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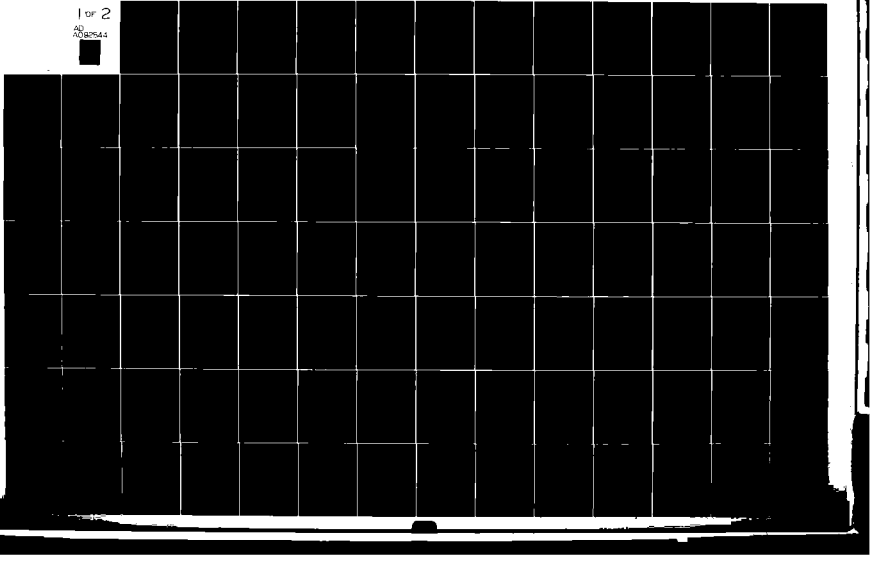

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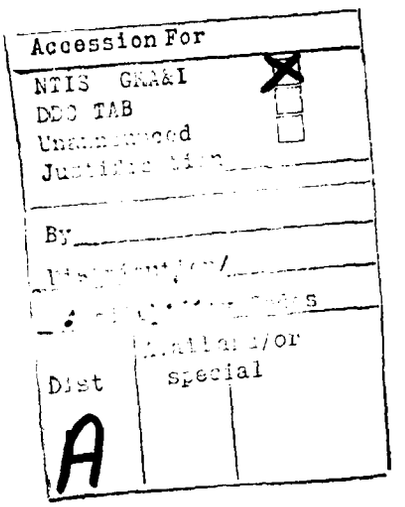
ABSTRACT

This study addresses the feasibility of allowing dependents of active duty members, retiree families and survivor families to select a health care program other than that provided in uniformed service facilities or under CHAMPUS. This report compares the group who would prefer an alternative to the present plan with those who do not so as to determine what factors are similar between each group and what factors are dissimilar.



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EVALUATING THE IMPACT OF ALTERNATIVE FORMS OF THE MILITARY HEALTH CARE BENEFIT: THE APPLICATION OF A HEALTH SERVICE BEHAVIORAL FRAMEWORK

A THESIS

SUBMITTED TO THE FACULTY

OF THE PROGRAM IN HOSPITAL AND HEALTH CARE ADMINISTRATION

OF THE UNIVERSITY OF MINNESOTA

BY

STEPHEN WARREN PORTER

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTERS IN HOSPITAL ADMINISTRATION

JUNE 1980

THE VIEWS EXPRESSED HEREIN ARE THOSE OF THE AUTHOR AND DO NOT NECESSARILY REFLECT THE VIEWS OF THE DEPARTMENT OF DEFENSE OR THE UNITED STATES AIR FORCE.

To:

SUSANNE

ERIC, BRIAN, ANDREWS AND DANIEL

For putting up with me while I
was studying at home and with
my absences while I was studying
away from home.

PREFACE

In the recent period of fiscal constraints and physician shortages the medical services of the Army, Navy and Air Force have faced many challenges. Through it all the managers and personnel of the Military Health Services System (MHSS) have tightened their belts and continued to provide the highest quality of care to the beneficiaries they serve. It has been in the continuing review of the MHSS management processes.

Various innovative alternative forms of the military health care benefit continue to be advanced to the management of the MHSS. The purpose of these proposals has been to relieve the tension between resource constraints and steadily growing beneficiary demand. This study was designed to provide and illustrate a methodology to examine the affect on the beneficiaries of those proposals.

Many people provided the assistance necessary to complete this work. However, without Lieutenant Colonel C. J. Schumaker's firm guidance, endless patience and technical expertise, I would still be in the bottomless morass of the data. As Director of the Health Studies Task Force, and as my preceptor, "Shuey's" direction has ensured the completion of this effort.

Colonel John E. Murphy, USA and his successor, Colonel Jon N. Harris, USA have also greatly assisted this study by making available all of the resources necessary to complete this paper.

A special thank you is also in order to Ms. Jean E. Burton and Ms. Dale Shaw whose typing and organizational skills have put my scribblings into readable form.

