14.61	10.72	5.78	20.74	21.32
≥ 45 yrs	0.00	1.65	27.92	33.11	28.67	23.02	40.11	40.77

TABLE 20

THE ESTIMATED AGE-SPECIFIC INCAPACITATION DAYS DUE TO ILLNESS IN SOUTHEAST SULAWESI IN 1980

DIAGNOSIS OF ILLNESS	INCAPACITATION DAYS IN AGE GROUP					
	≤1 YEAR	1-4 YEARS	5-14 YEARS	15-44 YEARS	≥45 YEARS	ALL AGE
1. Dysentery	8,895	21,882	540	152,570	36,508	220,396
2. Enteritis-Diarrhea	18,968	359,591	128,088	141,462	297,652	945,762
3. Tuberculosis	179	9,950	1,390	59,288	383,981	454,788
4. Measles	103,284	451,241	378,996	0	0	933,521
5. Malaria	0	59,432	644,126	380,160	288,381	1,372,098
6. Intestinal Worms	0	102,599	62,429	651,545	0	816,573
7. Dermatophytosis/Moniliasis	0	0	0	123,658	77,690	201,348
8. Mineral/Vitamin Deficiency	0	0	0	4,821	2,691	7,512
9. Protein Calory Malnutrition	0	11,331	12,454	0	330,185	353,969
10. Anemia	0	20,493	36,366	124,934	75,468	257,261
11. Diseases of the Brain	0	0	0	0	0	0
12. Eye Infection	16,199	37,659	115,632	382,825	12,132	564,447
13. Cataract	0	0	0	0	1,002,874	1,002,874
14. Other Diseases of C.N.S.	0	0	498,265	14,662	8,388	521,314

T A B L E 20 (continued)

DIAGNOSIS OF ILLNESS	INCAPACITATION DAYS IN AGE GROUP					
	≤1 YEAR	1-4 YEARS	5-14 YEARS	15-44 YEARS	≥45 YEARS	ALL AGE
15. Migraine/Headache	0	0	65,508	1,567,798	850,625	2,483,931
16. Heart/Vascular Diseases	0	0	0	46,398	26,324	72,722
17. Upper Respiratory Infection	1,306,421	4,368,560	3,940,223	1,386,792	742,005	11,744,000
18. Influenza	94,408	1,157,025	259,136	931,604	486,189	2,928,410
19. (Viral) Pneumonia	3,536	126,596	0	30,759	0	160,891
20. Bronchitis/Asthma/Emphysema	2,304	17,024	5,356	25,086	49,357	99,127
21. Hypertrophy Tonsils/Adenoids	0	0	0	0	0	0
22. Dental Illness	0	0	32,989	221,828	274,231	529,048
23. Peptic Ulcers	0	0	6,051	217,624	51,949	275,624
24. Liver/Billiary Diseases	0	0	5,997	18,905	0	24,902
25. Diseases of Pregnancy and Childbirth	0	0	0	22,889	0	22,889
26. Skin Infection (Bacterial)	29,532	108,807	40,446	522,039	55,205	756,029
27. Skin Mycosis	15,793	24,061	4,342	338,272	18,075	400,544
28. Bone and Joint Diseases	0	27,142	333,656	64,310	944,512	1,369,619
29. Bone Fractures	0	0	129,596	257,338	15,130	402,064
All Diseases	1,599,516	6,903,389	6,701,630	7,687,570	6,029,545	28,921,584

Incapacitation days of all age groups and total of all diseases may be different up to 9 days due to hexadecimal transformation inside the computers' core.

Age Group	Incapacitation days per capita per year
0 - 1 year	74.8 days
1 - 4 years	83.9 days
5 - 14 years	40.2 days
15 - 44 years	34.5 days
45 + years	103.1 days
All ages	52.4 days

The incapacitation days is very high. It is probably due to the apparent health care problems in the two regencies, where proportion of people seeking care when ill is only 30.% of the professionally defined illness.

The estimated number of visits in these two regencies are 1,449,706 visits per year, or 2.63 visits per capita per year. The estimate of utilization is not terribly low relative to other area of Indonesia. The incapacitation days due to illness is extremely high. Health care development alternatives should be intended to reduce this high incapacitation days, not merely to boost utilization. Program selection will be based on whatever combination will best suited Southeast Sulawesi.

C. Health Policy Development in Southeast Sulawesi

There are several feasible policy manipulable variables in Southeast Sulawesi. Provincial Health Office and Provincial Transmigration Service have the interest in the development of Southeast Sulawesi. Specific to health

development, their program intervention will be better if they design their programs to influence the most dominant determinant of health in this area. In doing so, both offices are also tied up to several administrative and political constraints. Therefore, selection of possible alternative health care development strategy must take into account the administrative and political reality.

The direction for health care development in Southeast Sulawesi could be anticipated toward:

1) Health care facility expansion, and
2) Health program intervention development.

As has been mentioned earlier, the pattern of health care facility expansion will follow the present health care system through the addition of new facilities to the existing facilities. The alternative could be the addition of:

1) Village health post,
2) Subhealth center,
3) Health center, and
4) Hospital.

The quantity and the mix of these four types of facilities should be explored further. It depends on what type of facility is best suited for Southeast Sulawesi, both in term of effectiveness, coverage, and cost. Policy manipulable variables derived from the explanatory variables of utilization and incapacitation are as follows:

1) Reduction of out-of-pocket payment,
2) Nutrition program to improve nutrition status of the population,
3) Reduction of distance from home to place of treatment, through the addition of health care facility.
4) Improvement of market availability of health care provider in the village level through addition of village health post, therefore change the mono and oligo provider villages into multi-provider villages. Greater competition is expected to improve performance of the health care provider.
5) The change in health personnel mix within the present health care facility.

Several of the program interventions are the explanatory variables in the additive models of utilization and incapacitation, while several others are not in the additive models.

D. The Feasible Policy Intervention

Government health policy development will have greater success, in reducing incapacitation days due to illness, if the development of health policy in Southeast Sulawesi uses significant explanatory variables, obtained from the additive model. The additive models of incapacitation and utilization explain the mathematical relationship between

the efficient policy manipulable explanatory variables and percentage seeking care when ill, utilization rate, and incapacitation rate. The effects of less efficient policy manipulable variables are computed through the suboptimal model, where they have been developed through the application of multiple regression analysis.

The health care facility in the Regencies of Kendari, and Kolaka, consist of six hospitals, 22 health centers, 24 subhealth centers, and 25 village health posts (see table 21).

TABLE 21

THE TYPES AND NUMBER OF HEALTH CARE FACILITIES IN REGENCIES OF KENDARI, AND KOLAKA IN 1979

TYPE OF FACILITY	NUMBER
Hospitals	6
Health Centers	22
Subhealth Centers	24
Village Health Posts	25

There has not been any agreement on the number of health care facilities needed in Southeast Sulawesi. National policy for health care facility development is almost arbitrarily set, using facility to population ratio as the method to determine the number of health care facility in a given area. At the moment, the recommended ratio between subhealth center to population is

1:15,000, and it is 1:30,000 for health center to population ratio. While for hospital, it is one hospital for one regency. This guidelines may be more applicable for Java or other more densely populated areas, but it is less applicable for Southeast Sulawesi, since the area is sparsely populated, and the infrastructure is grossly inadequate.

The number of hospitals, for instance are three times the recommended level. Bed to population ratio is 1:2,378 in the Regencies of Kendari, and Kolaka. This figure is better than the bed to population ratio for the City of Jakarta, where it is estimated at 1:4,000. However, hospitals in Southeast Sulawesi are different. They are practically urban located, and almost unreachable to the majority of the population who resides in rural area (see table 5). Therefore, further addition of hospitals could not be the most desirable alternative. Instead, the effort to improve referral to hospital, and improvement of quality of care in the hospital should be encouraged.

If there will be no additional health center up until the end of the 21-year planning period, the health centers to population ratio will be 1:42,114. At this ratio, additional health centers could be recommended without antagonizing national policy.

If there will be no additional subhealth center until the end of the planning period, subhealth center to population ratio will be 1:38,605, which is lower than the

recommended subhealth center to population ratio. At this ratio, it is also possible to recommend additional subhealth centers.

If there will not be any additional village health post, the ratio of village health post to population by the end of the 21-year planning period will be 1:37,060. The recommended ratio between village health post to population has not been established yet. The village health workers in Klampok, Central Java are operating with worker to population ratio of 1:2,000. Therefore, Southeast Sulawesi government could add more village health posts without antagonizing the national guidelines. The limits to village health workers expansion should be within the range of effective span of administrative control of one subhealth center. The ratio between subhealth center and village health post is reasonable at 1:5. Under these guidelines and assumptions, the proposed number of health care facilities in the regencies of Kendari, and Kolaka in year 2001 is presented in table 22.

Spatial allocation of facilities is based on the facility to population ratio, and radius of coverage. However, the radius of coverage presented in table 21 is quite large. Such distance does not yet completely remove the geographical barrier to health care, because they are still reasonably far from the place of residence. Even the village health post has a radius of 4.5 km. Further reduction of distance from home to place of treatment is

TABLE 22

THE RECOMMENDED NUMBER OF HEALTH CARE FACILITIES IN REGENCIES OF KENDARI, AND KOLAKA IN THE YEAR 2001, BASED ON THE COMPUTATION USING THE NATIONAL GUIDELINES

	TYPE OF FACILITIES			
	HOSPITAL	HEALTH CENTER	SUB-HEALTH CENTER	VILLAGE HEALTH POST
Number proposed	6	30	61	305
Facility to population ratio	1:154,418	1:30,884	1:15,189	1:3,078
Radius of coverage (in km)	32.09	14.35	10.06	4.50
Radius of coverage with clustering (in km)	14.35	6.42	4.50	2.01

obtainable through clustering of the place of residence around the center of economic activities of the area. If the ratio of the colony of residence and the living space can be made at 1:5, then the reduction of distance from home to place of treatment could be somewhat shorter. The process of clustering itself does not increase the development cost of transmigration. It is a matter of policy decision, whether the policy is going to build the area with a separate cluster of place of residence from the space for agriculture, or to build the area based on total dispersion of population.[2] For reason of accessibility to health care facility and other public services, this experiment should be made as an official policy. The decision itself is easy

to implement, since it does not require additional cost.

The Consequences of Village Health Post Expansion

Village health posts in Southeast Sulawesi are primarily the "monopoly" of the transmigration villages, and ran by their village head-men. In the survey, out of 16 transmigration villages, only four were found have operating village health posts, with the share of the overall market of 2.1% (see table 5). While 20.4% of the population admit that they live in places without any access to health care provider, 42.4% live in mono-provider villages, 19.1% in oligo-provider villages, and only 18.1% live in multi-provider villages.

The addition of 280 village health posts, as suggested by the result of spatial analysis, changes the health manpower mix in the area. There will be change in the status of the villages. Villages without health care provider will become at least mono-provider villages. Mono-provider villages could become oligo-provider villages, and oligo-provider villages could become multi-provider villages. Therefore, changes in the classification of the villages based on the availability of health care provider is expected to be 20.4% mono-provider, 42.4% oligo-provider, and 37.1% multi-provider (see table 23).

The consequences of the addition of 280 village health posts on percentage seeking care could be explained through

TABLE 23

VILLAGE CLASSIFICATION BEFORE AND AFTER THE ADDITION OF 280 VILLAGE HEALTH POSTS, HOLDING THE EXPANSION OF OTHER HEALTH CARE PROVIDERS CONSTANT

PHASE	VILLAGE CLASSIFICATION			
	NO-PROVIDER	MONO-PROVIDER	OLIGO-PROVIDER	MULTI-PROVIDER
Before the Addition of Village Health Post	20.4%	42.4%	19.1%	18.0%
After the Addition of 280 Village Health Posts	0.0%	20.4%	42.4%	37.1%

the interpretation of this following regression model:

$$PSC_i = 23.639 + 3.0672\ PRVOFF_i + .44735\ MULTI_i + \varepsilon_i$$

t: 16.663 15.591 15.582
p: <.001 <.001 <.001
Elasticity : .3702 .1583
N=8 Multiple-r=.99453 r^2=.9891 SE=.9218

Where: PSC_i = Percentage Seeking Care in subdistrict$_i$

$PRVOFF_i$ = Percentage of Village with private physician office in subdistrict$_i$

$MULTI_i$ = Percentage of villages classified as multi-provider villages in subdistrict$_i$

ε_i = error term$_i$ is expected equal 0.

Multiple regression model suggests that for every 100% increase in percentage of village with multiple provider, there will be 15.83% increase in percentage seeking care. The analysis in table 23 shows that as the result of

village health post expansion, there will be 106.11% increase in the percentage of villages with multiple providers. Such increase will lead to 16.8% increase in percentage seeking care.

The effect of village health post expansion on utilization rate is determined by the additive model, where the average utilization will increase by 1.0611 x 13/777 x .002/1.762 x 100% = .002%. It also increases the average incapacitation days due to illness by 1.0611 x 13/745 x 28.59/22.973 x 100% = 2.3%.

The Consequences of the Subhealth Center Expansion

There were only 24 subhealth centers in the Regencies of Kendari, and Kolaka in 1979. Even though national guidelines for health care facilities construction suggests that two or more subhealth centers should be added to each health center in order to increase the coverage and accessibility, such ratio has not been met in Southeast Sulawesi.

Spatial analysis of the Regencies of Kendari, and Kolaka indicates that a total of 61 subhealth centers are required in the year 2001. Therefore, additional 37 subhealth centers are needed. The effect of 37 additional subhealth centers on percentage seeking care could be explained through the interpretation of this equation:

$$PSC_i = 25.869 - .31856VHP_i + .67936SHC_i + 1.1846HC_i +$$

t :	8.5235	-.56853	4.5714	11.303
p :	.0034	.6094	.0196	.0015
Elasticity:		-.0048	.1188	.3247

$$1.2429HOSP_i + \varepsilon_i$$
$$5.9532$$
$$.0553$$

N=8 Multiple-r=.99265 r^2=.98536 SE=1.3789

where: PSC_i = Percentage seeking care in subdistrict$_i$
VHP_i = Average percentage seeking care to village health post in subdistrict$_i$
SHC_i = Average percentage seeking care to subhealth center in subdistrict$_i$
$HOSP_i$ = Average percentage seeking care to hospital in subdistrict$_i$

The conclusion that could be derived from the equation above is that for every 100% increase in the number of subhealth center there would be 11.88% increase in percentage seeking care. Therefore, for 154.17% increase in the number of subhealth centers, there would be 18.32% increase in percentage seeking care.

The use of Multiple Classification Analysis in explaining the effect of subhealth center expansion concludes that for 154.17% increase in the number of subhealth centers, there would be 1.5417 x 188/777 x (-.045)/1.762 x 100% = -.953% decrease in utilization rate, and 1.5417 x 183/745 x (-1.641)/22.973 x 100% = -2.71% decrease in incapacitation days due to illness.

The Consequences of Health Center Expansion

There were 22 health centers in the Regencies of Kendari, and Kolaka in 1979. Spatial analysis using the assumption developed based on the national guidelines for health care facilities suggests that, in the year 2001, there should be 30 health centers in the Regencies of Kendari, and Kolaka. What needed to be built are additional 8 health centers, or 36.36% of the number of today's health center.

The effect of additional 8 health centers on percentage seeking care could be derived from earlier equation, once used in the estimation of consequences of subhealth center expansion. For every 100% increase in the number of health centers, there will be 32.47% increase in percentage seeking care. Therefore, 36.36% increase in the number of health centers is anticipated to lead into 11.81% increase in percentage seeking care.

Multiple Classification Analysis is used in explaining the consequences of health center expansion on utilization rate, and on incapacitation due to illness. Health center expansion by 36.36% will lead to .3636 x 258/777 x .239/1.762 x 100% = 1.64% increase in utilization rate. It will also lead to .3636 x 276/745 x (-10.873)/22.973 x 100% = -6.38% decrease in incapacitation days due to illness.

Hospital Development Policy

As has been mentioned earlier, bed to population ratio in Regencies of Kendari, and Kolaka is better than in Jakarta. Bed Occupancy Rate (BOR) is low. Therefore, hospital development policy will not be based on the addition of more hospitals or hospital beds. Improvement of the existing physical facilities and up-grading of health care personnel could be taken into consideration. With the improvement of infra-structure (external factor), reduction of service charge, and more effective referral system, utilization and effectiveness of the existing hospital is expected to increase.

The Consequences of Out-of-Pocket Payment Reduction

The reduction of service charge will reduce the out-of-pocket payment made by the users. This reduction also has effect on the percent seeking care, utilization rate, and incapacitation days due to illness.

The perception of users about the present level of out-of-pocket payment is ranging from very cheap to very expensive. Of course this view is also depend on the amount of payment made for every service received. From the study of health care facilities, it was estimated that the present service charge could generate more revenue than the

estimated operating cost. Therefore, service charge reduction policy is well justified. Estimates from cash-flow analysis, the government subsidizes village health post operations at Rp. 6,814,250 and subsidizes subhealth center operations at Rp. 19,954,310. On the other hand government able to off set this subsidy from health center surplus of Rp. 189,871,380 and hospital surplus of Rp. 94,724,380. The net government earning from health care facilities then is Rp. 257.83 million, and the total patient revenue is estimated at Rp. 1,416.23 million that year. The government could reduced service charge and still make the health care facilities in Regencies of Kendari, and Kolaka operate at break even if the service charge is reduced by 18.2% across the board. Such decision of course will change the composition of cases in each category of out-of-pocket payment (see table 24).