Stephen W. Porter
Captain, USAF, MSC
Administrative Resident

TABLE OF CONTENTS

PAGE

PREFACE i

TABLE OF CONTENTS ii

LIST OF TABLES ..... iii-v

CHAPTER I

INTRODUCTION 1-7
STATEMENT OF THE PROBLEM 8-16
LITERATURE REVIEW 17-26
APPLICATIONS TO HEALTH BENEFIT PROGRAMS 27-30
HYPOTHESES 31-43

CHAPTER II

STUDY DESIGN 44-46
SAMPLE SELECTION 47-51
DATA COLLECTION 52
  Survey Response 52-56
  Survey Analysis 56-62
  Sample Representativeness 62-73
ANALYTICAL TECHNIQUES 74-77
LIMITATIONS 78-80

CHAPTER III

INTRODUCTION 81-82
OPERATIONAL DEFINITION OF VARIABLES 83
  Social Background 83-87
  Satisfaction 87-88
  Enabling Characteristics 88-93
  Health Status 93-95
  Dependent Variable 95
STEP 1 96-97
STEP 2 98-100
STEP 3 101-103
STEP 4 104-110
STEP 5 111-114
SUMMARY OF OUTCOME OF VARIABLES 115-126

CHAPTER IV

SUMMARY 127-129
CONCLUSIONS 130-131
RECOMMENDATIONS 132-133

APPENDIX 134-148
BIBLIOGRAPHY 149-153

LIST OF TABLES

TABLE		PAGE
1-1	CHAMPUS Cost-Sharing Provisions	7
1-2	Summary of FY-78 Services Curtailed	11
1-3	Air Force Survey Results - Overall CHAMPUS Rating	12
1-4	Air Force Survey Results CHAMPUS Met Health Needs	13
1-5	Utilization Survey - Active Duty Families' Usage of Medical Facilities	13
1-6	Variables to be Examined	31
2-1	Comparison of Hypothetical Alternatives	45
2-2	Descriptive Data on the Eleven Selected Base Hospitals	48
2-3	Adjusted Response Rate by Beneficiary Category	52
2-4	Adjusted Response Rates Analyzed by when Completed Survey was Received by the Contractor	54
2-5	Telephone Follow-up of Active Duty Non-Respondents	56
2-6	Population Characteristics of the Weighted Sample (Number of Responses)	58
2-7	Analysis of Characteristics by Beneficiary Class (Means)	60
2-8	Analysis of Resources by Beneficiary Class (Mean Values)	60
2-9	Analysis of Outpatient Utilization by Beneficiary Class (Mean Values)	60
2-10	Analysis of Inpatient Utilization by Beneficiary Class (Mean Values)	61
2-11	Distribution of Utilization - Active Duty and Retired Categories	62
2-12	Distribution of Age - Active Duty Category (Percent of Respondents)	64

TABLE		PAGE
2-13	Distribution of Rank - Active Duty Category (Percent of Respondents)	65
2-14	Distribution of Educational Level - Active Duty Category (Percent of Respondents)	65
2-15	Distribution of Branch of Service - Active Duty Category	66
2-16	Distribution by Gender - Retired Category (Percent of Respondents)	67
2-17	Distribution by Ethnic Background - Retired Category (Percent of Respondents)	67
2-18	Distribution by Age - Retired Category (Percent of Respondents)	68
2-19	Distribution by Rank - Retired Category (Percent of Respondents)	68
2-20	Distribution by Educational Level - Retired Category (Percent of Respondents)	69
2-21	Distribution by Marital Status - Retired Category (Percent of Respondents)	69
2-22	Distribution by Family Income - Retired Category (Percent of Respondents)	69
2-23	Distribution by Rank - Survivor Category (Percent of Sponsor)	71
2-24	Distribution by Educational Level - Survivor Category (Percent of Respondents)	71
2-25	Distribution by Gender - Survivor Category (Percent of Respondents)	72
2-26	Distribution by Ethnic Background - Survivor Category (Percent of Respondents)	72
2-27	Distribution by Age - Survivor Category (Percent of Sample)	72
2-28	Distribution by Family Income - Survivor Category (Percent of Respondent's Family)	73

TABLE		PAGE
3-1	Distribution of Measures of Outpatient Utilization in a 30-Day Period	94
3-2	Distribution of Measures of Inpatient Utilization in a One Year Period	95
3-3	Results of First Analysis Step-Bivariate Tests of Association Between the Independent and Dependent Variables	97
3-4	Harmful Colinearity Between Independent Variables	99
3-5	Discriminant Function Co-efficients from Step 3 Analysis	102
3-6	Predictive Ability of Step 3 Discriminant Function	102
3-7	Significant Variables from Discriminant Analysis from Step 4 Analysis	106
3-8	Parsimonious Discriminant Function Co-efficients from Step 4 Analysis	107
3-9	Predictive Ability of Parsimonious Discriminant Function from Step 4	107
3-10	Variables from Parsimonious Discriminant Analysis from Step 4	108
3-11	Parsimonious Discriminant Function Co-efficients Vs. Regression Function Co-efficients	109
3-12	Summary of the Results of Individual Independent Variables	110
3-13	Discriminant Function Co-efficients from Step 5	112
3-14	Significant Variables from Discriminant Analysis from Step 5	113
3-15	Predictive Ability of Discriminant Function from Step 5	114
3-16	Predictive Ability of Discriminant Function from Step 5	114

CHAPTER I

INTRODUCTION

The Military Health Services System is one of the largest employer-owned and operated health benefit systems in the United States. As such, it presents a unique mixture of issues concerning not only the delivery of services, but also the fitness of that delivery system in the compensation package. The problems of rising costs, physician shortage/mal-distribution and rising consumer expectations found in the civilian sector have also seriously affected military medicine. The Military Health Service System (MHSS), not unlike the civilian sector, finds itself in a position of not being able to provide all that is demanded of it. Such an inability is serious in the second most important benefit in the military compensation package. 1/ This is a sensitive problem in an era of the all-volunteer force when the military must compete in the open market for necessary manpower.