TABLE 24

DISTRIBUTION OF USER'S PERCEPTION ABOUT OUT-OF-POCKET PAYMENT IF SERVICE CHARGE IS REDUCED BY 18.2%

SERVICE CHARGE PERCEPTION CATEGORY	NOW	IF SERVICE CHARGE REDUCED BY 18.2%
Very cheap	41.57%	49.95%
Cheap	23.42%	22.83%
Rather Expensive	27.41%	20.86%
Expensive	6.82%	5.71%
Very Expensive	0.77%	0.66%

Out-of-pocket payment variable is one of the dependent variable of incapacitation model, as well as utilization model. The multivariate analysis of the effect of the shift in category could reduce incapacitation days due to illness by 6.25%. It also reduces the utilization rate by 1.97%. The reduction in utilization may occur because of greater percentage of seeking care due to lower service charge. Larger proportion of milder cases use the facilities, then it may reduce utilization rate. The effect of service charge reduction on percentage seeking care could be formulated in the following multiple regression model:

$$PSC_i = 48.932 + .037901\ PRVOFF_i - .013628\ OUTPOCKT_i + \varepsilon_i$$

t :	26.344	3.8788	-1.9214
p :	.0000	.0117	.1127
Elasticity:		.0005	.0632

N = 8 Multiple-r = .8805 r^2 = .7750 SE = 4.1846

where: PSC_i = Percentage seeking care in subdistrict$_i$

$PRVOFF_i$ = Percentage of Village with private physician office in subdistrict$_i$

$OUTPOCKT_i$ = Average out-of-pocket payment for one consultation in subdistrict$_i$

The above equation implies that for 18.2% reduction in the out-of-pocket payment, there will be 6.32% x .182 = 1.15% increase in percentage seeking care.

From the study of various type of health care facilities, it was found that a 18.2% reduction in the service charge would also mean an estimated Rp. 257.8 forgone patient care revenue per year in 1980. The

cumulative patient care revenue forgone as the result of service charge reduction over the entire 21-years planning period, would mount to Rp. 7,008.6 million.

The Consequences of Nutrition Education and Food Supplementation Program

There has been an established immunization monitoring program in Southeast Sulawesi. In the Regencies of Kendari, and Kolaka, scar survey is conducted regularly. An intensive nutrition education and food supplementation program could be combined with the immunization monitoring program in order to reduce implementation costs.

This nutrition program will include nutrition course, nutrition and food demonstration, and regular anthropometric measurements. The purpose is to alert both mother and health workers of the presence of nutrition problem[3]. Weighing and measuring can be conducted with a minimum of equipment. Similarly, nutrition instruction and demonstration will use locally available food. Through proper cooking, preservation, and feeding, nutrient could be saved and used for body energy, regeneration, and growth. Nutrition education curriculum would include:

1. The value of breastfeeding
2. The use of weaning foods
3. Types of locally available foods and their nutritional value.
4. Improved cooking, preservation and

storage of food

5. Budgeting of family resources
6. Advantages of child spacing
7. Importance of immunization

The nutrition education component would also emphasize the value of the health and nutrition monitoring program described above. Throughout the course, the mothers would be encouraged to adapt the information to their own situation.[4]

Nutrition supplementation should be included in the program. Actual demonstration of raw and prepared food, tasting of new food, peer support would strengthen the information and adoption of the new value received from the course. The target population of this program would be pregnant and lactating mothers, and children ages 0-2 years. Food supplementation programs are common in developing countries and range in size and scope of coverage.[5] This program would include the demonstration and preparation of nutritionally balanced meals of rice, fish, meat, vegetables, beans, and fruit.

If each health center implement nutrition education and food supplementation in its territory, with the addition of one nutrition/health education officer, each health center will be able to conduct 9 classes per year, of 16 weeks long, and meet once a week. One health center then will serve 270 people per year. This means, with population growth of 2.5% per year, the target population could be

covered by the end of the planning period.

The cost of the nutrition and health education program is shown in table 25. The total cost for the nutrition program for the planning period is Rp. 740,296,000. Given a mid of planning period population of 727,271, the per capita cost of the program is Rp. 508.95.

TABLE 25

COST OF NUTRITION EDUCATION AND FOOD SUPPLEMENTATION PROGRAM

COST ITEMS	AMOUNT
INVESTMENT	
Equipment	Rp. 200,000
Kitchen Utensils	Rp. 60,000
Subtotal	Rp. 260,000
OPERATING	
Salaries	Rp. 437,610
Transportation	Rp. 396,000
Food	Rp. 864,000
Depreciation	Rp. 52,000
Subtotal	Rp. 1,749,610

All costs are in 1980 rupiah.

The effects of the nutrition program would be to reduce incapacitation from all illnesses. By reducing the number of people with poor nutritional status and increasing the number with good nutritional status, the range of effectiveness is a reduction in incapacitation from 28.1 to

37.9 percent. This percentage was calculated by determining the independent effect (holding other variables constant) of nutritional status on incapacitation. The lower range of effect represents the incapacitation change if the percentage with poor nutritional status is reduced to 0 and the percentage with good nutritional status is increased to 24.43. The higher range is calculated by reducing the percentage with poor nutritional status to 0 and reducing the percentage with fair nutritional status to 50.57, while raising the percentage with good nutritional status to 49.43 percent.

In summary, the effects of each policy manipulable variable, either independently or jointly, will have effect on percentage seeking care when ill, utilization rate, and incapacitation days due to illness. The effect of each policy manipulable variable is presented in table 26.

D. Cost of Several Development Policy Alternatives

There are four types of government subsidized health care facilities in Southeast Sulawesi. They are hospital, health center, subhealth center, and village health post. Table 21 shows the number and type of health care facilities in the Regencies of Kendari, and Kolaka in 1979. Table 27 shows the unit cost to build and to operate the average sized hospital, health center, subhealth center, and village health post in 1980 rupiah.

TABLE 26

SUMMARY OF EFFECTS OF EACH POLICY MANIPULABLE VARIABLE

DEVELOPMENT POLICY	EFFECTS ON					
	PERCENTAGE SEEKING CARE	p	UTILIZATION RATE PER EPISODE	p	INCAPACITATION DAYS DUE TO ILLNESS	p
Village Health Post Expansion	+18.80%	<.001	+ .002%	<.01	+ 2.30%	<.01
Subhealth Center Expansion	+18.32%	<.05	- .853%	<.01	- 2.71%	<.01
Health Center Expansion	+11.81%	<.01	+1.64 %	<.01	- 6.38%	<.01
Out-of-Pocket Payment	+1.15%	>.1	-1.97 %	<.01	- 6.25%	<.01
Nutrition Education Food Supplementation	-	-	-	-	32.6%	>.05

The effect of nutrition education and food supplementation program in reducing incapacitation days due to illness ranges from -28.1%to -37.9%, with the mean -32.6%.

TABLE 27

THE ESTIMATES OF INVESTMENT AND OPERATING COSTS OF ONE UNIT OF HOSPITAL, HEALTH CENTER, SUBHEALTH CENTER, VILLAGE HEALTH POST IN REGENCIES OF KENDARI, AND KOLAKA IN 1980

DESCRIPTIONS	FACILITIES			
	38-BED HOSPITAL	HEALTH CENTER	SUBHEALTH CENTER	VILLAGE HEALTH POST
INVESTMENT				
Land	14,000,000	3,000,000	440,000	80,000
Building	48,992,000	7,682,400	2,100,000	400,000
Equipment	80,707,625	4,499,700	307,500	247,500
Subtotal	143,699,625	15,182,100	2,847,500	727,500
OPERATING				
Salary	15,384,170	3,267,870	495,060	90,000
Drugs	43,807,333	952,197	1,782,927	102,000
Food	9,646,950	0	0	0
Training	2,422,050	0	0	0
General	7,590,490	348,000	0	0
Depreciation	14,005,025	880,000	166,500	89,500
Subtotal	92,856,018	5,448,067	2,444,487	281,500
PATIENT REVENUE	85,629,267	11,814,348	1,874,271	103,233
GOVERNMENT SUBSIDY	15,384,170	3,267,870	495,060	90,000
SURPLUS	+8,157,419	+6,366,281	-570,216	-178,267
Est. User's Cost	12,189	521	117	67
Est. Gov't Cost	-1,161	-281	+25	+115
Est. Social Cost	11,028	230	141	182

The investment cost of each alternative development policy is as follow:

0	Hospital	Rp. ---
8	Health Centers	Rp. 121.5 million
37	Subhealth Centers	Rp. 105.4 million
280	Village Health Posts	Rp. 203.7 million
30	Nutrition Programs	Rp. 7.8 million

E. Budget Projection

The growth of the health budget in Southeast Sulawesi between fiscal year 1974/1975 and fiscal year 1980/81 is substantial, even after adjustment for population growth and 14% annual inflation rate (see table 28). If the trend could be maintained, then projection of health budget can be made. Regression of the adjusted budget on fiscal year if fiscal year 1974/1975 is considered as $year_1$ yields:

$$ADJBGT_i = 113330. + 158990.ADJYEAR_i + \varepsilon_i$$

t: 1.2221 7.6678
p: .2761 .0006

SE: 92728. 20735.
N = 7 Mult.-r = .96001 r^2 = .92162 S.E of reg. = 109720.
$F_{2,6}$ = 58.795 p = .0006

Where: $ADJBGT_i$ = Budget in fiscal $year_i$ after the budget is adjusted for inflation rate.
$ADJYEAR_i$ = Fiscal year of budget observation, where fiscal year 1974/1975 is $year_1$
ε_i = error $term_i$ is expected to be 0.

Projecting the budget from year 1980/1981 to the year 2001, with 95% confidence interval is presented in table 29.

TABLE 28

HEALTH BUDGET OF SOUTHEAST SULAWESI FROM FISCAL YEAR 1974/1975 THROUGH FISCAL YEAR 1980/1981
(in thousand rupiah)

FISCAL YEAR	HEALTH BUDGET
1974/1975	100,975.8
1975/1976	319,889.4
1976/1977	320,810.5
1977/1978	434,913.3
1978/1979	633,005.0
1979/1980	954,368.8
1980/1981	1,297,222.7

[1]SOURCE: Sub. Dit. Karantina Haji & PKPP, Jakarta, 1981.

If the budget estimates in table 29 is translated into per capita budget, there would be five levels of estimates of budget. They are Rp. 2,980.69, Rp. 3,464.66, Rp. 3,948.63, Rp. 4,432.61, and Rp. 4,916.58 with ± 95% confidence interval around the mean (see table 29). Among this budget, 59.36% are classified as development budget. The rest are routine budget. From the development budget, 55% could be used for physical construction.[6] Therefore, the estimated budget that could be made available for health care facility construction and program intervention, in five levels are Rp. 973.13, Rp. 1,131.14, Rp. 1,289.15, Rp. 1,447.16, and Rp. 1,605.17 per capita per year.

TABLE 29

THE PROJECTED HEALTH BUDGET OF SOUTHEAST SULAWESI FROM FISCAL YEAR 1980/1981 THROUGH FISCAL YEAR 2000/2001
(in million rupiah)

FISCAL YEAR	PROJECTED BUDGET AROUND THE MEAN WITH CONFIDENCE INTERVAL				
	-95%	-68%	MEAN	+68%	+95%
1980/1981	1,297.2	1,297.2	1,297.2	1,297.2	1,297.2
1981/1982	1,053.5	1,219.4	1,385.3	1,551.1	1,717.0
1982/1983	1,171.0	1,357.6	1,544.2	1,730.9	1,917.5
1983/1984	1,288.5	1,495.9	1,703.2	1,910.6	2,117.9
1984/1985	1,406.1	1,634.1	1,862.2	2,090.3	2,318.4
1985/1986	1,523.6	1,772.4	2,021.2	2,270.0	2,518.9
1986/1987	1,641.1	1,910.6	2,180.2	2,449.8	2,719.3
1987/1988	1,758.6	2,048.9	2,339.2	2,629.5	2,919.8
1988/1989	1,876.1	2,187.2	2,498.2	2,809.2	3,120.2
1989/1990	1,993.7	2,325.4	2,657.2	2,988.9	3,320.7
1990/1991	2,111.2	2,463.7	2,816.2	3,168.7	3,521.2
1991/1992	2,228.7	2,601.9	2,975.2	3,348.4	3,721.6
1992/1993	2,346.2	2,740.2	3,134.1	3,528.1	3,922.1
1993/1994	2,463.7	2,878.4	3,293.1	3,707.8	4,122.5
1994/1995	2,581.3	3,016.7	3,452.1	3,887.6	4,323.0
1995/1996	2,698.8	3,154.9	3,611.1	4,067.3	4,523.5
1996/1997	2,816.3	3,293.2	3,770.1	4,247.0	4,723.9
1997/1998	2,933.8	3,431.5	3,929.1	4,426.7	4,924.4
1998/1999	3,051.3	3,569.7	4,088.1	4,606.5	5,124.8
1999/2000	3,168.9	3,708.0	4,247.1	4,786.2	5,325.3
2000/2001	3,286.4	3,846.2	4,406.1	4,965.9	5,525.8
Total	44,695.8	51,953.1	59,210.3	66,467.6	73,724.8

[1]Reference population in 1980 is 551,631 people and in the year 2000 it will ba 903,912 people.
[2]Budget for fiscal year 1980/1981 is real, not projection.

F. Cost Effectiveness Analysis

The consequences of each health care development policy, mentioned earlier, have been calculated on the basis of 100% coverage. In reality, the budgetary constraint creates restriction in the implementation of each policy. Since each policy is competing for limited resources, rational decision making process certainly would looks for the most cost effective alternative, in order to get the most out of the available resources. The possible combinations of health care development alternatives and their costs in the Regencies of Kendari, and Kolaka are presented in table 30.

Incapacitation days due to illness per capita per year could be reduced through the introduction of different alternative health care facility expansion, and different health program intervention. If the governments of Regencies of Kendari, and Kolaka simply expand the health care facilities proportional to the rate of population growth in the area, the incapacitation days due to illness is anticipated to be constant for the next 21 years.

There are eight alternatives health care facility expansion, and four alternatives health program intervention. Together they make 32 alternatives policy options (see table 30). However, not all those policy options could be implemented fully because of the scarcity

TABLE 30

DEVELOPMENT COST OF ALL POSSIBLE COMBINATIONS OF HEALTH CARE FACILITY EXPANSION AND PROGRAM INTERVENTION

HEALTH CARE FACILITY DEVELOPMENT	PROGRAM INTERVENTION			
	NO NEW ONE	NUTRITION EDUCATION/ FOOD SUPPLEMENTATION	SERVICE CHARGE REDUCTION	NUTRITION EDUCATION/ FOOD SUPPLEMENTATION &SERVICE CHARGE REDUCTION
1. No Addition	0	740.3	7,008.6	7,748.9
2. 280 Village Health Posts	203.7	944.0	7,212.3	7,952.6
3. 37 Subhealth Centers	105.4	845.7	7,114.0	7,854.3
4. 280 VHPs + 37 SHCs	309.1	1,049.4	7,317.7	8,058.0
5. 8 Health Centers	121.5	861.8	7,130.1	7,87.4
6. 8 HCs + 280 VHPs	324.2	1,064.5	7,235.5	7,975.8
7. 8 HCs + 37 SHCs	226.9	967.2	7,235.5	7,975.8
8. 8 HCs + 37 SHCs + 280 VHPs	430.6	1,170.9	7,439.2	8,179.5

of resources. Selection of the most cost effective policy option is simulated, using the basic empirical data on annual illness rate, percentage seeking care, cost of each type of program and its influence on percentage seeking care, utilization rate, and incapacitation rate.

Under the lowest budgetary projection, the addition of health centers and implementation of nutrition education/ food supplementation simultaneously is the most cost effective alternative. The estimated incapacitation days due to illness under this policy is 42.26 days per capita per year, which represents 19.2% reduction of incapacitation days. Health center expansion without nutrition education/ food supplementation only reduces incapacitation days due o illness from 52.3 days to 52.02 days, which represents 0.54% reduction.

Of all health care facility expansion and health program intervention alternatives, nutrition education/food supplementation has the best result in reducing the overall incapacitation days due to illness. The days of incapacitation due to illness declines sharply whenever nutrition education/food supplementation is introduced. It seems nutrition education/food supplementation is the most likely candidate for the best single health policy alternative.

Local governments and local health offices in many regencies of Indonesia often times confused by the unclear objective of their health care system. The most classic

example is their efforts to stimulate utilization and coverage. These efforts do not always mean reduction of measurable parameter of ill-health. If the program to stimulate utilization runs parallel with the objective to reduce incapacitation days due to illness, then the problem is somewhat concealed. In the Southeast Sulawesi case, the adoption of health center, subhealth center and village health post expansion simultaneously, without any health program intervention, is the best way to increase coverage. The percent seeking care will increase from 32% to 49%, but this alternative is counter productive since it will also increase the incapacitation days due to illness from 52.3 days to 60.16 days per capita per year. This rather confusing outcome is the logical consequence increasing coverage by increasing number of health care facilities in the area. Referring back to table 26, it has been mentioned that with the addition of village health post, there will be 18.8% increase in percentage seeking care, 0.002% increase in the utilization rate, but it is also followed by 2.3% increase in the incapacitation rate. The "good" effect of increasing coverage is cancelled out by increasing incapacitation rate as the result of greater contact between the population with the village health post. Empirical data demonstrates the difference between the average incapacitation days when treated by village health personnel than when treated by other type of health care facilities. Whenever village health post is

included in the package of health care .facility expansion, the overall incapacitation days due to illness is increased. This increase ranges from 7.86% if health center, subhealth center, and village health post were implemented simultaneously, to 14.49% if village health posts and subhealth centers were combined. In between is 7.93% increase if health centers and village health posts were added together, and 8.68% if only village health post were added.

The budget projection of Southeast Sulawesi in general shows favorable projection. Even when the projection of 2 standard deviation away from the mean is taken, the health care development budget is sufficient to finance all types of alternative health care facility expansion. The budget however is insufficient if the nutrition education/food supplementation programs were introduced.

Health care facilities in the Regencies of Kendari, and Kolaka generate surplus revenue. Village health posts and subhealth centers are loosing money and need constant subsidization, but the health centers, and hospitals are generating more revenue than the amount of the subsidy. The revenue surplus becomes the income of the local government, where part of those revenue could be used again to finance the health system when needed. Whatever is left of the revenue afterward, it becomes the government "profit" from the health sector. This revenue surplus in itself is unique, and has great potential to be used in financing

unconventional health care development program in the area. The revenue surplus and the health care development budget is sufficient for the financing of all three types of health care facility expansion, and when the estimated projection of 2 standard deviation greater than mean is taken. When health care development budget were added, its combination is sufficient to cover all types of health care facility expansion, and nutrition education/food supplementation program.

Rational allocation of resources always looking for the most productive alternative. Rational allocation of resources in Southeast Sulawesi therefore should limit the policy option to the expansion of the health center system, and the implementation of nutrition education/food supplementation program. Subhealth center are cheap to run. In the Regency of Bogor for instance subhealth center shows an acceptable level of performance.[7] The subhealth centers and the village health posts of Kendari, and Kolaka are able to provide service at comparable cost, but fail to produce comparable outcome. Their performance are proven to be less cost effective than the performance of the health centers.

The ordinal ranks of preference of different health care development strategy for the Regencies of Kendari, and Kolaka under the very pessimistic budgetary growth is presented in table 31.

Under the very optimistic budgetary projection, the

TABLE 31

THE ORDINAL RANKS OF PREFERENCE OF DIFFERENT HEALTH CARE DEVELOPMENT POLICY OPTIONS OF THE REGENCIES OF KENDARI, AND KOLAKA UNDER THE VERY PESSIMISTIC BUDGETARY PROJECTION.

ALTERNATIVE POLICY OPTIONS	D.I.I.	ADD. COVER -AGE	PSC
1. 8 Health Centers + NE/FS	42.26	100.%	35.%
2. NE/FS	42.83	100.%	32.%
3. 8 Health Centers + 37 Subhealth Centers + NE/FS	43.24	100.%	41.%
4. 37 Subhealth Centers	43.99	100.%	37.%
5. 8 Health Centers + 280 Village Health Posts + NE/FS	44.87	100.%	42.%
6. 280 Village Health Posts + NE/FS	45.57	100.%	38.%
7. 8 Health Centers + 37 Subhealth Centers + 280 Village Health Posts + NE/FS	47.17	100.%	48.%
8. 37 Subhealth Centers + 280 Village Health Posts + NE/FS	47.17	100.%	44.%
9. 8 Health Centers + NE/FS + Service Charge Reduction	51.01	11.%	32.%
10. 8 NE/FS + Service Charge Reduction	51.05	12.%	32.%

NE/FS stands for Nutrition Education/Food Supplementation

ordinal ranks of preference of different health care development strategies for the Regencies of Kendari, and Kolaka does not shift from the ordinal ranks under the very pessimistic budgetary projection. Reasonable variation in the projected budget level changes the absolute number of

incapacitation days, program coverage, and percentage seeking care (see table 32), but does not change the ordinal ranks of preference of different health care development strategies.

TABLE 32

THE ORDINAL RANKS OF PREFERENCE OF DIFFERENT HEALTH CARE DEVELOPMENT POLICY OPTIONS OF THE REGENCIES OF KENDARI, AND KOLAKA UNDER THE VERY OPTIMISTIC BUDGETARY PROJECTION.

ALTERNATIVE POLICY OPTIONS	D.I.I.	ADD. COVER -AGE	PSC
1. 8 Health Centers + NE/FS	42.26	100.%	35.%
2. NE/FS	42.83	100.%	32.%
3. 8 Health Centers + 37 Subhealth Centers + NE/FS	43.24	100.%	41.%
4. 37 Subhealth Centers	43.99	100.%	37.%
5. 8 Health Centers + 280 Village Health Posts + NE/FS	44.87	100.%	42.%
6. 280 Village Health Posts + NE/FS	45.57	100.%	38.%
7. 8 Health Centers + 37 Subhealth Centers + 280 Village Health Posts + NE/FS	47.17	100.%	48.%
8. 37 Subhealth Centers + 280 Village Health Posts + NE/FS	47.24	100.%	44.%
9. 8 Health Centers + NE/FS + Service Charge Reduction	51.17	19.%	33.%
10. 8 NE/FS + Service Charge Reduction	51.24	19.%	32.%

NE/FS stands for Nutrition Education/Food Supplementation

Selection of the health center expansion to the degree

recommended by the result of spatial analysis is the most cost effective health care facility expansion strategy in the Regencies of Kendari, and Kolaka. This option is even better if it is combined with nutrition education/food supplementation program. Even if the health care development budget is eliminated, as long as the health sector revenue surplus can be used for health sector development, the available resources is sufficient for the development of the health care facilities and for the implementation of health program intervention. The result of cost effectiveness analysis in this particular situation does not alter the ordinal ranks of preferred alternative policy options 1 to 8 in table 31, and table 32.

G. Social Cost Effectiveness Analysis

The social cost effectiveness analysis has similar features with the previous series of cost effectiveness analyses. In the previous series of cost effectiveness analyses, the cost elements are the government cost of providing services in hospitals, health centers, subhealth centers, and village health posts. The users of services also pay from their own pocket, the service charge in all type of health care facilities, including the private sector, and home care.

The social cost in a particular facility is the sum of cost of providing the service paid by the government, and

INSTRUCTION TO READ THE SENSITIVITY ANALYSES IN TABLES 32, 33, 34, AND 35

INTERPRETATION OF COEFFICIENTS

Program Combination 5,2 means the use of alternative expansion of health care facilities type 5, and health program intervention type 2. Similarly, program combination 3,4 means the uses of alternative expansion of health care facilities type 3, and health program intervention type 4.

KEY TO CODES

ALTERNATIVE 1 = No expansion of health care facility

ALTERNATIVE 2 = Addition of 280 village health posts

ALTERNATIVE 3 = Addition of 37 subhealth centers

ALTERNATIVE 4 = Addition of 280 village health posts, and 37 subhealth centers

ALTERNATIVE 5 = Addition of 8 health centers

ALTERNATIVE 6 = Addition of 280 villago health posts, and 8 health centers

ALTERNATIVE 7 = Addition of 37 subhealth centers, and 8 health centers

ALTERNATIVE 8 = Addition of 280 village health posts, 37 subhealth centers, and 8 health centers

INTERVENTION 1 = Maintenance of the present health intervention programs

INTERVENTION 2 = Implementation of nutrition education/food supplementation in addition to the present health intervention programs

INTERVENTION 3 = Implementation of 18.2% service charge reduction in addition to tha present health intervention programs

INTERVENTION 4 = Implementation of nutrition education/food supplementation program, and 18.2% service charge reduction in addition to the present health intervention programs

the cost paid by the users. The services in the hospitals, and health centers generate revenue, therefore their government costs are negative. The services in the subhealth centers, and the village health posts require government subsidization, therefore their government costs are positive.

The social costs of each type of case per episode of illness will be as follow:

Bazaar	Rp.	392.67
Private Physician	Rp.	15,037.00
Village Health Post	Rp.	182.13
Subhealth Center	Rp.	141.94
Health Center	Rp.	230.45
Hospital	Rp.	11,028.02
Home	Rp.	410.00

The overall social cost of illness in 1980 is Rp. 6,928.2 million. Taking into consideration the annual population growth of 2.35%, then the estimated social cost for the entire 21-year planning period would be Rp. 12,559.50 per capita, with a possible ranges from Rp. 12,249.48 to Rp. 12,869.52 per capita.

Assume this social resources could be allocated efficiently, social cost effectiveness analyses in five resource levels yield the ordinal rank of preference presented in table 33.

It is apparent that from the social cost effectiveness analysis point of view, the expansion of the health center

TABLE 33

THE ORDINAL RANK OF PREFERENCE OF HEALTH CARE DEVELOPMENT OPTIONS OF THE REGENCIES OF KENDARI, AND KOLAKA BASED ON SOCIAL COST EFFECTIVENESS ANALYSIS

ORDINAL RANKS OF PREFERENCE	ESTIMATES OF SOCIAL RESOURCE AVAILABILITY PER CAPITA				
	Rp. 12,249.48	Rp. 12,404.49	Rp. 12,559.50	Rp. 12,714.51	Rp. 12,869.52
1.	5,2	5,2	5,2	5,2	5,2
2.	5,4	5,4	5,4	5,4	5,4
3.	1,2	1,2	1,2	1,2	1,2
4.	1,4	1,4	1,4	1,4	1,4
5.	7,2	7,2	7,2	7,2	7,2
6.	7,4	7,4	7,4	7,4	7,4
7.	3,4	3,4	3,4	3,4	3,4
8.	3,2	3,2	3,2	3,2	3,2
9.	6,4	6,4	6,4	6,4	6,4
10.	6,2	6,2	6,2	6,2	6,2

Alternative policy option 5,2 in this table means the selection of alternative health care expansion 5, in combination with alternative health program intervention 2

system is the most preferable alternative, and they are insensitive to reasonable variation in social resource availability. The second best is no expansion at all. The third best is the expansion of the health center, and subhealth center system simultaneously. The fourth best is the expansion of the subhealth center system. The fifth best is the expansion of the health center, subhealth center, and village health post system simultaneously. Each of these best alternative could be combined with nutrition education/ food supplementation as the first choice, and nutrition education/food supplementation in combination with 18.2% service charge reduction as the second choice. In term of incapacitation days due to illness among the top ten alternative policy options presented in table 33, the pay off from health care facility expansion is small. The best outcome is produced by the introduction of nutrition education/food supplementation program.

H. Sensitivity Analysis

Some of the coefficients used in the cost effectiveness analysis are not statistically greater than zero, at level of significance greater than 0.05, or some of them have large range.

The outcome of cost effectiveness analysis of different program alternative is not sensitive to reasonable variation in health care development budget. The mean

estimate of health care development budget is Rp. 1,289.15 per capita for the entire 21-year planning period. Even if the health care budgetary projection were Rp. 9,000. per capita for the same period, which is approximately 47.0 Standard deviation greater than the mean, and highly unlikely to be achieved, the ordinal rank of preference among the health care facility expansion alternatives is not altered. Changes take place among the proposed health program intervention strategies, where the most expensive intervention, the reduction in service charge by 18.2% in combination with mass nutrition education/food supplementation is taking over the nutrition education/food supplementation (see table 34).

Among the uncertain coefficients are the effect of service charge reduction on percentage seeking care, and the effect of nutrition education/food supplementation on incapacitation days due to illness (see table 26). As has been mentioned earlier, the result of service charge reduction is 1.15% increase in percentage seeking care with level of significancy $p>0.05$. Nutrition education/food supplementation reduces incapacitation days due to illness by 28.1% to 37.9%, with the mean of 32.6% at, 95.% confidence interval. Sensitivity analysis of the ordinal ranks of preference of various policy options is tested across different variation of these uncertain coefficients.

The effect of service charge reduction on percentage seeking care is divided into three levels, namely 0.0%,

TABLE 34

SENSITIVITY ANALYSIS BASED ON DIFFERENT BUDGETARY PROJECTION OF THE ALTERNATIVE POLICY OPTIONS FOR HEALTH CARE DEVELOPMENT OF REGENCIES OF KENDARI, AND KOLAKA

ORDINAL RANKS OF PREFERENCE	POLICY OPTIONS ACROSS DIFFERENT BUDGETARY PROJECTION						
	Rp. 0.00 per capita	Rp. 973.13 per capita	Rp. 1,131.14 per capita	Rp. 1,289.15 per capita	Rp. 1,447.16 per capita	Rp. 1,605.17 per capita	Rp. 9,000.00 per capita
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,4
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,4
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,4
4.	3,2	3,2	3,2	3,2	3,2	3,2	5,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	3,4
6.	2,2	2,2	2,2	2,2	2,2	2,2	1,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	7,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	6,4
9.	A.O.	5,4	5,4	5,4	5,4	5,4	3,2
10.	A.O.	1,4	1,4	1,4	1,4	1,4	2,4

A.O. stands for All Others option.

0.575%, and 37.9%. The effect of nutrition education/food supplementation on days of incapacitation due to illness is also divided into three levels, namely 28.1%, 32.6%, and 37.9%. These two trichotomies resulted in nine different cost effectiveness analyses. When combined with six levels of health care development budgetary projection, then there will be 54 alternative policy options being tested (see table 35).

The sensitivity analysis shows that variation in percentage seeking care as the result of service charge reduction, variation in incapacitation days due illness as the result of nutrition education/food supplementation, and variation in health care development budget do not alter the ordinal ranks of preference of different alternative policy options. The combination of health center expansion policy and nutrition education/food supplementation appear to be the best selection, followed by nutrition education/food supplementation alone, then by health center and subhealth center simultaneous expansion in combination with nutrition education/ food supplementation.

Even if the budgetary constraint is removed --a highly unlikely proposition--the ordinal ranks of preference of the alternative health care facility expansion is still maintained. The only difference, the absence of budgetary constraint makes even the most expensive service charge reduction a viable addition to the existing system.

The ordinal ranks of preference of health care

TABLE 35

SENSITIVITY ANALYSIS ON ORDINAL RANKS OF PREFERENCE AMONG DIFFERENT POLICY OPTIONS FOR HEALTH CARE DEVELOPMENT IN REGENCIES OF KENDARI, AND KOLAKA FROM 1980-2001
(Health Care Development Budget is Rp. 973.13 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +0.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2
4.	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2
6.	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2
9.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
10.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4

BASE NE/FS DII -32.6% SCR PSC +1.15%, and other identical abbreviations of the captions above stand for:"Base data where the nutrition education/food supplementation program reduces days of incapacitation due to illness by 32.6%, and service charge reduction increases percentage seeking care by 1.15%.
Alternative policy options 5,2 in this table means the selection of alternative health care expansion 5, in combination with alternative health intervention program 2.

TABLE 35 (continued)

(Health Care Development Budget is Rp. 1,131,14 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +0.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2
4.	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2
6.	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2
9.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
10.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4

T A B L E 35 (continued)

(Health Care Development Budget is Rp. 1,289.15 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +0.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2
4.	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2
6.	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2
9.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
10.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4

T A B L E 35 (continued)

(Health Care Development Budget is Rp. 1,447.16 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +0.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2
4.	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2
6.	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2
9.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
10.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4

TABLE 35 (continued)

(Health Care Development Budget is Rp. 1,605.17 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +0.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
2.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
3.	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2	7,2
4.	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
5.	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2	6,2
6.	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2
7.	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2	8,2
8.	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2	4,2
9.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
10.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4

T A B L E 35 (continued)

(Health Care Development Budget is Rp. 9,000.00 per capita)

ORDINAL RANKS OF PREFERENCE	BASE NE/FS DII -32.6% SCR PSC +1.15%	NE/FS DII -32.6% SCR PSC +C.575%	NE/FS DII -32.6% SCR PSC +0.00%	NE/FS DII -28.1% SCR PSC +1.15%	NE/FS DII -28.1% SCR PSC +0.575%	NE/FS DII -28.1% SCR PSC +0.00%	NE/FS DII -37.9% SCR PSC +1.15%	NE/FS DII -37.9% SCR PSC +0.575%	NE/FS DII -37.9% SCR PSC +0.00%
1.	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
2.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
2.	1,4	1,4	1,4	1,4	1,4	1,4	1,4	7,4	7,4
3.	7,4	7,4	7,4	7,4	7,4	7,4	7,4	1,4	1,4
4.	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
5.	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4
6.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
7.	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
7.	7,2	7,2	6,4	7,2	7,2	6,4	7,2	7,2	6,4
8.	6,4	6,4	7,2	6,4	6,4	7,2	6,4	6,4	7,2
9.	3,2	2,4	2,4	3,2	2,4	2,4	3,2	2,4	2,4
10.	2,4	3,2	3,2	2,4	3,2	3,2	2,4	3,2	3,2

facility expansion is somewhat remote from classical presumption. Village health post expansion for instance is less attractive than subhealth center expansion, and subhealth center expansion is less attractive than health center expansion. Even though the investment for one village health post is only Rp. 727,500. and the operating cost is Rp. 103,233. per year, in comparison to the subhealth center with investment cost of Rp. 2,847,500. and operating cost of Rp. 1,874,271 per year, and the health center with the investment cost of Rp. 15,182,870 and operating cost of Rp. 11,814,348., the relative effectiveness of the present health center is far better than the subhealth center, and the relative effectiveness of the subhealth center is far better than the village health post. This relative effectiveness is greater than their relative cost, which makes the health center more cost effective than the subhealth center, and the subhealth center is more cost effective than the village health post. If the capability of the village health post and subhealth center are improved, then there is a chance that their position in cost effectiveness scale will be changed. However, there is no way of predicting to what direction the changes in the relative effectiveness of different health care facility in the future in Regencies of Kendari, and Kolaka from the existing empirical data.

Future development of health care system in Southeast Sulawesi would be better if Regencies of Kendari, and Kolaka

begin to adapt the development of their health care delivery system along the line of health center expansion using the present health center as the standard. Unless there is some fundamental change in the operating efficiency of subhealth center and village health post, health care facility expansion along subhealth center and village health post line should be avoided.

The implementation of nutrition education/food supplementation in each catchment area of the health center measured in term of reduction in the incapacitation days due to illness, has been proven as the most rewarding activity.

The present level of service charge is judged by many users as quite reasonable. The finding about the revenue surplus from service charge in hospital and health center is unexpected, and its magnitude is quite startling. However, haste decision to balance the book by reducing the service charge is self defeating. Reduction in service charge by 18.2% does not stimulate enough demand because of the very inelastic nature of health care demand in this area. Also the service charge reduction will not reduce enough incapacitation days due to illness, therefore, it is not justifiable for implementation.

Footnotes to Chapter V

[1]International Classification of Diseases, Manual of Diseases, Injuries, and Cause of Death, Vol. I, Geneva: World Health Organization, 1967, pp. 447-449.

[2]Recent discussion with transmigration authority in the area disclosed that transmigration services have been experimenting with clustering of place of residence.

[3]Morley, David, Paediatric Priorities in the Developing World, London: Butterworths Co. Ltd., 1973.

[4]Austin, James et.al. Nutrition Assessment and Guidelines United Nations ACC Subcommittee on Nutrition, June 1978.

[5]Beaton, G.H. and H. Ghassemi "Supplementary Feeding Programmes for Young Children in Developing Countries", Report Prepared for UNICEF and the ACC Subcommittee on Nutrition of the United Nations, October 1979.

[6]Computed from Biaya Proyek Kesehatan 1974/1975 - 1980/1981 Propinsi Sulawesi Tenggara (Expenditure of Health Project of Province of Southeast Sulawesi 1974/1975 - 1980/1981), Sub. Dit. Karantina Haji & PKPP, Jakarta, 1981.