Recent changes in health benefit packages in both industry and government have led military personnel to reconsider their perceptions of their health care benefit. In light of these developments the Department of Defense has begun to explore the feasibility of alternative methods of providing that health benefit. This study will examine the characteristics of those personnel

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1/ Third Quadrennial Review of Military Compensation, Staff Studies, Vol. III, pp. 22-23.

who indicate they would prefer to participate in a commercial insurance-like alternative to the present MHSS.

A brief description of the MHSS and the beneficiaries it serves follows.

The four major components of the MHSS are: the Medical Departments of the Army; the Navy (which also provides health services support to the Marine Corps); the Air Force; and the Office of Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). Each medical department is directed by a Surgeon General, who is the principal advisor to his respective Service Secretary and Service Chief of Staff on all health matters. Each Surgeon General exercises technical guidance and/or command authority over all activities of his medical department. The role of the Surgeons General in resource management give them wide-range influence over health services-related activities within their departments.

The fourth major component of the MHSS, CHAMPUS, is a field office of the Secretary of Defense. The Assistant Secretary of Defense (Health Affairs (OSD(HA)) is responsible for development, coordination and evaluation of DOD policies and programs related to health services activities (with the exception of research, development, test and evaluation) within the Military Departments.

In addition to activities within its own service, each Military Department participates in tri-service activities which support the military direct care system. These activities are jointly staffed and are utilized by more than one service. Examples of such activities include: The Armed

Forces Institute of Pathology: the Military Blood Program Office: and the Defense Medical Materiel Board.

The primary objective of the MHSS is the maintenance of the military force in a physically and mentally combat-ready status. Other objectives are:

- The assurance of the timely availability of trained manpower and other health resources required to support combat mobilization and contingency plans of the armed services.
- The provision of health care as part of the military pay benefit.
- The maintenance of these functions as effectively and efficiently as possible within the constraints of assigned missions and responsibilities. 2/

To achieve these objectives the uniformed services operates 168 hospitals and 307 freestanding clinics that have 19,550 operating beds. During the fiscal year (FY) ending 30 September 1978 there were 911,000 admissions and 46,450,000 outpatient visits provided to beneficiaries at a total cost of $3.9 billion. There are 107,000 personnel assigned to the system of whom about 11,000 are physicians. 3/

Direct comparison with similar figures from the civilian sector is difficult because the MHSS is designed to provide all the health care necessary to support the various communities it serves. Besides inpatient and outpatient care, a base or post-hospital provides:

2/ Summarized from Report of Military Health Care Study, Department of Defense, Department of Health, Education and Welfare, and Office of Management and Budget, Dec 75, pp. 14-16.

3/ Vernon McKenzie. Principal Deputy Assistant Secretary of Defense (HA). Testimony before the Subcommittee on Military Compensation of the Committee on Armed Services, U. S. House of Representatives, 23 May 1979.

- Dental care to some community members.
- Occupational health services to all employees of the installation.
- Infectious disease and vector control programs.
- Water purity and affluent testing for the installation itself.

The primary objective of the MHSS is the maintenance of the military force in a physically and mentally combat-ready status. Other objectives are:

- Small animal clinics, especially for zoonotic diseases.
- Inspection for wholesomeness of food sold on the military installation.
- Inspection of all food preparation on the military installation.

In a military setting the hospital is responsible for functions usually performed by the Federal Aviation Administration (FAA), U. S. Department of Agriculture (USDA), Public Health Service (PHS), State and county health departments, Office of Safety and Health Administration (OSHA), private practitioners, dentists, and the county hospital.

Beneficiaries of the MHSS include several categories of beneficiaries. The largest ones are:

- Active duty personnel (includes Army, Navy, Marines, Air Force, Public Health Service and others).
- Dependents of active duty personnel.
- Retired service members.
- Dependents of retirees.
- Dependents of personnel who died while on active duty.
- Dependents of deceased retired personnel.

The two categories of dependents of deceased personnel are usually considered together under the title of survivors.

The MHSS serves about 9.5 million beneficiaries. There are 2.0 million [4/] active duty personnel -- 1.4 million in the United States, 400,000 overseas and 200,000 afloat. These active duty personnel have 2.9 million [5/] dependents of whom 300,000 are overseas. Approximately 1.2 million [6/] men and women draw either disability or non-disability pensions and are eligible for care in MHSS. An additional 3.1 million [7/] people are dependents of retirees and are likewise eligible for care. And the approximately 350,000 [8/] who are survivors of active duty and retired personnel are also beneficiaries. In addition, occupational health programs are provided to an employer with 1.1 million [9/] civilian employees.

Differing beneficiary classes have differing entitlements to services within the MHSS. [10/] Active duty personnel are entitled to complete medical and dental care from military facilities. [11/] All other classes of beneficiaries may receive medical care in military facilities only when space

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4/ Selected Manpower Statistics, p. 49.

5/ Ibid., p. 148.

6/ Ibid., p. 155.

7/ Derived from Ibid., p. 155 and Danny Cook, Demographic Data of Military Beneficiaries: 1978, p. 17.

8/ Report of the Military Health Care Study, p. 25.

9/ Selected Manpower Statistics, p. 9.

10/ Title 10, USC, Para. 1076 and 1078.