[7]Siagian, Berlian T.P., Quantitative Techniques for a Health Care Development Model: The Case of Regency of Bogor, West Java, Indonesia, (PhD Dissertation), The University of Michigan, 1982.

CHAPTER VI

SUMMARY AND CONCLUSIONS

One of the greatest problem in the Indonesian health planning is the tendency to generalize the health planning of this diverse country into one form. More recent experience with the development mis-matches in health sector, stimulate the development of regency health planning to meet the specific local variation.

The main objective of this research is to select alternative health care development strategy for the Regencies of Kendari, and Kolaka. The local political and administrative climate of Southeast Sulawesi are suitable for this new approach. As the first step in the rational health planning works is the study of health condition of the area. This has been done through health household survey, where stratified random sample of neighborhood units was drawn, and approximately 200 households per subdistrict were selected. There were 10,330 people interviewed in the study. Interview covers individual illnesses within one-month period prior to the interview. Each of them received physical examination. In one fourth of the sample, the physical examination is complemented with laboratory

examination for routine clinical test, acid fast bacilli test of the sputum, malaria and filaria detection in the blood, and detection of Enterobacteriaceae in feces. These data have been used to develop the additive models of utilization, and incapacitation.

The World Health Organization definition of health is very general. There has been some difficulties in the operationalization of this definition for practical planning purposes. In response, there have been many parameters of health status have been introduced in the last 20 years. Multiple determinants of health, such as: Socioeconomic condition, life style, nutrition, food availability, physical environment, development in health sciences, health care delivery, climate, and much more further complicate the parameters. It also substantiate the fact that only a fraction of these determinants are in the realm of the public health sector.

Infant mortality rate, maternal mortality rate, and crude death rate are the crude parameters of health care performance. The deficiency of mortality based parameters is in its large sample requirement in order to obtain sufficient case variation. Therefore small size survey for regency health planning should use incapacitation days due to illness as its parameter. Clear statement of objective and consistent selection of parameter of health status help to prevent goal shifting in the provision of health care services.

It has been proven that in term of mortality, health care organization plays minor role in producing health, while at the same time receives the largest share of health care budget. Innovative health care delivery system however, has demonstrated remarkable success in the improvement of health status of the population of two regencies in Central Java. This success disillusioned many Indonesian health policy makers. National adoption of primary health care model based on Central Java experience only followed by slow and sporadic adoption elsewhere. The slow adoption is suspected due to over generalization of primary health care concept in its implementation. In fact, local modification of any health care model is one of the most important prerequisite for successful adoption.

In searching for the specific model of health in the Regencies of Kendari, and Kolaka, this study uses an approach analogous to the approach used in the development of "The Behavioral Model for Health Service Use" (Anderson, 1968). The result is the findings of nine predictor variables of utilization, specific for the Regencies of Kendari, and Kolaka. Each predictor has different level of correlation with the utilization variable. Their levels, measured by beta coefficient are as follow:

Predictor Variables	beta
1. Out of pocket payment	.384955
2. Type of health care provider	.297044
3. Diagnosis of illness	.220187

4. Place of treatment	.179497
5. Distance to place of treatment	.141470
6. Subdistrict of residence	.114673
7. Outcome of treatment	.102921
8. Market availability of provider	.072292
9. Age group	.071504

There are five predictor variables of incapacitation due to illness. They are listed with their corresponding beta coefficients as follow:

Predictor Variables	beta
1. Result of treatment	.213726
2. Nutritional status	.147561
3. Age group	.115817
4. Place of treatment	.102971
5. Out of pocket payment	.100547

The computation of all coefficients of age specific utilization rate, and age specific incapacitation rate is based on these two additive models. Twenty-nine out of fifty-four diagnoses are included in the computation.

From the computation, it is found that almost 1.5 million visits take place per year, or equal to 2.63 visits per capita per year. The estimated days of incapacitation due to illness per year is 52.4 days per capita, with age group breakdown as follow:

Age Group	Incapacitation days per capita year
0 - 1 year	74.8 days
1 - 4 years	83.9 days

5 - 14 years	40.2 days
15 - 44 years	34.5 days
45 + years	103.1 days
All ages	52.4 days

The aggregate incapacitation days due to illness is equal to 28.9 million days per year, which is very high relative to other regencies of Indonesia. The selection of alternative health care development strategy aims to reduce this.

There are four alternatives health care facility expansion based on the existing facilities; they are:

1) Village Health Post expansion, the recommended number of facilities not more than 305 units,
2) Subhealth Center expansion, the recommended number of facilities not more than 61 units,
3) Health Center expansion, the recommended number of facilities not more than 30 units, and
4) Hospitals expansion, the recommended number of facilities not more than 6 units.

There are two alternatives health program intervention; they are:

1) Nutrition education/food supplementation, and
2) Service charge reduction by 18.2%.

Hospital expansion is ruled out because bed to population ratio in the Regencies of Kendari, and Kolaka was 1:2,378 in 1980. This ratio is much higher than the ratio of other areas of Indonesia. What is needed with respect to hospital care development is not additional hospitals or hospital

beds, but more efficient use of the existing hospital facilities.

Each of the remaining three alternatives health care facility expansion and two alternatives health program intervention has calculated impact on percentage seeking care, utilization rate, and incapacitation rate. The implementation of each of their 32 combinations has varying degree of coverage for a given budget. Based on the projected budget, cost effectiveness analysis of these 32 alternatives health care development strategy produces different level of incapacitation, and different level of coverage. The projected government budget, as well as the projected social expenditure for health sector produce consistent outcomes in term of ranks order of preference among the top ten alternatives health care development strategy. The top ten alternatives health care development strategy are not sensitive to reasonable variation in budget, and in calculated impact of different alternative health care facility expansion as well as program intervention.

Cost effectiveness analysis from the government budget as well as social expenditure perspective favors the development of health care delivery system along the line of health center expansion. The recommended number of health center in year 2001 is 30 units. Improvement of the operating efficiency of the existing subhealth centers and village health posts is more favorable than the expansion of

the subhealth center and village health post system. Expansion along the line of subhealth center and village health post should be avoided. Implementation of the Nutrition Education/Food Supplementation program in each catchment area of the health center reduces incapacitation days sharply, while the service charge reduction by 18.2% is self defeating, since it is not cost effective.

This research has demonstrated the practical application of health policy analysis using household survey and several survey research techniques, the additive models of incapacitation and utilization, budget forecasting, and simulation of the incapacitation days due to illness under various alternatives health care development strategy.

APPENDICES

APPENDIX A

PROFILE ANALYSIS PROGRAM AND OUTPUT

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MICHIGAN TERMINAL SYSTEM FORTRAN G(21.8)          MAIN          11-23-82          13:13:23          PAGE P001

                C REGENCY HEALTH PLANNING PROFILE MODEL FOR INDONESIA
                C THIS PROGRAM ALSO CALCULATES COST OF SEEKING CARE
                C WRITTEN BY BERLIAN SIAGIAN, STARTED FEB 3, 1982
                C COMPILER TRPROFCOM MODIFIED NOVEMBER 18, 1982.
0001                 DIMENSION POP(6),RATE(20,6),PSC(30,6,7),VE(30,5,7),DL(30,6,7),
                    1     XDL(7),TDLC(7),TDL(30),TXD(7),DLAX(6),
                    2     DLNRX(30,6),XY(30,6),DIAGN(30,10),AGNAM(6,2),RGNAM(8),
                    3     DATE(4),COSTSC(7),TCOST(7),TTVIS(7)
0002                      DATA TDL,TCOST,TTVIS/30*0.,7*0.,7*0./
                C MEMBACA NAMA KABUPATEN DARI INPUT DEVICE 5
0003                 READ(5,12)(RGNAM(K2),K2=1,8)
0004              12 FORMAT(8A4)
                C MEMBACA TANGGAL PEKERJAAN DARI INPUT DEVICE 5
0005                 READ(5,13)(DATE(K3),K3=1,4)
0006              13 FORMAT(4A4)
                C MEMBACA JUMLAH DIAGNOSIS PENYAKIT YANG AKAN DIPAKAI MAX 20
0007                 READ(5,1)NDIS
0008               1 FORMAT(I2)
                C MEMBACA JUMLAH GOLONGAN UMUR YANG AKAN DIPAKAI MAX 6
0009                 READ(5,4)NAGE
0010               4 FORMAT(I1)
                C MEMBACA JUMLAH SARANA PENGOBATAN YANG AKAN DIPAKAI MAX 7
                C PERIKSA BAHWA JUMLAH SARANA DISESUAIKAN DENGAN FORMAT
                C PADA SAAT MEMBACA DAN MENULIS DATA , DARI INPUT DEVICE 5
0011                 READ(5,4)LCR
0012                 READ(5,17)(COSTSC(L),L=1,LCR)
0013              17 FORMAT(7F10.3)
0014                 POPT=0
0015                 DO 5 J=1,NAGE
                C MEMBACA JUMLAH PENDUDUK KABUPATEN DISETIAP GOLONGAN UMUR
                C DARI INPUT DEVICE 5
                C DISUSUL DENGAN LABEL MASING MASING GOLONGAN UMUR TERSEBUT
0016                 READ(5,7)POP(J)
0017               7 FORMAT(F9.1)
0018                 POPT=POPT+POP(J)
0019               5 READ(5,6)(AGNAM(J,K1),K1=1,2)
0020               6 FORMAT(2A4)
0021                 DO 10 I = 1, NDIS
                C MEMBACA DIAGNOSIS PENYAKIT KEMUDIAN INSIDENSI/PREVALENSI PENYAKIT
                C MELALUI INPUT DEVICE 5
0022                 READ(5,3)(DIAGN(I,K),K=1,10)
0023               3 FORMAT(10A4)
                C MEMBACA JUMLAH PEMAKAIAN SARANA PENGOBATAN MENURUT JENIS SARANA,
                C UNTUK SATU EPISODE PENYAKIT DARI INPUT DEVICE 7
0024                 DO 10 J = 1, NAGE
0025                 READ(7,2)(VE(I,J,L),L=1,LCR)
0026               2 FORMAT(7F5.2)
0027                 READ (5,20) RATE(I,J),(PSC(I,J,L),L=1,LCR)
0028              20 FORMAT(F8.2,7F7.3)
                C MEMBACA JUMLAH HARI TIDAK DAPAT BEKERJA SEPERTI BIASA KARENA SAKIT
                C MENURUT JENIS PENYAKIT, GOLONGAN UMUR DAN JENIS SARANA PENGOBATAN
                C YANG DIPAKAI DARI INPUT DEVICE 9
0029              10 READ(9,21)DLNRX(I,J),(DL(I,J,L),L=1,LCR)
0030              21 FORMAT(8F8.3)
                C MENULISKAN NAMA KABUPATEN, JUMLAH PENDUDUK DAN TANGGAL PEKERJAAN
```

```
                C MELALUI OUTPUT FILE 6
0031                  WRITE (6,50) (RGNAM(K2),K2=1,8),POPT,(DATE(K3),K3=1,4)
0032               50 FORMAT ('1',/,'-',34X,63('*'),/,35X,'*',5X,
                     +'DISEASE PROFILE FOR ',8A4,4X,'*',/,35X,'*',15X,F10.0,1X,
                     +'PEOPLE',29X,'*',/,35X,'*',18X,4A4,27X,'*',/,35X,63('*'))
0033                  WRITE (6,55)
0034               55 FORMAT(35X,'*',19X,'POPULATION DISTRIBUTION',19X,'*')
0035                  DO 25 J=1,NAGE
0036               25 WRITE (6,56) (AGNAM(J,K1),K1=1,2),POP(J)
0037               56 FORMAT (35X,'*',19X,2A4,10X,F8.0,16X,'*')
0038                  WRITE (6,57)
0039               57 FORMAT (35X,63('*'))
0040                  TDAYS = 0
0041                  TVISIT = 0
0042                  TCASE = 0
0043                  XDAY = 0
0044                  YDAY = 0
0045                  TCARE = 0
                C MENULISKAN JUDUL TABEL DAN JUDUL KOLOM MELALUI OUTPUT DEVICE 6
0046                  CALL HEAD1
0047                  CALL COLIST
0048                  DO 460 I = 1, NDIS
                C DO LOOP BERIKUT INI MENGHITUNG TABEL DASAR PERTAMA
0049                  WRITE(6,9)(DIAGN(I,K),K=1,10)
0050               9  FORMAT('0',10A4)
0051                  TCAS = 0
0052                  DO 8 L=1,LCR
0053                8 TDLC(L) = 0
0054                  TSC = 0
0055                  TVIS = 0
0056                  TDLY = 0
0057                  TDLX = 0
0058                    DO 450 J = 1, NAGE
0059                      TOSC = 0
0060                      TOVT = 0
0061                      X = 0
0062                      CASE = POP(J) * RATE(I,J)/1000.
0063                    DO 451 L=1,LCR
0064                      XNSC = CASE * PSC(I,J,L)/100.
0065                      XVE = XNSC * VE(I,J,L)
0066                      XDL(L) = XNSC * DL(I,J,L)
0067                      X = X + XDL(L)
0068                      TOSC = TOSC + XNSC
0069                      TOVT = TOVT + XVE
0070                      TXD(L) = TXD(L) + XDL(L)
0071                      TTVIS(L) = TTVIS(L) + XVE
0072                    TDLC(L) = TDLC(L) + XDL(L)
0073                    TCOST(L)=TCOST(L) + (XNSC * COSTSC(L)/1000.)
0074              451 CONTINUE
0075                      TNSC = CASE - TOSC
0076                      Y = TNSC*DLNRX(I,J)
0077                      IF(Y.LT.0.)Y=0
0078                      XY(I,J) = X + Y
0079                      TSC = TSC + TOSC
0080                      TVIS = TVIS + TOVT
```

```
0081                TDLX = TDLX + X                                          111.000
0082                TDLY = TDLY + Y                                          112.000
0083                TCAS = TCAS + CASE                                       113.000
0084                TDL(I) = TDL(I) + XY(I,J)                                114.000
0085                DLAX(J) = DLAX(J) + XY(I,J)                              115.000
0086          450 WRITE (6,390) (AGNAM(J,K1),K1=1,2),RATE(I,J),CASE,         116.000
                 1    TDSC,TDVT,Y,(XDL(L),L=1,LCR),X,XY(I,J)                 117.000
0087          390 FORMAT (5X,2A4, F6.0,3(1X,F8.0),2X,3F8.0,1X,F8.0,1X,       118.000
                 1 4F8.0,1X,F8.0,1X, F9.0)                                   119.000
0088                TCASE = TCASE + TCAS                                     120.000
0089                XDAY = XDAY + TDLX                                       121.000
0090                YDAY = YDAY + TDLY                                       122.000
0091                TDAYS = TDAYS + TDL(I)                                   123.000
0092                TCARE = TCARE + TSC                                      124.000
0093                TVISIT = TVISIT + TVIS                                   125.000
0094             WRITE(6,470)TCAS,TSC,TVIS,TDLY,(TDLC(L),L=1,LCR),TDLX,TDL(I)  126.000
0095             CHECK=I/6.0                                                 127.000
0096             ICH=CHECK                                                   128.000
0097             CHECK=CHECK-ICH                                             129.000
0098             IF(CHECK.EQ.0.0) CALL COLIST                                130.000
0099          470 FORMAT('0',4X,'ALL AGE',7X,3(F9.0),2X,3F8.0,F9.0,1X,       131.000
                +4F8.0,F9.0,1X,F9.0)                                          132.000
0100          460 CONTINUE                                                   133.000
0101             WRITE  (6,471)TCASE,TCARE,TVISIT,YDAY,(TXD(L),L=1,LCR),     134.000
                +XDAY,TDAYS                                                   135.000
0102          471 FORMAT('0',2X,'ALL DISEASES',4X,3(F9.0),1X,F9.0,           136.000
                +F8.0,2(F8.0,1X),3F8.0,3F9.0,F9.0)                            137.000
0103             WRITE(6,472)                                                138.000
0104          472  FORMAT('1',////,50X,'OUTPKT COST FOR S.C. BY TYPE PROVIDER')  139.000
0105             WRITE(6,473)                                                140.000
0106          473  FORMAT('B',60X,'(IN THOUSAND RP)')                        141.000
0107             WRITE(6,474)                                                142.000
0108          474 FORMAT('0',24X,'BAZAR',5X,'PRVOFF',5X,'VHP',8X,'SHC',9X,'HC',8X,'H  143.000
                10SP',7X,'HOME')                                              143.000
0109             WRITE(6,475)(TCOST(L),L=1,LCR)                              144.000
0110          475  FORMAT('0',18X,7(1X,F10.2))                               145.000
0111             SOCST=0                                                     146.000
0112             DO 91 L=1,LCR                                               147.000
0113          91   SOCST=SOCST + (TCOST(L)/1000.)                            148.000
0114             WRITE(6,476)SOCST                                           149.000
0115          476  FORMAT('-','      SOCIAL COSTS=RP.',F11.5,' MILLION')    150.000
0116             WRITE(6,482)                                                151.000
0117          482  FORMAT('0',//,46X,'TOTAL NUMBER OF VISIT BY TYPE OF PROVIDER')  152.000
0118             WRITE(6,474)                                                153.000
0119             WRITE(6,485)(TTVIS(L),L=1,LCR)                              154.000
0120          485  FORMAT('0',18X,7(1X,F10.0))                               155.000
            C KEPALA TABEL DASAR KEDUA                                       156.000
0121             CALL HEAD2                                                  157.000
            C DO LOOP BERIKUT INI MENGHITUNG TABEL DASAR KEDUA               158.000
0122             DO 500 I = 1, NDIS                                          159.000
0123          500  WRITE(6,520)(DIAGN(I,K),K=1,10),(XY(I,J),J=1,NAGE),TDL(I)  160.000
0124             WRITE(6,510)(DLAX(J),J=1,NAGE),TDAYS                        161.000
0125          520  FORMAT ('0',3X,10A4,6('|',1X,F9.0,1X),1X,F9.0)            162.000
0126          510  FORMAT ('0',15X,'ALL DISEASES',16X,6('|',1X,F9.0,1X))     163.000
            C DO LOOP BERIKUT INI MENGHITUNG JUMLAH PEMAKAIAN SARANA PENGOBATAN  164.000
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```
              C RATA RATA UNTUK SATU EPISODE PENYAKIT, MENURUT GOLONGAN UMUR
0127                WRITE(6,521)
0128           521  FORMAT('1',33X,'AGGREGATE RATES')
0129                WRITE(6,522)
0130           522  FORMAT(' ',78('-'),/,' ','+',76X,'+',/,' ','+ AGE GROUP',
                   +2X,' D.I.I. PER PERSON PER YEAR',37X,'+',/,' ','+',76X,
                   +'+',/,' ',78('-'))
0131                DO 149 J=1,NAGE
0132                SMR = DLAX(J)/POP(J)
0133           149  WRITE (6,540) (AGNAM(J,K2),K2=1,2),SMR
0134           540  FORMAT(' ','|',76X,'|',/,'|',2A4,13X,F8.3,47X,'|')
0135                XMR =TDAYS/POPT
0136                WRITE(6,660) XMR
0137           660  FORMAT(79('-'),/,'|',76X,'|',/,'|','ALL AGE GROUP',8X,
                   +F8.3,47X,'|',/,'|',76X,'|',/,79('-'))
0138                VPY = TVISIT / POPT
0139                WRITE(6,530) TVISIT,VPY
0140           530  FORMAT(' ','|',76X,'|',/,'|','TOTAL VISIT PER YEAR = ',F9.0,
                   +5X,'VISIT PER PERSON PER YEAR = ',F6.4,5X,'|',/,' ','|',
                   +76X,'|',/,' ',78('-'))
0141                 FSC=TCARE/TCASE
0142                WRITE(6,455) TCARE,FSC
0143           455  FORMAT(1X,'|',76X,'|',/,'|','TOTAL NUMBER SEEKING CARE =',
                   +F9.0,5X,' FRACTION SEEKING CARE',F7.3,6X,'|',/,'|',76X,'|',
                   +/,78('-'))
0144                STOP
0145                END
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = MAIN    , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =      145,PROGRAM SIZE =    23866
 *STATISTICS*  NO DIAGNOSTICS GENERATED
```

```
0001          SUBROUTINE HEAD1                                                  192.000
0002          WRITE (6,65)                                                      193.000
0003       65 FORMAT (////////////////////,'  ',57('+'),/,'  + TABLE 1',47X,'+'  194.000
            1,/,                                                                194.000
            +'  +',55X,'+',/,'  + AGE SPECIFIC-DISEASE SPECIFIC MORBIDITY,',    195.000
            +' TOTAL NUMBER +',/,'  +',' OF CASES, NUMBER OF VISITS, AND',      196.000
            +' DAYS LOST BY TYPE OF  +',/,'  +',1X,'HEALTH ',                   197.000
            +'CARE PROVIDER',34X,'+',/,'  ',57('+'))                            198.000
0004          RETURN                                                            199.000
0005          END                                                               200.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = HEAD1    , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =        5,PROGRAM SIZE =      516
 *STATISTICS*  NO DIAGNOSTICS GENERATED
```

```
0001          SUBROUTINE COLIST                                                  201.000
0002          WRITE (6,70)                                                       202.000
0003       70 FORMAT ('1',2X,'DIAGNOSIS',3X, 'RATE', 4X, 'TOTAL', 3X,'TOTAL',5X, 203.000
             1       'NUMBER',3(4X,'DAYS'),2(5X,'DAYS'),3(4X,'DAYS'),5X,          204.000
             1'TOTAL',5X,'TOTAL',/,6X,'AND',6X, 'PER', 6X, '#OF', 4X,             205.000
             2'SEEKING',4X,'#OF',2X,3(4X,'LOST'),2(5X,'LOST'),3(4X,'LOST'),       206.000
             35X,'DAYS',6X,'DAYS',/,3X,'AGE GROUP',3X,'1000',4X,'CASES',3X,       207.000
             4'CARE',6X,'VISIT',5X,'NRX',4X,'BAZAR',3X,'PRVOFF',4X,'VHP',7X,      208.000
             5'SHC',5X,'HC',5X,'HOSP',4X,'HOME',5X,'RX',7X,'LOST')                209.000
0004          RETURN                                                             210.000
0005          END                                                                211.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = COLIST  , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =        5,PROGRAM SIZE =      596
 *STATISTICS*  NO DIAGNOSTICS GENERATED
```

```
0001          SUBROUTINE HEAD2                                                212.000
0002          WRITE(6,475)                                                    213.000
0003      475 FORMAT('1',42('+'),/,' ','+',' TABLE 2',31X,'+',/ ,             214.000
             +' ','+',2X,'DISABILITY BY AGE GROUP AND DIAGNOSIS',1X,'+',/     215.000
             +' ',42('+'),///)                                                216.000
0004          WRITE (6,480)                                                   217.000
0005      480 FORMAT (133('-'),/,' ',15X,'DIAGNOSIS',19X,'|  0-1 YR   ',      218.000
             +'|  1-4 YR   |','  5-14 YR  |',                                219.000
             +' 15-44  YR |','  45 + YR  |','   TOTAL   ',                    220.000
             +/,44X, 6('|  D.I.I.   '),/,' ',132('-'))                        221.000
0006          RETURN                                                          222.000
0007          END                                                             223.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = HEAD2    , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =        7,PROGRAM SIZE =      536
 *STATISTICS*  NO DIAGNOSTICS GENERATED