11/ If active duty personnel receive care from civilian sources, the bills are paid by the nearest uniformed services facility.

and staff are available. If space or a particular service is not available in military facilities, other classes of beneficiaries must seek care from civilian sources or other military facilities. Care from civilian sources for all beneficiaries other than active duty personnel comes under the CHAMPUS program.

Dental care is more restricted. Active duty personnel are entitled to full care. Retirees may receive care, if space is available. Dependents of retirees and active duty personnel and survivors may receive only emergency care. Routine care for the last three classes is not authorized unless they are overseas or are in one of the approximately 100 areas in the United States, which have been designated as "remote areas," because adequate dental care is not available in the civilian sector. CHAMPUS will pay for dental care only when it is an adjunct to medical care.

CHAMPUS is a United States government financial mechanism which partially reimburses beneficiaries or the providers for health care services received from civilian sources. It was designed to supplement care available in uniformed services facilities. CHAMPUS provides extensive coverage of both inpatient and outpatient medical care. In addition, there is a special program of non-medical rehabilitative benefits for the physically handicapped and mentally retarded who are spouses or children of active duty personnel. Dental care under CHAMPUS is limited by law to that required as a necessary adjunct to medical or surgical treatment. At age 65 any beneficiary, other than an active duty dependent, who is entitled to hospital benefits under Title XVIII of the Social Security Act (Medicare), loses his CHAMPUS eligibility.

The program's cost-sharing features as of October 1, 1979 are summarized in Table 1-1.

TABLE 1-1

CHAMPUS COST-SHARING PROVISIONS

INPATIENT	OUTPATIENT
Active Duty Dependents	
The beneficiaries pay $5.00 per day or $25.00 admission, whichever is greater.	The family pays first $50.00 per person each year -- up to $100.00 per family -- plus. 20% of additional charges.
Retirees, Their Dependents, Survivors	
The beneficiaries pay 25% of all charges.	The family pays first $50.00 per person each year -- up to $100.00 per family -- plus. 25% of additional charges.

STATEMENT OF THE PROBLEM

That health care is part of the military compensation package has long been accepted. However, the ramifications of that acceptance have not been explicitly spelled-out or widely recognized.

> "Health care tends to be viewed by the managers of the system not as a guaranteed benefit at some specified level but as a serendipitous by-product of a health care establishment that exists to maintain the health of the Active Duty force and to provide wartime support. Military beneficiaries, on the other hand, have come to expect a guaranteed benefit. The divergency of these two philosophies appears to explain much of the frustrated expectations and dissatisfaction." [12]

This comment from the Defense Resource Management Study best summarizes the confusion facing the health benefits issue today.

The era of all-volunteer force and its recent problems in recruiting and retention have drawn attention to an important compensation area. Perceptions about that package have changed to the point that its superiority is no longer recognized by the people it serves. [13] The health benefit is ranked by service personnel as the second most important (after retirement) of all of the military benefits. [14] Findings of the Cost and Value Survey suggest that the health benefit is a most efficient compensation tool. Military personnel, on the average, value this benefit at several times its cost to the government. Just how many times depends on the assumptions made about allocation of overhead costs. The value ranges from 2.6 to 3.0 times the cost to the government. [15]

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12 Donald B. Rice, Defense Resource Management Study, Final Report, p. 94.

13 Military Health Benefit Study, pp. 11-12, Cost and Value Study, p. 276.

14 Third Quadrennial Review of Military Compensation, Staff Studies, Vol. III, p. 22-27.

15 Cost and Value Study, p. 267.

The multiplier effect works in the other direction as well. That is, the effect of a small change in policy or services offered has a much greater effect in the perceptions of the beneficiaries. The publication of the Cost and Value Survey results should increase awareness among the managers in the MHSS and among management throughout the Federal government.

Some progress in creating that necessary management awareness has already been made. For the first time in the institutional memory of the Office of Planning and Policy Analysis, the fact that the military health benefit is compensation has been explicitly recognized. Secretary of Defense Brown so stated in the Consolidated Guidance for FY 81-85.

> "With regard to defense manpower, it is United States policy to: attain a cost-effective Military Health Services System which satisfies military medical support requirements and provides quality care to all beneficiaries as a part of a benefit package which is an explicit, integral component of military compensation policy." 16/

Management attention has also been focused on the MHSS as a result of internal trends as well. Recent increases in CHAMPUS utilization, in criticisms of the MHSS's availability of services and decreases in the physicians available to provide those services, have caused upheavals in uniformed services facilities. As a result, a great deal of concern has developed regarding the extent to which the DOD beneficiary has been denied health care at the military health facilities of the uniformed services. This concern by Congress, the Office of the Secretary of Defense and the Office of the Assistant

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16/ Consolidated Guidance, FY 81-85, p. 33.

Secretary of Defense for Health Affairs resulted in the conducting of a study [17] in the Fall of 1978 to determine the extent of the reduction in services provided in the military health care system that occurred in FY-78 and the reasons for those reductions of services.

The closure and/or curtailment of health services in the Department of Defense were identified by the study as problems of significant magnitude to have affected all beneficiaries of the Military Health Services System. The closures and/or curtailments involved the entire spectrum of health care disciplines -- from the most rudimentary screening procedures to the most sophisticated specialties and sub-specialties necessary to provide modern "state of the art" health care.

The impact of those actions when examined across DOD is quite dramatic. Table 1-2 reflects a total of 427 services that were either curtailed or closed during FY-78 in DOD medical facilities that served approximately 5.5 million of the beneficiaries. [18] This represents 60% of the estimated 9.5 million worldwide beneficiary population. The effect on these beneficiaries has been to deny them some specific services and to raise questions as to what, in fact, their health benefit really is.