NO STATEMENTS FLAGGED IN THE ABOVE COMPILATIONS.
```

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*************************************************************
*     DISEASE PROFILE FOR SOUTHEAST SULAWESI                *
*                  551631. PEOPLE                           *
*                  Sept. 1982                               *
*************************************************************
*                   POPULATION DISTRIBUTION                 *
*                   0-1 YR              21393.              *
*                   1-4 YRS             82243.              *
*                   5-14 YRS           166588.              *
*                   15-44 YR           222890.              *
*                   45+ YRS             58511.              *
*************************************************************
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ TABLE 1                                                 +
+                                                         +
+ AGE SPECIFIC-DISEASE SPECIFIC MORBIDITY, TOTAL NUMBER   +
+ OF CASES, NUMBER OF VISITS, AND DAYS LOST BY TYPE OF    +
+ HEALTH CARE PROVIDER                                    +
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

DIAGNOSIS AND AGE GROUP	RATE PER 1000	TOTAL #OF CASES	TOTAL SEEKING CARE	NUMBER #OF VISIT	DAYS LOST NRX	DAYS LOST BAZAR	DAYS LOST PRVOFF	DAYS LOST VHP	DAYS LOST SHC	DAYS LOST HC	DAYS LOST HOSP	DAYS LOST HOME	TOTAL DAYS RX	TOTAL DAYS LOST
DYSENTERY														
0-1 YR	277.	5930.	0.	0.	8895.	0.	0.	0.	0.	0.	0.	0.	0.	8895.
1-4 YRS	371.	30498.	3812.	3355.	0.	0.	0.	0.	21882.	0.	0.	0.	21882.	21882.
5-14 YRS	17.	2882.	1441.	1009.	0.	0.	0.	0.	0.	540.	0.	0.	540.	540.
15-44 YR	87.	19347.	15845.	16162.	0.	0.	17711.	0.	56620.	40704.	0.	37535.	152570.	152570.
45+ YRS	31.	1814.	1814.	1270.	0.	748.	25321.	0.	0.	10439.	0.	0.	36508.	36508.
ALL AGE		60471.	22912.	21795.	8895.	748.	43032.	0.	78502.	51683.	0.	37535.	211501.	220396.
ENTERITIS/DIARRHEA														
0-1 YR	214.	4578.	3049.	2139.	1024.	0.	2947.	0.	0.	0.	7338.	7658.	17943.	18968.
1-4 YRS	1910.	157112.	42263.	38461.	42494.	0.	0.	73751.	44189.	13241.	0.	155915.	317097.	333591.
5-14 YRS	202.	33617.	18355.	14715.	0.	0.	40748.	0.	0.	2294.	41758.	43288.	128088.	128088.
15-44 YR	98.	21910.	11547.	10448.	1140.	0.	46508.	0.	0.	20009.	0.	73805.	140322.	141462.
45+ YRS	848.	49528.	12397.	12397.	12273.	0.	0.	0.	0.	285379.	0.	0.	285379.	297652.
ALL AGE		266806.	87611.	78161.	56932.	0.	90203.	73751.	44189.	320924.	49096.	310666.	888830.	945762.
TUBERCULOSIS														
0-1 YR	55.	1185.	12.	17.	0.	0.	0.	0.	0.	0.	0.	179.	179.	179.
1-4 YRS	17.	1398.	931.	1374.	0.	0.	0.	0.	2673.	0.	7278.	0.	9950.	9950.
5-14 YRS	5.	833.	277.	433.	0.	0.	0.	0.	1390.	0.	0.	0.	1390.	1390.
15-44 YR	23.	5126.	2609.	4401.	34610.	0.	3610.	1348.	3847.	8326.	3721.	3825.	24678.	59288.
45+ YRS	102.	5968.	3032.	4624.	292927.	295.	14997.	0.	10266.	18410.	7181.	39905.	91054.	383981.
ALL AGE		14511.	6862.	10849.	327537.	295.	18607.	1348.	18175.	26736.	18180.	43908.	127251.	454788.
MEASLES														
0-1 YR	602.	12879.	4289.	2530.	38655.	0.	0.	0.	0.	0.	0.	64629.	64629.	103284.
1-4 YRS	621.	51077.	41474.	27124.	19205.	0.	0.	91991.	91765.	0.	248280.	0.	432036.	451241.
5-14 YRS	228.	37982.	31677.	24709.	15763.	0.	0.	0.	0.	4757.	0.	358476.	363234.	378996.
15-44 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45+ YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		101937.	77440.	54363.	73622.	0.	0.	91991.	91765.	4757.	248280.	423105.	859898.	933521.
MALARIA														
0-1 YR	37.	792.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	119.	9788.	6998.	6354.	6974.	0.	7124.	13408.	8034.	1204.	0.	22688.	52458.	59432.
5-14 YRS	858.	142932.	60889.	59754.	215774.	0.	27289.	25123.	60868.	13722.	0.	301352.	428353.	644126.
15-44 YR	183.	40789.	23658.	23890.	97477.	0.	32827.	11918.	78706.	37722.	8460.	113050.	282683.	380160.
45+ YRS	203.	11878.	6461.	5853.	62829.	0.	30178.	17697.	46313.	0.	21439.	109926.	225552.	288381.
ALL AGE		206178.	98006.	95851.	383053.	0.	97418.	68147.	193920.	52647.	29898.	547016.	989046.	1372098.
INTESTINAL WORMS														
0-1 YR	168.	3594.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	861.	70816.	22661.	6147.	0.	0.	14418.	0.	32519.	9744.	0.	45917.	102599.	102599.
5-14 YRS	190.	31652.	7153.	1687.	10044.	0.	12789.	0.	0.	0.	19442.	20154.	52385.	62429.
15-44 YR	139.	30982.	30982.	8365.	0.	0.	0.	0.	0.	0.	321280.	330265.	651545.	651545.
45+ YRS	96.	5617.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		142661.	60796.	16199.	10044.	0.	27207.	0.	32519.	9744.	340722.	396336.	806528.	816573.

DIAGNOSIS AND AGE GROUP	RATE PER 1000	TOTAL #OF CASES	TOTAL SEEKING CARE	NUMBER #OF VISIT	DAYS LOST NRX	DAYS LOST BAZAR	DAYS LOST PRVOFF	DAYS LOST VHP	DAYS LOST SHC	DAYS LOST HC	DAYS LOST HOSP	DAYS LOST HOME	TOTAL DAYS RX	TOTAL DAYS LOST
DERMATOPHYTOSIS/MONILIASIS														
0-1 YR	35.	749.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	31.	2550.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	42.	6997.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	107.	23849.	5962.	298.	0.	0.	0.	0.	0.	0.	123658.	0.	123658.	123658.
45+ YRS	92.	5383.	2019.	108.	15476.	0.	0.	0.	19291.	15490.	0.	27433.	62214.	77690.
ALL AGE		39527.	7981.	406.	15476.	0.	0.	0.	19291.	15490.	123658.	27433.	185872.	201348.
MINERAL/VITAMIN DEFICIENCY														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	18.	1480.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	12.	1999.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	6.	1337.	669.	764.	0.	0.	2247.	0.	0.	2574.	0.	0.	4821.	4821.
45+ YRS	6.	351.	117.	140.	0.	0.	0.	0.	0.	2691.	0.	0.	2691.	2691.
ALL AGE		5168.	786.	905.	0.	0.	2247.	0.	0.	5265.	0.	0.	7512.	7512.
PROTEIN/CALORIE MALNUTRITION														
0-1 YR	78.	1669.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	48.	3948.	1974.	533.	0.	0.	0.	0.	11331.	0.	0.	0.	11331.	11331.
5-14 YRS	12.	1999.	1999.	600.	0.	0.	0.	0.	5008.	375.	0.	7072.	12454.	12454.
15-44 YR	4.	892.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45+ YRS	18.	1053.	351.	88.	316117.	0.	0.	0.	0.	0.	14067.	0.	14067.	330185.
ALL AGE		9560.	4324.	1220.	316117.	0.	0.	0.	16338.	375.	14067.	7072.	37852.	353969.
ANEMIA														
0-1 YR	61.	1305.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	147.	12091.	4026.	1329.	0.	0.	20493.	0.	0.	0.	0.	0.	20493.	20493.
5-14 YRS	37.	6164.	4623.	1957.	0.	0.	6842.	0.	7720.	0.	0.	21804.	36366.	36366.
15-44 YR	131.	29199.	12059.	5950.	3599.	0.	15274.	0.	32240.	32066.	20590.	21165.	121335.	124934.
45+ YRS	71.	4154.	2077.	1002.	0.	0.	0.	0.	0.	11954.	0.	63514.	75468.	75468.
ALL AGE		52912.	22785.	10238.	3599.	0.	42609.	0.	39960.	44020.	20590.	106483.	253662.	257261.
DISEASES OF THE BRAIN														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	10.	822.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	2.	333.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	8.	1783.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45+ YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		2939.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
EYE INFECTION														
0-1 YR	1893.	40497.	0.	0.	16199.	0.	0.	0.	0.	0.	0.	0.	0.	16199.
1-4 YRS	538.	44250.	9115.	4011.	10540.	0.	23199.	0.	0.	3920.	0.	0.	27119.	37659.
5-14 YRS	325.	54141.	18949.	9299.	27098.	0.	16029.	0.	27125.	5076.	0.	38305.	88534.	115632.
15-44 YR	334.	74445.	37297.	19374.	25261.	0.	98857.	0.	83795.	90792.	0.	84120.	357565.	[illegible].
45+ YRS	37.	2165.	433.	242.	2165.	0.	0.	0.	0.	9967.	0.	0.	9967.	12132.
ALL AGE		215498.	65735.	32926.	31262.	0.	140085.	0.	110920.	109754.	0.	122425.	483184.	564447.

DIAGNOSIS AND AGE GROUP	RATE PER 1000	TOTAL #OF CASES	TOTAL SEEKING CARE	NUMBER #OF VISIT	DAYS LOST NRX	DAYS LOST BAZAR	DAYS LOST PRVOFF	DAYS LOST VHP	DAYS LOST SHC	DAYS LOST HC	DAYS LOST HOSP	DAYS LOST HOME	TOTAL DAYS RX	TOTAL DAYS LOST
CATARACTS														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	2.	446.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45+ YRS	62.	3628.	2721.	698.	904201.	0.	25321.	0.	0.	0.	36377.	36975.	98673.	1002874.
ALL AGE		4073.	2721.	698.	904201.	0.	25321.	0.	0.	0.	36377.	36975.	98673.	1002874.
OTHER DISEASES OF C.N.S.														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	3.	247.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	3.	500.	0.	0.	498265.	0.	0.	0.	0.	0.	0.	0.	0.	498265.
15-44 YR	5.	1114.	223.	107.	13373.	0.	0.	0.	0.	1288.	0.	0.	1288.	14662.
45+ YRS	10.	585.	293.	126.	0.	0.	0.	0.	8388.	0.	0.	0.	8388.	8388.
ALL AGE		2446.	515.	233.	511638.	0.	0.	0.	8388.	1288.	0.	0.	9676.	521314.
MIGRAINE/HEADACHE														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	470.	78296.	13075.	8499.	0.	0.	0.	0.	65508.	0.	0.	0.	65508.	65508.
15-44 YR	1612.	359299.	134737.	112640.	89825.	0.	361454.	0.	577752.	155756.	0.	383012.	1477974.	1567798.
45+ YRS	792.	46341.	26507.	15639.	19834.	0.	185018.	0.	379976.	0.	265798.	0.	830792.	850625.
ALL AGE		483936.	174319.	136778.	109658.	0.	546472.	0.	1023236.	155756.	265798.	383012.	2374273.	2483931.
HEART/VASCULAR DISEASES														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	1.	167.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	5.	1114.	608.	1119.	38352.	0.	1020.	0.	2174.	586.	2103.	2162.	8046.	46398.
45+ YRS	13.	761.	532.	945.	4717.	0.	0.	0.	0.	0.	6102.	15506.	21608.	26324.
ALL AGE		2042.	1141.	2064.	43069.	0.	1020.	0.	2174.	586.	8205.	17668.	29654.	72722.
UPPER RESPIRATORY INFECTION														
0-1 YR	5088.	108848.	108739.	47240.	59.	0.	7576.	124273.	57528.	0.	77016.	1039970.	1306363.	1306421.
1-4 YRS	20448.	1681827.	603776.	310179.	549806.	0.	710521.	0.	666104.	179350.	0.	2262781.	3818755.	4368560.
5-14 YRS	11251.	1874281.	361736.	191570.	735195.	0.	291263.	0.	413166.	111051.	0.	689548.	1505028.	3940223.
15-44 YR	1506.	335672.	95331.	55037.	199483.	0.	84422.	122604.	309463.	143574.	83542.	443705.	1187309.	1386792.
45+ YRS	947.	55410.	15515.	8489.	219423.	0.	0.	73385.	127088.	51021.	0.	271087.	522582.	742005.
ALL AGE		4056036.	1185094.	612515.	3403965.	0.	1093781.	320262.	1573348.	484996.	160558.	4707090.	8340036.	11744000.
INFLUENZA														
0-1 YR	3092.	66147.	22093.	14402.	17622.	0.	12852.	0.	63934.	0.	0.	0.	73786.	94408.
1-4 YRS	4262.	350545.	155291.	134886.	31241.	0.	44607.	0.	332001.	38287.	136975.	573916.	1125785.	1157025.
5-14 YRS	829.	138101.	37978.	35429.	89110.	0.	0.	0.	81643.	12222.	0.	76211.	170076.	259186.
15-44 YR	776.	172963.	69877.	66028.	124734.	0.	74820.	0.	255874.	127965.	75332.	272880.	806870.	931604.
45+ YRS	559.	32708.	13345.	11786.	58089.	0.	0.	0.	212864.	33882.	0.	181355.	428101.	486189.
ALL AGE		760464.	298584.	262532.	320795.	0.	132279.	0.	946316.	212355.	212308.	1104361.	2607616.	2928410.

DIAGNOSIS AND AGE GROUP	RATE PER 1000	TOTAL #OF CASES	TOTAL SEEKING CARE	NUMBER #OF VISIT	DAYS LOST NRX	DAYS LOST BAZAR	DAYS LOST PRVOFF	DAYS LOST VHP	DAYS LOST SHC	DAYS LOST HC	DAYS LOST HOSP	DAYS LOST HOME	TOTAL DAYS RX	TOTAL DAYS LOST
VIRAL PNEUMONIA														
0-1 YR	114.	2439.	1219.	232.	0.	0.	3536.	0.	0.	0.	0.	0.	3536.	3536.
1-4 YRS	510.	41947.	8389.	2013.	83894.	0.	42702.	0.	0.	0.	0.	0.	42702.	126596.
5-14 YRS	104.	17325.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	6.	1337.	0.	0.	30759.	0.	0.	0.	0.	0.	0.	0.	0.	30759.
45+ YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		63048.	9609.	2245.	114653.	0.	46238.	0.	0.	0.	0.	0.	46238.	160891.
BRONCHITIS/EMPHYSEMA/ASTHMA														
0-1 YR	119.	2546.	636.	337.	0.	0.	0.	0.	2304.	0.	0.	0.	2304.	2304.
1-4 YRS	54.	4441.	2425.	1827.	0.	0.	0.	0.	4640.	1390.	0.	0.	6030.	6030.
5-14 YRS	23.	3832.	1096.	876.	1286.	0.	0.	0.	921.	546.	0.	2602.	4070.	5356.
15-44 YR	14.	3120.	1819.	1362.	5075.	0.	3924.	0.	4181.	3752.	5372.	2794.	20023.	25098.
45+ YRS	54.	3160.	1804.	1381.	0.	0.	3176.	0.	6432.	25966.	0.	13783.	49357.	49357.
ALL AGE		17099.	7781.	5783.	6361.	0.	7100.	0.	18478.	31654.	5372.	19180.	81783.	88144.
HYPERTROPHY OF TONSILS/ADENOIDS														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	1258.	103469.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	312.	51975.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	16.	3566.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45+ YRS	4.	234.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		159245.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DENTAL DISEASE														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	106.	8718.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	131.	21823.	8751.	3879.	1438.	0.	6492.	0.	0.	4370.	0.	20689.	31551.	32989.
15-44 YR	411.	91608.	19787.	8517.	12209.	0.	39628.	0.	42228.	46066.	81698.	0.	209619.	221828.
45+ YRS	544.	31830.	7066.	2261.	74291.	0.	98645.	0.	101295.	0.	0.	0.	199940.	274231.
ALL AGE		153979.	35605.	14657.	87939.	0.	144764.	0.	143522.	50436.	81698.	20689.	441109.	529048.
ULCERS														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	58.	9662.	1208.	1039.	0.	0.	0.	0.	6051.	0.	0.	0.	6051.	6051.
15-44 YR	56.	12482.	4631.	4266.	166835.	0.	11301.	0.	10303.	9235.	9837.	10112.	50788.	217624.
45+ YRS	49.	2867.	1669.	1464.	599.	0.	6644.	0.	6822.	13728.	9545.	14611.	51350.	51949.
ALL AGE		25011.	7507.	6768.	167435.	0.	17945.	0.	23176.	22962.	19382.	24723.	108189.	275624.
LIVER/BILIARY DISEASES														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	5.	833.	833.	1683.	0.	0.	0.	0.	0.	312.	5685.	0.	5997.	5997.
15-44 YR	14.	3120.	2078.	4555.	0.	0.	0.	0.	3713.	8008.	7184.	0.	18905.	18905.
45+ YRS	20.	1170.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		5124.	2911.	6237.	0.	0.	0.	0.	3713.	8320.	12869.	0.	24902.	24902.

DIAGNOSIS AND AGE GROUP	RATE PER 1000	TOTAL #OF CASES	TOTAL SEEKING CARE	NUMBER #OF VISIT	DAYS LOST NRX	DAYS LOST BAZAR	DAYS LOST PRVOFF	DAYS LOST VHP	DAYS LOST SHC	DAYS LOST HC	DAYS LOST HOSP	DAYS LOST HOME	TOTAL DAYS RX	TOTAL DAYS LOST
DISEASES OF PREGNANCY AND BIRTH														
0-1 YR	7.	150.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15-44 YR	9.	2006.	1003.	843.	1505.	0.	0.	0.	0.	0.	0.	21384.	21384.	22889.
45+ YRS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ALL AGE		2156.	1003.	843.	1505	0.	0.	0.	0.	0.	0.	21384.	21384.	22889.
SKIN INFECTION														
0-1 YR	460.	9841.	4930.	4026.	0.	0.	4766.	0.	0.	0.	0.	24766.	29532.	29532.
1-4 YRS	379.	31172.	11503.	11433.	8261.	0.	8409.	0.	9483.	2815.	0.	79838.	100545.	108807.
5-14 YRS	127.	21157.	12461.	13831.	3739.	0.	0.	0.	12507.	6537.	0.	17663.	36707.	40446.
15-44 YR	50.	11145.	6051.	6291.	466726.	0.	4709.	0.	29867.	10757.	0.	9979.	55313.	522039.
45+ YRS	37.	2165.	1353.	1410.	8118.	0.	0.	0.	7758.	6230.	0.	33099.	47087.	55205.
ALL AGE		75479.	36299.	36992.	486845.	0.	17884.	0.	59616.	26339.	0.	165345.	269184.	756029.
SKIN MYCOSES														
0-1 YR	79.	1690.	1690.	989.	0.	0.	0.	0.	3059.	0.	0.	12734.	15793.	15793.
1-4 YRS	133.	10939.	3665.	2394.	0.	0.	3118.	0.	10486.	527.	0.	9930.	24061.	24061.
5-14 YRS	52.	8663.	2001.	1481.	0.	0.	0.	0.	3342.	1001.	0.	0.	4342.	4342.
15-44 YR	30.	6687.	2066.	1468.	316274.	0.	2287.	0.	12329.	2667.	4715.	0.	21998.	338272.
45+ YRS	19.	1112.	557.	356.	0.	0.	5183.	0.	5323.	0.	0.	7569.	18075.	18075.
ALL AGE		29090.	9979.	6688.	316274.	0.	10589.	0.	34539.	4194.	4715.	30234.	84270.	400544.
BONE/JOINT DISEASES														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	11.	905.	0.	0.	27142.	0.	0.	0.	0.	0.	0.	0.	0.	27142.
5-14 YRS	4.	666.	333.	273.	332176.	0.	1479.	0.	0.	0.	0.	0.	1479.	333655.
15-44 YR	96.	21397.	6013.	6683.	615.	0.	15068.	4377.	12845.	12244.	0.	19160.	63694.	64310.
45+ YRS	337.	19718.	7966.	8370.	712644.	0.	38537.	11752.	39572.	71718.	27681.	42607.	231868.	944512.
ALL AGE		42687.	14312.	15326.	1072578.	0.	55085.	16128.	52418.	83962.	27681.	61767.	297041.	1369619.
FRACTURES														
0-1 YR	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1-4 YRS	29.	2385.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5-14 YRS	360.	59972.	17152.	12692.	51384.	0.	0.	71781.	0.	6432.	0.	0.	78213.	129596.
15-44 YR	31.	6910.	3835.	2968.	207547.	0.	0.	0.	8222.	8866.	0.	32703.	49791.	257338
45+ YRS	14.	819.	410.	281.	0.	0.	0.	6781.	0.	0.	0.	8349.	15130.	15130.
ALL AGE		70086.	21396.	15941.	258931.	0.	0.	78561.	8222.	15298.	0.	41053.	143134.	402064.
ALL DISEASES		7070158.	2264065.	1449206.	9082375.	1044.	2559875.	650190.	4542711.	1739527.	1679446.	8655448.	19828208.	28910576.

B

GOVERMENT COST FOR S.C. BY TYPE PROVIDER
(IN THOUSAND RP)

BAZAR	PRVOFF	VHP	SHC	HC	HOSP	HOME
0.0	0.0	6814.25	19954.31	-189871.38	-94724.38	0.0

GOVERNMENT COSTS=RP. -257.82715 MILLION

TOTAL NUMBER OF VISIT BY TYPE OF PROVIDER

BAZAR	PRVOFF	VHP	SHC	HC	HOSP	HOME
3398.	163664.	38641.	386416.	498467.	42150.	316773.

TABLE 2
DISABILITY BY AGE GROUP AND DIAGNOSIS

DIAGNOSIS	0-1 YR D.I.I.	1-4 YR D.I.I.	5-14 YR D.I.I.	15-44 YR D.I.I.	45 + YR D.I.I.	TOTAL D.I.I.
DYSENTERY	8895.	21882.	540.	152570.	36508.	220396.
ENTERITIS/DIARRHEA	18968.	359591.	128088.	141462.	297652.	945762.
TUBERCULOSIS	179.	9950.	1390.	59288.	383981.	454788.
MEASLES	103284.	451241.	378996.	0.	0.	933521.
MALARIA	0.	59432.	644126.	380160.	288381.	1372098.
INTESTINAL WORMS	0.	102599.	62429.	651545.	0.	816573.
DERMATOPHYTOSIS/MONILIASIS	0.	0.	0.	123658.	77690.	201348.
MINERAL/VITAMIN DEFICIENCY	0.	0.	0.	4821.	2691.	7512.
PROTEIN/CALORIE MALNUTRITION	0.	11331.	12454.	0.	330185.	353969.
ANEMIA	0.	20493.	36366.	124934.	75468.	257261.
DISEASES OF THE BRAIN	0.	0.	0.	0.	0.	0.
EYE INFECTION	16199.	37659.	115632.	382825.	12132.	564447.
CATARACTS	0.	0.	0.	0.	1002874.	1002874.
OTHER DISEASES OF C.N.S.	0.	0.	498265.	14662.	8388.	521314.
MIGRAINE/HEADACHE	0.	0.	65508.	1567798.	850625.	2483931.
HEART/VASCULAR DISEASES	0.	0.	0.	46398.	26324.	72722.
UPPER RESPIRATORY INFECTION	1308421.	4368560.	3940223.	1386792.	742005.	11744000.
INFLUENZA	94408.	1157025.	259186.	931604.	486189.	2928410.
VIRAL PNEUMONIA	3536.	126596.	0.	30759.	0.	160891.
BRONCHITIS/EMPHYSEMA/ASTHMA	2304.	6020.	5356.	25098.	49357.	88144.
HYPERTROPHY OF TONSILS/ADENOIDS	0.	0.	0.	0.	0.	0.
DENTAL DISEASE	0.	0.	32989.	221828.	274231.	529048.
ULCERS	0.	0.	6051.	217624.	51949.	275624.
LIVER/BILIARY DISEASES	0.	0.	5997.	18905.	0.	24902.
DISEASES OF PREGNANCY AND BIRTH	0.	0.	0.	22889.	0.	22889.

SKIN INFECTION	29532.	108807.	40446.	522039.	55205.	756029.
SKIN MYCOSES	15793.	24061.	4342.	338272.	18075.	400544.
BONE/JOINT DISEASES	0.	27142.	333656.	64310.	944512.	1369619.
FRACTURES	0.	0.	129596.	257338.	15130.	402064.
ALL DISEASES	1599516.	5892396.	6701630.	7687570.	6029545.	28910576.

AGGREGATE RATES

AGE GROUP	D.I.I. PER PERSON PER YEAR
0-1 YR	74.768
1-4 YRS	83.799
5-14 YRS	40.229
15-44 YR	34.490
45+ YRS	103.050
ALL AGE GROUP	52.409

TOTAL VISIT PER YEAR = 1449206. VISIT PER PERSON PER YEAR = 2.6271

TOTAL NUMBER SEEKING CARE = 2264065. FRACTION SEEKING CARE 0.320

APPENDIX B

COST EFFECTIVENESS ANALYSIS PROGRAM AND OUTPUT

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MICHIGAN TERMINAL SYSTEM FORTRAN G(21.8)          MAIN          11-23-82          13:14:58          PAGE P001

              C RESOURCE ALLOCATION SUBOPTIMIZATION MODEL
              C FOR THE INDONESIAN REGIONAL HEALTH PLANNING
              C THE SHORT VERSION OF MODIFIED RGALLOC (FTRALLOC)
              C MODIFIED OCTOBER 7, 1982 COMPILER TRACOM
 0001               COMMON PSC,CPSCI,CPSCA,VE,CVEI,CVEA,DL,CDLI,CDLA,LCR
 0002               DIMENSION POP(5),RATE(30,5),PSC(8,8,30,5,7),VE(8,8,30,5,7),
                  +          DL(8,8,30,5,7),DLNRX(30,5),CPSCI(3,30),TCASE(8,8),
                  +          TSC(8,8),COSTV(8,8),TVIS(8,8),COSTF(8,8),ATDAY(5),
                  +          ASDIR(8,8,5),DIR(8,8),COST(8,8),COV(8,8),CDLI(3,30),
                  +          EXBUD(8,8),XMORBT(8,8),XMORB(8,8,5),COSTSC(7),ND(4),
                  +          AGNAM(5,2),DIAGN(30,10),INTNAM(4,10),RGNAM(8),
                  +          DATE(4),BUDG(10),XCOV(8,8),CDLA(3),CPSCA(3),INDEX(3,30),
                  +          CVEI(3,30),CVEA(3)
 0003               DATA TCASE,TVIS,TSC,COSTV/64*0.,64*0.,64*0.,64*0./
              C MEMBACA DATA DASAR DENGAN INPUT DEVICE 5
              C MEMBACA NAMA DAERAH
 0004            77 READ(5,10)(RGNAM(K2),K2=1,8)
 0005           10  FORMAT(8A4)
              C MEMBACA TANGGAL PEKERJAAN DARI INPUT DEVICE 5
 0006               READ(5,10)(DATE(K3),K3=1,4)
              C MEMBACA JUMLAH JENIS PENYAKIT DALAM PERHITUNGAN,
              C JUMLAH MAX 30 PENYAKIT
 0007               READ(5,11)NDIS
 0008           11  FORMAT(I2)
              C MEMBACA JUMLAH GOLONGAN UMUR
 0009               READ(5,12)NAGE
 0010           12  FORMAT(I1)
              C MEMBACA JUMLAH SARANA PENGOBATAN YANG AKAN DIPAKAI,
              C MAX 7 JENIS SARANA, DARI INPUT DEVICE 5
 0011               READ(5,12)LCR
              C MEMBACA BIAYA TANGGUNGAN (PRIBADI/PEMERINTAH/SOSIAL)
              C SATU KONSULTASI MENURUT JENIS SARANA PELAYANAN
 0012               READ(5,25)(COSTSC(L),L=1,LCR)
 0013            25 FORMAT(7F10.3)
 0014               POPT=0
 0015               DO 5 J=1,NAGE
              C MEMBACA JUMLAH PENDUDUK MERURUT GOLONGAN UMUR
              C PADA PERTENGAHAN MASA PERENCANAAN
 0016               READ(5,13)POP(J)
 0017           13  FORMAT(F8.0)
 0018               POPT=POPT+POP(J)
              C MEMBACA NAMA GOLONGAN UMUR
 0019            5  READ(5,14)(AGNAM(J,K1),K1=1,2)
 0020           14  FORMAT(2A4)
              C MEMBACA LAMA MASA PERENCANAAN
 0021               READ(5,11)LPP
 0022               DO 100 I=1,NDIS
 0023               READ (5,15)(DIAGN(I,K4),K4=1,10)
 0024           15  FORMAT(10A4)
 0025               DO 100 J=1,NAGE
 0026               READ(1,21)(VE(1,1,I,J,L),L=1,LCR)
 0027               READ(5,20)RATE(I,J),(PSC(1,1,I,J,L),L=1,LCR)
 0028               READ(3,22)DLNRX(I,J),(DL(1,1,I,J,L),L=1,LCR)
 0029           21  FORMAT(7F5.2)
 0030           22  FORMAT(8F8.3)
```