A brief review of the collected data for the study indicates that the primary reason for the closures and curtailments of services was the shortage of physicians in the MHSS. The total figure of 427 services closed or curtailed represents a minimum because additional services would have been

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17/ Adrienne Eddings, Closure and Curtailment of Health Services.

18/ Ibid., p. 11.

TABLE 1-2

SUMMARY OF FY-78 SERVICES CURTAILED [19/]

Branch Of Service	Total Number Services Closed Or Curtailed	Total Number Beneficiaries Affected	Total Number Services Closed		Total Number Services Curtailed		Civilian Contracts Let For Health Services To Relieve Doctor Shortage	
			Temporarily	Indefinitely	Temporarily	Indefinitely	Total	
Army	159	2,402,763	16	24	84	35	2,220	210
Navy	134	2,329,108	14	41	43	36	22	8
Air Force	134	746,033	24	28	37	45	58	24
TOTAL	427	5,477,904	54	93	164	116	2,300	242

19/ Ibid.

closed, if contracts had not been let to obtain civilian physician coverage of threatened services. When the 242 additional civilian contracts are also included the number of health services affected rises to 669. 20/

The closure/curtailments cited above are dramatic evidence that the declining health benefit in the military services is a reality and has become a problem of major proportions.

As evidenced by the cutbacks the direct care portion of the MHSS is no longer able to offer the level of service it once did. To obtain these services, beneficiaries must seek civilian sources under the other portion of MHSS -- CHAMPUS. However, there is evidence that for the beneficiaries, the alternative of civilian care under CHAMPUS is considered less than satisfactory.

The Air Force CHAMPUS Medical Survey for 1978 indicated such dissatisfaction with CHAMPUS. When asked how they rated the program overall, the respondents revealed that:

TABLE 1-3

AIR FORCE SURVEY RESULTS-OVERALL CHAMPUS RATING

OVERALL RATING	PERCENTAGE OF RESPONDENTS 21/
Excellent	6
Good	21
Fair	26
Poor	17
Very Poor	14
Don't Know/No Opinion	17

20/ Ibid.

21/ Air Force CHAMPUS Medical Survey for 1978, Draft, p. 8.

When asked whether or not they agreed that CHAMPUS met their health needs, the following answers were received:

TABLE 1-4

AIR FORCE SURVEY RESULTS-CHAMPUS MET HEALTH NEEDS

CHAMPUS MET HEALTH NEEDS?	PERCENTAGE OF RESPONDENTS 22/
Strongly Agreed	9
Agreed	33
Undecided	29
Disagreed	21
Strongly Disagreed	8

It is clear that a large portion (29% to 30%) of the Air Force active duty personnel are dissatisfied with the CHAMPUS program. The Utilization Survey 23/ identifies the use of civilian sources of care by all categories of beneficiaries of the MHSS. Air Force personnel and their families show the lowest usage of civilian sources. It is reasonable to assume that the other services, with higher civilian usage rates, have similar problems of personnel dissatisfaction with the CHAMPUS program.

TABLE 1-5

UTILIZATION SURVEY-ACTIVE DUTY FAMILIES 24/
USAGE OF MEDICAL FACILITIES

BRANCH OF SERVICE OF SPONSOR	% VISITS TO CIVILIAN SOURCES TO VISITS TO ALL SOURCES
Army	15%
Navy	18
Marine Corps	20
Air Force	14
All	16%

22/ Ibid., p. 9.

23/ Ibid.

24/ C. J. Schumaker, Jr., Selected Measures of Health Services Utilization, 1978: Military Beneficiaries, p. 7.

This beneficiary dissatisfaction with CHAMPUS and the trend of curtailment of services in the uniformed facilities may have far-reaching consequences because of the relatively high value placed on the health benefit by military personnel. It has become necessary for the services to begin exploring ways of providing an improved health benefit that will, hopefully, decrease dissatisfaction with CHAMPUS and lessen pressure toward the uniformed facilities.

Presently, eligible beneficiaries do not have a DOD-provided alternative to MHSS. Increasingly, employers are offering their employees an informed choice of, at least, two employer-financed health care plans. 25/

The MHSS has been criticized for providing a non-competitive health care plan to a captive population. 26/ Although recent survey results indicate that most beneficiaries are satisfied, there appears to exist a minority who are dissatisfied and/or who do not exercise their entitlement. In the 1978 Utilization Survey, 80.4% of the active duty personnel and retirees were either satisfied or very satisfied with the overall quality of medical care received in military health services. 27/

The Military Health Care Study was completed in December 1975. The final report contained nine specific interrelated recommendations that deal with medical care delivered in CONUS military medical facilities and

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25/ Such as Goodyear Tire and Rubber, the United Auto Workers, Southern Railroad and General Motors.

26/ Military Health Benefits Study.

27/ C. J. Schumaker, Jr., Satisfaction with Health Services: Military Beneficiaries, p. 10.

by civilian providers financed by DOD through CHAMPUS. The recommendations were intended as long-term guidance and were designed to provide a framework within which details of management and organization could be adapted to changing requirements and circumstances within and without DOD.