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0031          20   FORMAT(F8.2,7F7.3)                                          56.000
0032          100  CONTINUE                                                   57.000
            C  MEMBACA JUMLAH VARIABLE YANG MUNGKIN DIPAKAI SEBAGAI ALAT       58.000
            C  PENGEMBANGAN KEBIJAKSANAAN UMUM KESEHATAN, DALAM RANGKA        59.000
            C  PENINGKATAN JUMLAH KUNJUNGAN DAN PENGURANGAN JUMLAH HARI SAKIT  60.000
0033              READ (7,12) NINT                                            61.000
0034              NCOMB=2**NINT                                               62.000
            C  MANFAAT ANEKA KEBIJAKSANAAN KESEHATAN                          63.000
            C                                                                 64.000
0035              DO 500 N=1,NINT                                             65.000
0036              READ(7,15)(INTNAM(N,K4),K4=1,10)                            66.000
            C MEMBACA JUMLAH PENYAKIT YANG DIPENGARUHI OLEH                   67.000
            C PERUBAHAN KEBIJAKSANAAN                                         68.000
0037              READ(7,11)ND(N)                                             69.000
0038              N1=ND(N)                                                    70.000
0039              DO 500 NN=1,N1                                              71.000
0040              READ (7,11) INDEX(N,NN)                                     72.000
0041              I=INDEX(N,NN)                                               73.000
            C  MEMBACA PERUBAHAN RELATIP PEMAKAIAN SARANA/ HARI TIDAK DAPAT   74.000
            C BEKERJA KARENA SAKIT DARI BEBERAPA PILIHAN MELALUI INPUT FILE 7 75.000
0042          500 READ(7,23)CPSCI(N,I),CVEI(N,I),CDLI(N,I)                    76.000
0043              READ(7,12)NALT                                              77.000
0044              DO 62 LA=1,NALT                                             78.000
0045           62 READ(7,23)CPSCA(LA),CVEA(LA),CDLA(LA)                       79.000
0046           23 FORMAT(3F9.4)                                               80.000
0047              LL=2*NALT                                                   81.000
0048              DO 37 LT=1,LL                                               82.000
0049              DO 37 K=1,NCOMB                                             83.000
0050              DO 37 I=1,NDIS                                              84.000
0051              DO 37 J=1,NAGE                                              85.000
0052              DO 37 L=1,LCR                                               86.000
0053              VE(LT,K,I,J,L)=VE(1,1,I,J,L)                                87.000
0054              PSC(LT,K,I,J,L)=PSC(1,1,I,J,L)                              88.000
0055           37 DL(LT,K,I,J,L)=DL(1,1,I,J,L)                                89.000
0056              DO 360 K=1,NCOMB                                            90.000
0057              DO 360 I=1,NDIS                                             91.000
0058              DO 360 J=1,NAGE                                             92.000
0059              NA=1                                                        93.000
0060              DO 365 LA4=1,2                                              94.000
0061              DO 365 LA3=1,2                                              95.000
0062              DO 365 LA2=1,2                                              96.000
0063              DO 365 LA1=1,2                                              97.000
0064              LT=NA                                                       98.000
0065              IF(LA1.EQ.2)CALL ALTER(1,LT,K,I,J)                          99.000
0066              IF(LA2.EQ.2)CALL ALTER(2,LT,K,I,J)                         100.000
0067              IF(LA3.EQ.2)CALL ALTER(3,LT,K,I,J)                         101.000
0068              IF(LA4.EQ.2)CALL ALTER(4,LT,K,I,J)                         102.000
0069           63 IF(NA.EQ.LL)GO TO 370                                      103.000
0070          365 NA=NA+1                                                    104.000
0071          370 CONTINUE                                                   105.000
0072          360 CONTINUE                                                   106.000
0073              DO 375 LT=1,LL                                             107.000
0074              DO 375 J=1,NAGE                                            108.000
0075              NC=1                                                       109.000
0076              DO 376 L4=1,2                                              110.000
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0077          DO 376 L3=1,2                                          111.000
0078          DO 376 L2=1,2                                          112.000
0079          DO 376 L1=1,2                                          113.000
0080          K=NC                                                   114.000
0081          IF(L1.EQ.2)CALL INTER(1,LT,K,J,ND,INDEX)               115.000
0082          IF(L2.EQ.2)CALL INTER(2,LT,K,J,ND,INDEX)               116.000
0083          IF(L3.EQ.2)CALL INTER(3,LT,K,J,ND,INDEX)               117.000
0084          IF(L4.EQ.2)CALL INTER(4,LT,K,J,ND,INDEX)               118.000
0085       64 IF(NC.EQ.NCOMB)GO TO 377                               119.000
0086      376 NC=NC+1                                                120.000
0087      377 CONTINUE                                               121.000
0088      375 CONTINUE                                               122.000
0089          DO 650 LT=1,LL                                         123.000
0090          DO 650 K=1,NCOMB                                       124.000
0091          CTDAY=0                                                125.000
0092          DO 656 J=1,NAGE                                        126.000
0093      656 ATDAY(J)=0                                             127.000
0094          DO 651 I=1,NDIS                                        128.000
0095          DO 651 J=1,NAGE                                        129.000
0096          PSCI=0                                                 130.000
0097          DO 653 L=1,LCR                                         131.000
0098      653 PSCI=PSCI+PSC(LT,K,I,J,L)                              132.000
0099          DO 657 L=1,LCR                                         133.000
0100      657 IF(PSCI.GT.100)PSC(LT,K,I,J,L)=PSC(LT,K,I,J,L)*100/PSCI 134.000
0101          TNSC=0                                                 135.000
0102          TDAYX=0                                                136.000
0103          CASE=POP(J)*RATE(I,J)/1000.                            137.000
0104          DO 652 L=1,LCR                                         138.000
0105          XNSC=CASE*PSC(LT,K,I,J,L)/100.                         139.000
0106          TNSC=TNSC+XNSC                                         140.000
0107          DAYX=XNSC*DL(LT,K,I,J,L)                               141.000
0108          TSC(LT,K)=TSC(LT,K)+XNSC                               142.000
0109          COSTV(LT,K)=COSTV(LT,K)+(XNSC*COSTSC(L))               143.000
0110          TVIS(LT,K)=TVIS(LT,K)+(XNSC*VE(LT,K,I,J,L))            144.000
0111      652 TDAYX=TDAYX+DAYX                                       145.000
0112          YNRX=CASE-TNSC                                         146.000
0113          DAYNRX=YNRX*DLNRX(I,J)                                 147.000
0114          IF(DAYNRX.LT.0.)DAYNRX=0                               148.000
0115          ATDAY(J)=ATDAY(J)+DAYNRX+TDAYX                         149.000
0116          TCASE(LT,K)=TCASE(LT,K)+CASE                           150.000
0117      651 CTDAY=CTDAY+DAYNRX+TDAYX                               151.000
0118          DO 654 J=1,NAGE                                        152.000
0119      654 ASDIR(LT,K,J)=ATDAY(J)/POP(J)                          153.000
0120      650 DIR(LT,K)=CTDAY/POPT                                   154.000
        C PEMBAHASAN COST EFFECTIVENESS DARI ANEKA PROGRAM           155.000
        C                                                            156.000
        C BACAKAN BIAYA PENYELENGGARAAN MASING MASING PROGRAM        157.000
0121          DO 610 LT=1,LL                                         158.000
0122      610 READ(9,41)(COSTF(LT,K),K=1,NCOMB)                      159.000
0123       41 FORMAT(8F15.3)                                         160.000
0124          DO 611 LT=1,LL                                         161.000
0125          DO 611 K=1,NCOMB                                       162.000
0126          COSTVC=LPP*COSTV(LT,K)/TSC(LT,K)                       163.000
0127          COSTFC=COSTF(LT,K)/POPT                                164.000
0128      611 COST(LT,K)=COSTVC+COSTFC                               165.000
```

```
              C MEMBACA BEBERAPA KEMUNGKINAN TINGKATAN PEMBIAYAAN                166.000
0129             81 READ(9,12)NLEVEL                                            167.000
0130                DO 620 M=1,NLEVEL                                           168.000
0131            620 READ(9,43)BUDG(M)                                           169.000
0132            43  FORMAT(F8.2)                                                170.000
0133                DO 625 M=1,NLEVEL                                           171.000
              C MENULISKAN TABEL UNTUK BERBAGAI TINGKATAN PEMBIAYAAN             172.000
0134                WRITE (6,82)M,(RGNAM(K2),K2=1,8),(DATE(K3),K3=1,4),POPT,    173.000
                   +TCASE(1,1),LPP,BUDG(M),((AGNAM(J,K1),K1=1,2),J=1,NAGE)      174.000
0135             82 FORMAT('1',48('*'),/'* TABLE',I3,' - ',8A4,2X,'*',50X,'DATE ',4A4,  175.000
                   +/'*',46X,'*',/'* COST EFFECTIVENESS ANALYSIS OF VARIOUS       *',  176.000
                   +19X,'POPULATION IN MID PLANNING PERIOD IS',F9.0,' PEOPLE',/  177.000
                   +'* HEALTH PROGRAMS MEASURED IN DAYS OF',10X,'*',/           178.000
                   +'* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS  *',19X,     179.000
                   +'AVERAGE ANNUAL EPISODE OF ILLNESS IS',F9.0,' CASES',/      180.000
                   +'* IF TOTAL DEVELOPMENT BUDGET FOR THE ',I2,' YEARS *',/    181.000
                   +'* PLANNING PERIOD IS RP.',F9.2,' PER CAPITA   *',/48('*'),/'-'/  182.000
                   +2('ALTER. '),'  ADD.    ADD.',5X,'TOTAL',8X,'NUMBER OF INCAPACIT',  183.000
                   +'ATION DAYS/PERSON/YEAR   AV. ANN. PERCENT   AV. ANN.',/'FACIL.',  184.000
                   +' POLICY COST PER PROGRAM  SURPLUS',1X,18('_'),'AGE_____GROUPS',  185.000
                   +17('_'),2(' SEEKING '),'   # OF',/'EXPAN. INTER.  CAPITA  COVER',  186.000
                   +'AGE BUDGET',2X,10A4,2X,'ALL AGE ',2(' CARE    '),' VISITS',/'-'/)  187.000
0136                DO 630 LT=1,LL                                              188.000
0137                DO 630 K=1,NCOMB                                            189.000
0138                IF (COST(LT,K).GT.0.0) GO TO 635                            190.000
0139                 COV(LT,K)=1.                                               191.000
0140                GO TO 636                                                   192.000
0141            635 COV(LT,K)=BUDG(M)/COST(LT,K)                                193.000
0142                IF(COV(LT,K).GT.1.)COV(LT,K)=1.                             194.000
0143                IF(COV(LT,K).LT.1.)EXBUD(LT,K)=0.0                          195.000
0144            636 IF(COV(LT,K).EQ.1.)EXBUD(LT,K)=BUDG(M)-COST(LT,K)           196.000
0145                XCOV(LT,K)=COV(LT,K)*100.                                   197.000
0146                XMORBT(LT,K)=(DIR(LT,K)*COV(LT,K))+((1-COV(LT,K))*DIR(1,1))  198.000
0147                DO  655 J=1,NAGE                                            199.000
0148            655 XMORB(LT,K,J)=(ASDIR(LT,K,J)*COV(LT,K))+((1-COV(LT,K))      200.000
                   +*ASDIR(1,1,J))                                              201.000
0149                XTSC=(TSC(LT,K)*COV(LT,K))+((1-COV(LT,K))*TSC(1,1))         202.000
0150                XTVIS=(TVIS(LT,K)*COV(LT,K))+((1-COV(LT,K))*TVIS(1,1))      203.000
0151                XPSC=XTSC*100/TCASE(LT,K)                                   204.000
0152            630 WRITE(6,110)LT,K,COST(LT,K),XCOV(LT,K),EXBUD(LT,K),         205.000
                   +(XMORB(LT,K,J),J=1,5),XMORBT(LT,K),XTSC,XPSC,XTVIS          206.000
0153            110 FORMAT(2(1X,I2,4X),F8.2,2X,F5.1,'%',1X,F8.2,1X,4(F6.2,2X),  207.000
                   +F6.2,5X,F5.2,1X,F9.0,1X,F5.1,'%',2X,F10.0)                  208.000
0154            625 CONTINUE                                                    209.000
0155                STOP                                                        210.000
0156                END                                                         211.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN E      *  NAME = MAIN     , LINECNT =       57
 *STATISTICS*     SOURCE STATEMENTS =      156,PROGRAM SIZE =    15870
 *STATISTICS*  NO DIAGNOSTICS GENERATED
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190
190

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0001          SUBROUTINE INTER(N,LT,K,J,ND,INDEX)                                212.000
0002          COMMON PSC,CPSCI,CPSCA,VE,CVEI,CVEA,DL,CDLI,CDLA,LCR               213.000
0003          DIMENSION PSC(8,8,30,5,7),DL(8,8,30,5,7),CPSCI(3,30),CDLI(3,30),   214.000
             +          CPSCA(3),CDLA(3),ND(4),INDEX(3,30),CVEI(3,30),           215.000
             +          VE(8,8,30,5,7),CVEA(3)                                   216.000
0004          N1=ND(N)                                                           217.000
0005          AI=0                                                               218.000
0006          DO 1 NN=1,N1                                                       219.000
0007          I=INDEX(N,NN)                                                      220.000
0008          DO 1 L=1,LCR                                                       221.000
0009          VE(LT,K,I,J,L)=(VE(LT,K,I,J,L)*(1+(CVEI(N,I)/100)))                222.000
0010          DL(LT,K,I,J,L)=(DL(LT,K,I,J,L)*(1+(CDLI(N,I)/100)))                223.000
0011          PSC(LT,K,I,J,L)=(PSC(LT,K,I,J,L)*(1+(CPSCI(N,I)/100)))             224.000
0012        1 AI=AI+PSC(LT,K,I,J,L)                                              225.000
0013          DO 2 L=1,LCR                                                       226.000
0014        2 IF(AI.GT.100)PSC(LT,K,I,J,L)=PSC(LT,K,I,J,L)*100/AI                227.000
0015          RETURN                                                             228.000
0016          END                                                                229.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = INTER   , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =       16,PROGRAM SIZE =     1256
 *STATISTICS*  NO DIAGNOSTICS GENERATED
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0001          SUBROUTINE ALTER(LA,LT,K,I,J)                                  230.000
0002          COMMON PSC,CPSCI,CPSCA,VE,CVEI,CVEA,DL,CDLI,CDLA,LCR           231.000
0003          DIMENSION PSC(8,8,30,5,7),DL(8,8,30,5,7),CPSCA(3),CDLA(3),     232.000
             +          CPSCI(3,30),CDLI(3,30),CVEI(3,30),VE(8,8,30,5,7),    233.000
             +          CVEA(3)                                              234.000
0004          AA=0                                                           235.000
0005          DO 33 L=1,LCR                                                  236.000
0006          PSC(LT,K,I,J,L)=(PSC(LT,K,I,J,L)*(1+(CPSCA(LA)/100)))          237.000
0007          VE(LT,K,I,J,L)=(VE(LT,K,I,J,L)*(1+(CVEA(LA)/100)))             238.000
0008          DL(LT,K,I,J,L)=(DL(LT,K,I,J,L)*(1+(CDLA(LA)/100)))             239.000
0009       33 AA=AA+PSC(LT,K,I,J,L)                                          240.000
0010          DO 34 L=1,LCR                                                  241.000
0011       34 IF(AA.GT.100)PSC(LT,K,I,J,L)=PSC(LT,K,I,J,L)*100/AA            242.000
0012          RETURN                                                         243.000
0013          END                                                            244.000
 *OPTIONS IN EFFECT*  ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
 *OPTIONS IN EFFECT*  NAME = ALTER    , LINECNT =       57
 *STATISTICS*    SOURCE STATEMENTS =       13,PROGRAM SIZE =     1060
 *STATISTICS*  NO DIAGNOSTICS GENERATED

NO STATEMENTS FLAGGED IN THE ABOVE COMPILATIONS.
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*********************************************
* TABLE  1 - Kendari & Kolaka, S.E. Sulawesi  *
*                                             *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS      *
* HEALTH PROGRAMS MEASURED IN DAYS OF         *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS *
* PLANNING PERIOD IS RP.     0.0  PER CAPITA  *
*********************************************
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	2274.03	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	1259.02	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	4	8367.63	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
2	1	-1984.21	100.0%	1984.21	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	969.01	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
2	4	8657.41	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
3	1	-2119.49	100.0%	2119.49	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	1104.30	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
3	4	8522.15	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
4	1	-1833.55	100.0%	1833.55	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	818.20	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
4	4	8807.88	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
5	1	-2100.45	100.0%	2100.45	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	1085.35	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
5	4	8541.18	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
6	1	-1814.66	100.0%	1814.66	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	799.36	50.80	69.99	35.64	32.19	81.95	44.87	3873387.	41.6%	2544716.
6	3	7811.52	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
6	4	8826.81	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
7	1	-1948.48	100.0%	1948.48	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	933.19	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
7	4	8692.99	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
8	1	-1662.97	100.0%	1662.97	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	647.52	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
8	4	8698.77	0.0%	0.0	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.

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* TABLE  2 - Kendari & Kolaka, S.E. Sulawesi    *
*                                               *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS        *
* HEALTH PROGRAMS MEASURED IN DAYS OF           *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS   *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS  *
* PLANNING PERIOD IS RP.   973.13 PER CAPITA    *
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DATE October 1, 198:

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPI

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASE!

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	3247.16	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	2232.15	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	13.2%	0.0	74.20	82.01	40.05	34.41	103.34	52.06	2989378.	32.0%	1915773.
1	4	8367.63	11.6%	0.0	71.70	79.44	39.47	33.86	102.09	51.05	2987976.	32.0%	1915493.
2	1	-1984.21	100.0%	2957.34	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	1942.14	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	12.7%	0.0	74.59	83.78	40.34	34.89	103.18	52.61	3056323.	32.8%	1959090.
2	4	8657.41	11.2%	0.0	72.02	80.54	39.62	34.19	101.73	51.37	3046884.	32.7%	1953583.
3	1	-2119.49	100.0%	3092.62	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	2077.43	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	13.0%	0.0	74.14	83.23	40.20	34.70	102.76	52.34	3055817.	32.8%	1955931.
3	4	8522.15	11.4%	0.0	71.71	80.18	39.53	34.05	101.42	51.19	3046294.	32.7%	1950728.
4	1	-1833.55	100.0%	2806.68	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	1791.33	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	12.5%	0.0	74.56	85.12	40.47	35.20	103.05	52.96	3127969.	33.5%	2001814.
4	4	8807.88	11.0%	0.0	72.03	81.35	39.66	34.41	101.42	51.56	3110167.	33.3%	1991311.
5	1	-2100.45	100.0%	307[illegible].58	71.14	85.24	40.18	34.58	98.44	52.02	3316635.	35.6%	2172698.
5	2	-1085.35	100.0%	2058.48	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	12.9%	0.0	73.76	82.35	40.04	34.44	102.62	52.03	3032093.	32.5%	1947850.
5	4	8541.18	11.4%	0.0	71.50	79.67	39.44	33.88	101.42	51.01	3025493.	32.4%	1943649.
6	1	-1814.66	100.0%	2787.79	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	1772.49	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	12.5%	0.0	74.16	84.11	40.29	34.90	102.43	52.55	3101930.	33.3%	1993335.
6	4	8826.81	11.0%	0.0	71.81	80.77	39.57	34.21	101.02	51.31	3087257.	33.1%	1983864.
7	1	-1948.48	100.0%	2921.61	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	1906.32	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	12.7%	0.0	73.73	83.55	40.16	34.71	101.96	52.28	3102092.	33.3%	1990406.
7	4	8692.99	11.2%	0.0	71.51	80.39	39.48	34.07	100.67	51.13	3087181.	33.1%	1981146.
8	1	-1662.97	100.0%	2636.10	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	1620.65	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	12.7%	0.0	74.12	85.56	40.42	35.23	102.99	53.00	3185788.	34.2%	2044070.
8	4	8698.77	11.2%	0.0	71.73	81.54	39.58	34.42	101.26	51.54	3160813.	33.9%	2028348.