This study will address a facet of one area of one of the recommendations from that report:

- Consideration should be given to the feasibility of allowing dependents of active duty members, retiree families and survivor families to select a health care program other than that provided in uniformed services facilities or under CHAMPUS. 28/

In November 1977 the Defense Resource Management Study was commissioned by the Secretary of Defense in response to a request by the President. Among the major areas of study was the Military Health Services System. The final report was published in February 1979. Among its recommendations was that the Department of Defense consider a test of the concept of offering all non-active duty beneficiaries the option to enroll in the choice of health care plans available locally. Part of the rationale for this recommendation was that it would relieve the pressure of excess demand, enhance beneficiary satisfaction, introduce competition into the direct care system and that offering a choice was consistent with national policy.

This report will compare the group who would prefer an alternative to MHSS with those who do not so as to determine what factors are similar

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28/ Report of the Military Health Care Study, p. 88.

between each group and what factors are dissimilar between the groups. Specifically, this report will compare the 30% of respondents to the Military Cost and Value Survey who indicated they preferred hypothetical alternatives to the current structure of their health care benefit to those who preferred the current structure. Briefly, alternatives offered were the standard high option Blue Cross plan including dental coverage, the same Blue Cross plan without the dental benefits and a health maintenance organization.

LITERATURE REVIEW

Despite a substantial increase in interest in health services organization and utilization, no common theory explaining health behavior and health services utilization has become widely accepted. Rather, what has emerged is a loosely structured framework derived from many differing pieces of research which support some hypothesis better than others.

Several analytical approaches have been used to explain health behavior. The interactions between these differing approaches have served both to enlighten and confuse. Modifications to each have been made as weaknesses have been presented, but overall the effect has been confusing with differing hypotheses trying to explain the same behavior. A discussion of each of the major approaches follows, with a sampling of the work done in each. A more complete bibliography in each of the approaches was beyond the scope of this study.

Economic - Some of the earliest literature began what turned out to be an extensive study of the link between income and health services utilization. 29/ Added to the frey have been several studies that suggest not only that income effects utilization but also that the method of payment influences utilization. Many of these studies have suggested economic factors may act as deterrents. The evidence was strong enough that the link was generally accepted, leading to usage of terms such as "financial barriers," "economic access" and "economic barriers."

29/ Victor R. Fuchs (Editor), Essays in the Economics of Health and Medical Care.

The evidence is not unanimous, however. McKinley [30] contended that the link or barrier would only partially explain under-utilization. He pointed out two weaknesses of an economic approach: that proponents fail to consider the indirect effect of income in greater participation in social systems which bring the potential patient into greater contact with the health service delivery system, and that level of income by itself does not adequately describe variations in patterns of utilization.

Berkanovic and Reeder [31] also object to the concept of financial access on the explanation for utilization patterns. They raise four objections: 1) there are cultural, not economic differences, as to what kind of symptoms need medical attention, 2) when economic barriers are removed, utilization is not necessarily higher among groups with higher levels of morbidity, 3) behavior in seeking preventive services varies within groups with similar levels of income, and 4) the rate of physician visits has increased among low income groups and is now higher than for other groups. They go on to list three other cultural influences that affect health services utilization: behavior and different expectations between consumer and providers; differing vulnerabilities to ego assault in the provider-patient encounter; and prejudices (predominantly middle class) of the providers.

30/ John McKinley, "Some Approaches and Problems in the Study of the Use of Services - An Overview," Journal of Health and Social Behavior, June 1972.

31/ Emil Berkanovic and Leo Reeder, "Can Money Buy the Appropriate Use of Services? Some Notes of the Meaning of Utilization Data." Journal of Health and Social Behavior, June 1974.

In a further examination of Berkanovic and Reeder's four objectives, Aday [32] contended that those data were misleading, that those data should be re-examined in light of utilization relative to need (as measured by disability days). She argued that such re-examination resulted in the conclusion that utilization relative to need is still disproportionately lower among the poor than the non-poor, even when insurance among levels were considered.

She examined other ecological factors as well -- travel time, presence of a usual source of care, appointment visiting time and office wasting time. She found no consistent relationship between those variables and a use disability ratio except for a lower rate of uses among those who have no regular source of care (except the non-poor insured).

As with income, the link between health care utilization and distance traveled to the source of care has received a good deal of scrutiny over the last twenty years.

In an early study of western Pennsylvania, Ciocco and Altman [33] found a difference in utilization rates by type of provider according to the distance necessary to travel to obtain care. Those who had to travel further (in rural areas) had lower rates of physician utilization or specialists than did residents of the more urban areas where the specialists were located.

32/ LuAnn Aday, "Economic and Non-economic Barriers to the Use of Medical Services," Medical Care, June 1975.

33/ Ciocco and Altman, I. "Medical Service Areas and Distances Traveled for Physician Care in Western Pennsylvania," Public Health Monograph, No. 19, 1954.

Weiss, Greenlich and Jones [34] supported the traditional finding. that more visits are made to the facility nearest the patient's residence. This relationship was found to have weakened as the difference in distance between equal facilities declined. Not significantly related in any travel patterns were disease category [35] or demographic variables.

Weiss, Greenlich and Jones [36] examined distance traveled to and found it to have a differential effect, depending on the social class of the patient. In fact, they found that social class was the more powerful variable, being in turn modified in its effect by distance to the appropriate medical facility. Also, the additional variable of point of entry into the medical service system was found to interact both with social class and distance.

Bosanac, et al [37] continued to examine distance to a facility as a planning factor. However, they defined distance in terms of time instead of space. This distance can be quite significant in West Virginia where the study took place or any other area where geographic obstacles may be a factor. Any large geographic feature makes the application of policy based on a measure of distance unrealistic at best.

34/ James Weiss, Merwyn Greenlich and Joseph Jones, "Determinants of Medical Care Utilization: The Spatial Factors." Inquiry, Dec 1971.

35/ Acute, chronic - or other, Ibid., p. 460.

36/ James Weiss and Merwyn Greenlich, "Determinates of Medical Care Utilization: The Effect of Social Class and Distance on Contacts with Medical Care System." Medical Care, November 1970.

37/ Edward Bosanac, Rosalind Parkinson, and David Hall, "Geographic Access to Hospital Care: A 30-Minute Travel Time Standard," Medical Care, July 1976.

Shannon and associates [38] reviewed the development of the concept over nearly fifty years. They concluded that more development is necessary. The traditional linear measurements of distance have not been satisfactory. They suggest further examination of two dimensional; vector measures will be more promising.

Social Psychological - Besides the ecological and demographic approach the social-psychological approach has been the most extensively explored. The object of such an approach is to explain health services utilization behavior in terms of motivation, perception and learning.

Consumer attitudes toward physicians in Fort Wayne, Indiana, were examined by Hulka, et al [39] in an attempt to measure satisfaction with care received. They found differences associated with race, sex, ages, physician continuity and type of insurance coverage.

Age, number of children in the family, perceived threat of symptoms and the perceived benefits of the health services system were found to be "triggered" by or of utilization behavior by Kirscht, Becker and Eveland.[40]

Tessler and associates [41] demonstrated that psychological stress was one of the determinants of physician utilization. Specifically eliminated

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38/ Gary Shannon, Rashid Bashshur and Charles Metzner, "The Concept of Distance as a Factor in Accessibility and Utilization of Health Care," Medical Care Review, July 1969.

39/ Barbara Hulka, et al., "Correlates of Satisfaction and Dissatisfaction with Medical Care: A Community Perspective," Medical Care, August 1975.

40/ John Kirscht, Marshall Becker and John Eveland, "Psychological and Social Factors as Predictors of Medical Behavior," Medical Care, May 1976.

41/ Richard Tassler, David Mechanic and Margert Dimond, "The Effect of Psychological Distress on Physician Utilization: A Prospective Study, Journal of Health and Social Behavior, December 1976.

as other possible explanations for the relationship shown were more illness among the distressed, greater propriety to use health services and any attitudinal pre-disposition to use physician services.

Socio-cultural - Variations in health services utilization can be explained by the unique aspects of the culture or sub-culture of a particular social group. Examples of variables considered in this approach are: cultural definition of illness, cultural definition of illness behavior, life styles, familial composition.

Suchman 42/ examined knowledge about disease, attitudes towards medical care and behavior during illness among different ethnic groups in a mixed New York City neighborhood. Differences in each variable were found among the five groups surveyed. These differences were related to the form of the social organization within the ethnic groups. The more ethnocentric and cohesive the group, the more likely its members were to have low knowledge about disease, skepticism toward providers, and be dependent during illness. The amount of variance between differing cultural groups were striking.

Geersten, et al 43/ did not find support for Suchman's model in a study of a more homogeneous group in Salt Lake City. However, neither the counter-indications raised nor the further research suggested questioned the applicability of the approach. The disagreements were only over the specific measures used and the conclusions drawn.

Social Systems - The last twenty years have seen the systems approach spread to nearly all social service areas. Its application to health services

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42/ Edward Suchman, "Sociomedical Variations Among Ethnic Groups," American Journal of Sociology, November 1964.

43/ H. R. Geersten, et al, "A Re-Examination of Suchman's View on Social Factors in Health Care Utilization," Journal of Health and Social Behavior, June 1975.

utilization has seemed particularly promising in light of the variety of the other approaches used in this area. The social system analysis approaches health services behavior in terms of characteristics of the health service system: organization, population factors (age, ethnicity), ecological factors (proximity to care).

Hershy, Luft and Gianaris [44/] designed a systems model that included demographic, socio-cultural and health system characteristics. They surveyed families in a rural community. By including alternative sets of independent and dependent variables in a multiple regression analysis they pointed out that the omission of certain factors can lead to quite different interpretations of the resulting analysis. Incorrect interpretation will result unless all of the necessary factors are included.

Anderson [45/] and Burtkus [46/] used systems approach in a study of university students in a prepaid group health plan. Their model used ecological-demographic, social-psychological and need variables. They found that demographic variables did not have a direct effect on health behavior but they had an indirect effect by influencing symptom sensitivity, need and evaluation of services provided, which, in turn, had a direct effect on health behavior.

Behavorial Frameworks - The diversity and relative advantage and disadvantage of each of the approaches discussed make obvious the need for a unifying framework that will encompass all of the varying approaches.

44/ John Hershy, Harold Luft and Joan Gianaris, "Making Sense Out of Utilization Data," Medical Care, October 1975.

45/ James G. Anderson, "Demographic Factors Affecting Health Services Utilization - A Causal Model," Medical Care, March-April 1973.

46/ James G. Anderson and D. E. Burtkus, "Choice of Medical Care: A Behavioral Model of Health and Illness Behavior," Journal of Health and Social Behavior, September 1973.

Such a framework was provided by Anderson. 47/ He took the applicable variables from each of the approaches and structured them into three major categories - predisposing, enabling and need variables. Pre-disposing variables include such things as family composition, social structure, and health beliefs. Enabling variables are family resource and community resource factors. Need variables include both illness and the patient's response to that illness.