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* TABLE  3 - Kendari & Kolaka, S.E. Sulawesi    *
*                                               *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS        *
* HEALTH PROGRAMS MEASURED IN DAYS OF           *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS   *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS  *
* PLANNING PERIOD IS RP.  1131.14 PER CAPITA    *
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	3405.17	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	2390.16	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	15.4%	0.0	74.11	81.92	40.02	34.40	103.25	52.02	2989523.	32.0%	1915005.
1	4	8367.63	13.5%	0.0	71.21	78.94	39.35	33.75	101.80	50.85	2987893.	32.0%	1914681.
2	1	-1984.21	100.0%	3115.35	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	2100.15	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	14.8%	0.0	74.57	83.99	40.35	34.95	103.07	52.65	3067339.	32.9%	1965356.
2	4	8657.41	13.1%	0.0	71.57	80.23	39.52	34.15	101.38	51.22	3056366.	32.8%	1958955.
3	1	-2119.49	100.0%	3250.63	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	2235.44	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	15.1%	0.0	74.04	83.35	40.20	34.73	102.58	52.35	3066750.	32.9%	1961685.
3	4	8522.15	13.3%	0.0	71.21	79.80	39.41	33.98	101.02	51.01	3055681.	32.8%	1955636.
4	1	-1833.55	100.0%	2964.69	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	1949.34	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	14.5%	0.0	74.52	85.55	40.51	35.31	102.92	53.06	3150617.	33.8%	2015017.
4	4	8807.88	12.8%	0.0	71.58	81.16	39.57	34.40	101.02	51.44	3129925.	33.6%	2002809.
5	1	-2100.45	100.0%	3231.59	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	2216.49	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	15.0%	0.0	73.60	82.32	40.01	34.43	102.41	51.98	3039173.	32.6%	1952291.
5	4	8541.18	13.2%	0.0	70.97	79.21	39.32	33.78	101.03	50.80	3031501.	32.5%	1947408.
6	1	-1814.66	100.0%	2945.80	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	1930.50	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	14.5%	0.0	74.06	84.37	40.31	34.97	102.20	52.59	3120351.	33.5%	2005161.
6	4	8826.81	12.8%	0.0	71.32	80.48	39.47	34.16	100.56	51.15	3103294.	33.3%	1994153.
7	1	-1948.48	100.0%	3079.62	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	2064.33	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	14.7%	0.0	73.57	83.72	40.15	34.74	101.65	52.23	3120539.	33.5%	2001757.
7	4	8692.99	13.0%	0.0	70.99	80.05	39.36	34.00	100.15	50.94	3103206.	33.3%	1990993.
8	1	-1662.97	100.0%	2794.11	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	1778.66	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	14.7%	0.0	74.02	86.05	40.46	35.35	102.85	53.11	3217825.	34.5%	2064135.
8	4	8698.77	13.0%	0.0	71.24	81.39	39.48	34.41	100.84	51.42	3188794.	34.2%	2045859.

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* TABLE  4 - Kendari & Kolaka, S.E. Sulawesi    *
*                                               *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS        *
* HEALTH PROGRAMS MEASURED IN DAYS OF           *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS   *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS  *
* PLANNING PERIOD IS RP.  1289.15 PER CAPITA    *
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	3563.18	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	2548.17	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	17.5%	0.0	74.02	81.84	39.99	34.39	103.16	51.99	2989669.	32.1%	1914238.
1	4	8367.63	15.4%	0.0	70.71	78.44	39.22	33.65	101.51	50.65	2987809.	32.0%	1913867.
2	1	-1984.21	100.0%	3273.36	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	2258.16	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	16.9%	0.0	74.54	84.20	40.37	35.01	102.96	52.70	3078354.	33.0%	1971621.
2	4	8657.41	14.9%	0.0	71.12	79.91	39.42	34.10	101.03	51.07	3065849.	32.9%	1964328.
3	1	-2119.49	100.0%	3408.64	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	2393.45	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	17.2%	0.0	73.94	83.47	40.20	34.76	102.41	52.36	3077683.	33.0%	1967438.
3	4	8522.15	15.1%	0.0	70.72	79.42	39.30	33.91	100.62	50.83	3065068.	32.9%	1960545.
4	1	-1833.55	100.0%	3122.70	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	2107.35	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	16.5%	0.0	74.49	85.97	40.55	35.43	102.79	53.17	3173265.	34.0%	2028221.
4	4	8807.88	14.6%	0.0	71.14	80.97	39.48	34.39	100.62	51.32	3149683.	33.8%	2014307.
5	1	-2100.45	100.0%	3389.60	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	2374.50	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	17.1%	0.0	73.44	82.29	39.98	34.42	102.21	51.94	3046254.	32.7%	1956732.
5	4	8541.18	15.1%	0.0	70.43	78.75	39.19	33.68	100.63	50.59	3037510.	32.6%	1951167.
6	1	-1814.66	100.0%	3103.81	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	2088.51	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	16.5%	0.0	73.97	84.63	40.32	35.03	101.96	52.63	3138771.	33.6%	2016989.
6	4	8826.81	14.6%	0.0	70.84	80.20	39.36	34.12	100.10	50.99	3119332.	33.4%	2004442.
7	1	-1948.48	100.0%	3237.63	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	2222.34	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	16.8%	0.0	73.40	83.89	40.14	34.78	101.34	52.28	3138986.	33.7%	2013108.
7	4	8692.99	14.8%	0.0	70.46	79.71	39.24	33.93	99.63	50.74	3119231.	33.4%	2000841.
8	1	-1662.97	100.0%	2952.12	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	1936.67	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	16.8%	0.0	73.91	86.54	40.49	35.47	102.70	53.22	3249361.	34.8%	2084199.
8	4	8698.77	14.8%	0.0	70.75	81.23	39.38	34.40	100.42	51.30	3216775.	34.5%	2063371.

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* TABLE  5 - Kendari & Kolaka, S.E. Sulawesi    *
*                                               *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS        *
* HEALTH PROGRAMS MEASURED IN DAYS OF           *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS   *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS  *
* PLANNING PERIOD IS RP.  1447.16 PER CAPITA    *
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	3721.19	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	2706.18	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	19.7%	0.0	73.92	81.76	39.96	34.37	103.08	51.95	2989813.	32.1%	1913471.
1	4	8367.63	17.3%	0.0	70.21	77.94	39.10	33.55	101.22	50.44	2987727.	32.0%	1913054.
2	1	-1984.21	100.0%	3431.37	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	2416.17	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	18.9%	0.0	74.51	84.40	40.39	35.08	102.85	52.75	3089369.	33.1%	1977887.
2	4	8657.41	16.7%	0.0	70.68	79.59	39.32	34.05	100.69	50.92	3075331.	33.0%	1969700.
3	1	-2119.49	100.0%	3566.65	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	2551.46	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	19.3%	0.0	73.84	83.58	40.19	34.80	102.23	52.37	3088616.	33.1%	1973191.
3	4	8522.15	17.0%	0.0	70.22	79.04	39.19	33.84	100.22	50.65	3074454.	33.0%	1965452.
4	1	-1833.55	100.0%	3280.71	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	2265.36	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	18.6%	0.0	74.45	86.39	40.59	35.54	102.65	53.28	3195914.	34.3%	2041423.
4	4	8807.88	16.4%	0.0	70.70	80.79	39.38	34.37	100.22	51.20	3169441.	34.0%	2025805.
5	1	-2100.45	100.0%	3547.61	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	2532.51	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	19.2%	0.0	73.28	82.26	39.95	34.41	102.01	51.89	3053334.	32.7%	1961173.
5	4	8541.18	16.9%	0.0	69.90	78.28	39.07	33.58	100.23	50.38	3043518.	32.6%	1954925.
6	1	-1814.66	100.0%	3261.82	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	2246.52	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	18.5%	0.0	73.87	84.88	40.33	35.10	101.73	52.67	3157192.	33.8%	2028815.
6	4	8826.81	16.4%	0.0	70.36	79.92	39.25	34.07	99.64	50.83	3135370.	33.6%	2014731.
7	1	-1948.48	100.0%	3395.64	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	2380.35	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	18.8%	0.0	73.23	84.06	40.13	34.81	101.03	52.27	3157432.	33.9%	2024459.
7	4	8692.99	16.6%	0.0	69.93	79.36	39.12	33.86	99.11	50.55	3135256.	33.6%	2010689.
8	1	-1662.97	100.0%	3110.13	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	2094.68	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	18.8%	0.0	73.81	87.04	40.52	35.59	102.56	53.34	3281897.	35.2%	2104264.
8	4	8698.77	16.6%	0.0	70.25	81.07	39.27	34.39	100.00	51.17	3244757.	34.8%	2080883.

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* TABLE  6 - Kendari & Kolaka, S.E. Sulawesi  *
*                                             *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS      *
* HEALTH PROGRAMS MEASURED IN DAYS OF         *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS *
* PLANNING PERIOD IS RP.  1605.17 PER CAPITA  *
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	3879.20	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	2864.19	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	21.8%	0.0	73.83	81.68	39.94	34.36	102.39	51.91	2989958.	32.1%	1912703.
1	4	8367.63	19.2%	0.0	69.71	77.44	38.98	33.44	100.93	50.24	2987644.	32.0%	1912241.
2	1	-1984.21	100.0%	3589.38	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	2574.18	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257291.
2	3	7642.22	21.0%	0.0	74.48	84.61	40.41	35.14	102.74	52.80	3100383.	33.2%	1984153.
2	4	8657.41	18.5%	0.0	70.23	79.27	39.22	34.00	100.34	50.77	3084814.	33.1%	1975072.
3	1	-2119.49	100.0%	3724.66	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	2709.47	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	21.4%	0.0	73.74	83.70	40.19	34.83	102.05	52.37	3099549.	33.2%	1978944.
3	4	8522.15	18.8%	0.0	69.72	78.66	39.07	33.77	99.83	50.46	3083840.	33.1%	1970360.
4	1	-1633.55	100.0%	3438.72	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	2423.37	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	20.6%	0.0	74.42	86.82	40.63	35.66	102.52	53.38	3218562.	34.5%	2054627.
4	4	8807.88	18.2%	0.0	70.25	80.60	39.29	34.36	99.83	51.08	3189198.	34.2%	2037303.
5	1	-2100.45	100.0%	3705.62	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	2690.52	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	21.3%	0.0	73.11	82.24	39.92	34.40	101.81	51.85	3060415.	32.8%	1965614.
5	4	8541.18	18.8%	0.0	69.37	77.82	38.94	33.48	99.84	50.17	3049527.	32.7%	1958684.
6	1	-1814.66	100.0%	3419.83	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	2404.53	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	20.5%	0.0	73.77	85.14	40.34	35.16	101.50	52.71	3175612.	34.0%	2040642.
6	4	8826.81	18.2%	0.0	69.88	79.63	39.15	34.03	99.18	50.67	3151407.	33.8%	2025020.
7	1	-1946.48	100.0%	3553.65	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	2538.36	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	20.9%	0.0	73.06	84.23	40.12	34.85	100.72	52.27	3175879.	34.0%	2035809.
7	4	8692.99	18.5%	0.0	69.40	79.02	39.00	33.79	98.60	50.36	3151282.	33.8%	2020536.
8	1	-1662.97	100.0%	3268.14	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	2252.69	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	20.9%	0.0	73.70	87.53	40.56	35.71	102.42	53.45	3313934.	35.5%	2124329.
8	4	8698.77	18.5%	0.0	69.76	80.91	39.17	34.38	99.57	51.05	3272739.	35.1%	2098394.

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* TABLE  7 - Kendari & Kolaka, S.E. Sulawesi  *
*                                             *
* COST EFFECTIVENESS ANALYSIS OF VARIOUS      *
* HEALTH PROGRAMS MEASURED IN DAYS OF         *
* INCAPACITATION DUE TO ILLNESS BY AGE-GROUPS *
* IF TOTAL DEVELOPMENT BUDGET FOR THE 21 YEARS *
* PLANNING PERIOD IS RP.  9000.00 PER CAPITA  *
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DATE October 1, 1982

POPULATION IN MID PLANNING PERIOD IS 727772. PEOPLE

AVERAGE ANNUAL EPISODE OF ILLNESS IS 9327702. CASES

ALTER. FACIL. EXPAN.	ALTER. POLICY INTER.	ADD. COST PER CAPITA	ADD. PROGRAM COVERAGE	TOTAL SURPLUS BUDGET	NUMBER OF INCAPACITATION DAYS/PERSON/YEAR AGE GROUPS 0-1 YR	1-4 YRS	5-14 YRS	15-44 YR	45+ YRS	ALL AGE	AV. ANN. SEEKING CARE	PERCENT SEEKING. CARE	AV. ANN. # OF VISITS
1	1	-2274.03	100.0%	11274.02	74.77	82.51	40.22	34.49	103.87	52.30	2988487.	32.0%	1920500.
1	2	-1259.02	100.0%	10259.02	51.30	58.67	34.76	29.32	91.94	42.83	2977385.	31.9%	1913041.
1	3	7352.63	100.0%	1647.37	70.47	78.67	38.91	33.90	99.67	50.50	2995231.	32.1%	1884789.
1	4	8367.63	100.0%	632.37	48.42	56.06	33.74	29.04	88.57	41.55	2984098.	32.0%	1877454.
2	1	-1984.21	100.0%	10984.21	77.95	97.15	42.71	38.29	103.33	56.84	3513955.	37.7%	2266163.
2	2	-969.01	100.0%	9969.01	53.34	68.16	36.08	32.19	88.93	45.57	3500797.	37.5%	2257281.
2	3	7642.22	100.0%	1357.78	73.40	92.48	41.11	37.59	98.51	54.69	3521232.	37.8%	2223560.
2	4	8657.41	100.0%	342.59	50.30	64.99	34.83	31.86	84.86	44.03	3508024.	37.6%	2214835.
3	1	-2119.49	100.0%	11119.49	74.27	92.49	41.59	36.68	99.98	54.65	3500552.	37.5%	2235788.
3	2	-1104.30	100.0%	10104.30	50.89	65.04	35.31	30.93	86.33	43.99	3487447.	37.4%	2227038.
3	3	7506.96	100.0%	1493.04	69.95	88.06	40.08	36.08	95.36	52.64	3507898.	37.6%	2193834.
3	4	8522.15	100.0%	477.85	47.99	62.03	34.12	30.67	82.43	42.55	3494743.	37.5%	2185226.
4	1	-1833.55	100.0%	10833.55	77.60	108.79	44.04	40.87	102.18	59.88	4099332.	43.9%	2622830.
4	2	-818.20	100.0%	9818.20	53.02	75.64	36.57	34.09	85.68	47.24	4083818.	43.8%	2612445.
4	3	7792.54	100.0%	1207.46	73.07	103.40	42.20	40.15	97.35	57.54	4105423.	44.0%	2571645.
4	4	8807.88	100.0%	192.12	49.98	71.99	35.13	33.79	81.70	45.60	4089836.	43.8%	2561423.
5	1	-2100.45	100.0%	11100.45	71.14	85.24	40.18	34.58	98.44	52.02	3318635.	35.6%	2172698.
5	2	-1085.35	100.0%	10085.35	48.82	60.28	34.47	29.32	86.01	42.26	3306243.	35.4%	2164216.
5	3	7526.05	100.0%	1473.95	67.01	81.22	38.81	34.06	94.21	50.18	3325732.	35.7%	2132027.
5	4	8541.18	100.0%	458.82	46.05	57.54	33.40	29.12	82.43	40.96	3313292.	35.5%	2123685.
6	1	-1814.66	100.0%	10814.66	74.23	100.22	42.48	38.39	96.98	56.45	3893066.	41.7%	2554792.
6	2	-799.36	100.0%	9799.36	50.80	69.99	35.64	32.19	81.95	44.87	3878387.	41.6%	2544716.
6	3	7811.52	100.0%	1188.48	69.90	95.31	40.80	37.77	92.33	54.30	3899130.	41.8%	2505172.
6	4	8826.81	100.0%	173.19	47.90	66.66	34.32	31.95	78.09	43.35	3884389.	41.6%	2495255.
7	1	-1948.48	100.0%	10948.48	70.72	95.37	41.33	36.73	93.50	54.20	3878700.	41.6%	2520976.
7	2	-933.19	100.0%	9933.18	48.45	66.74	34.84	30.89	79.26	43.24	3864077.	41.4%	2511038.
7	3	7677.70	100.0%	1322.30	66.61	90.72	39.74	36.21	88.83	52.16	3884808.	41.6%	2472043.
7	4	8692.99	100.0%	307.01	45.70	63.58	33.60	30.72	75.33	41.80	3870128.	41.5%	2462263.
8	1	-1662.97	100.0%	10662.97	73.98	112.13	43.72	40.97	102.00	60.16	4539905.	48.7%	2954203.
8	2	-647.52	100.0%	9647.52	50.53	77.64	36.01	34.08	84.78	47.17	4522615.	48.5%	2942420.
8	3	7683.33	100.0%	1316.67	69.66	106.52	41.82	40.35	96.94	57.80	4546282.	48.7%	2896154.
8	4	8698.77	100.0%	301.23	47.63	73.84	34.52	33.88	80.61	45.52	4528909.	48.6%	2884554.