Wan and Yates 48/ took Anderson's framework and demonstrated its efficiency with 18 difference predictors in a different setting.

Wan and Soifer 49/ tested 18 variables to determine their causal ordering of predicting physician visits. They surveyed some 2,100 households in New York, and Pennsylvania, and used path analysis to test a behaviorial framework. They concluded that the need for care, average cost per visit, health insurance coverage and age had the strongest affect on physician utilization.

Galvin and Fan 50/ also used path analysis to test a model of utilization. Their model was derived from a sample of 1,000 households in Los

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47/ Ronald Anderson, A Behavior Model of Families' Use of Health Services.

48/ Thomas Wan and Ann Stromber Yates, "Prediction of Dental Services Utilization: A Multivariate Approach," Inquiry, June 1975.

49/ Thomas Wan and Scott Soifer, "Determinants of Physician Utilization: A Causal Analysis," Journal of Health and Social Behavior, June 1974.

50/ Michael E. Galvin and Margaret Fan, "The Utilization of Physician Services in Los Angeles County, 1973," Journal of Health and Social Behavior, March 1975.

Angeles. They found days disabled, public insurance and sex to be key variables. In addition, age was also a significant contributor to the explanative power of the model through disability days and public insurance coverage.

Another model was developed and supported by Wolinsky [51] in a survey of Iowa households. This included: factors of the population at risk (predisposing and enabling characteristics), utilization, system characteristics and consumer satisfaction. His model postulated that "enabling characteristics are caused by the predisposing characteristics; illness is caused by the enabling and predisposing characteristics." [52] Additionally, future utilization is dependent on satisfaction which, in turn, is influenced by previous utilization.

Schumaker [53] states that health service utilization behavior is the result of the interaction of three factors -- social background, intervening and health status variables. The social background are those population characteristics, such as age, sex, ethnicity. Intervening variables fall within the three-sub-categories of predisposing (attitudes), enabling characteristics and consumer satisfaction. Health status is not only the overall health of an individual but also the specific symptom that "triggers" utilization.

51/ Frederic Wolinsky, "Health Services Utilization and Attitudes Toward HMO's: A Theoretical and Methodological Discussion," Journal of Health and Social Behavior, September 1976.

52/ Ibid., p. 223.

53/ C. J. Schumaker, Jr., Health Services Utilization Study Proposal.

The movement of the study of health utilization behavior (as reflected in this review) has been toward more complete frameworks that attempt to measure very complex behavior. Certainly there is no general agreement in the field, but the direction of effort seems to be clear.

One aspect of utilization behavior that has yet to become integrated into the behavioral frameworks has been the organization and financing of the health services delivery system. The review of the previous work in this area follows as a separate section.

APPLICATIONS TO HEALTH BENEFIT PROGRAMS

As the popularity of the health maintenance organizations grew, spreading eastward from the Kaiser Permanente Group, the study of alternative organizations concurrently increased. Part of this overall increased level of activity has been directed at the determinants of the choice made when the consumer is presented with one or more alternatives.

Moustafa and associates [54/] surveyed University of California, Los Angeles, employee subscribers of a Kaiser plan and a basic Blue Cross alternative. They discovered that consumers were unaware of the specific services offered in the respective coverages, although employees had realistic concepts about the general scope of their coverage. Furthermore, most knew if their respective plans had open or closed physician panels. They concluded that the consumers choice of an alternative was related to the characteristics of the plan.

Roghman, et al [55/] reported similar results from two surveys in different situations. Each was the offering of alternatives at a place of employment; the first survey being more limited in scope than the second. They found that: there are those who are not integrated into the present care system and those who appreciated the care characteristics of a proposed plan (comprehensive and preventive care). No differences were found as to risk vulnerability, out-of-pocket expenses, health status and ambulatory care utilization rates.

54/ A. Thuler Moustafa, Carl E. Hopkins and Bonnie Klein, "Determinates of Choice and Change of Health Insurance Plan." Medical Care. Jan-Feb 1971.

55/ Klaus J. Roghman, et al. "Who Chooses Prepaid Medical Care: Survey Results from Two Marketings of Three New Prepayment Plans," Public Health Reports.

Tressler and Mechanic [56] found that level of education, marital status, integration within the medical system and travel time were major determinants of a choice in a prepaid plan. Not supported in this study was the risk-vulnerability hypothesis, that is, those with higher perceived risk (and use) would choose the more comprehensive coverage of a prepaid plan vis-a-vis a liberal Blue Cross/Blue Shield coverage. Also not supported were selections based on neuroticism or preventive health behavior.

Bice, [57] on the other hand, supported the risk-vulnerability hypothesis through a prospective study of enrollment in a prepaid group practice among a group of families eligible for Medicaid. The families' health status and prior utilization were poor predictors of enrollment in the prepaid plan until economic factors were included. The families in this study tended to enroll in the prepaid plan, if their out-of-pocket costs would be reduced.

Kirscht, et al [58] investigated the relationship between the presence of symptoms in a child and the mother's seeking care for that child. They found various social and psychological variables (personal coping abilities, situational barriers, predispositions) affecting the use of a particular health care system. [59] Each variable had differing roles depending on the particular situation. Kirscht et al concluded: situational factors were important in determining health behavior and health beliefs predicted behavior across varying situations.

56/ Richard Tressler and David Mechanic, "Factors Affecting the Choice Between Prepaid Group Practice and Alternative Insurance Programs," Milbank Memorial Fund Quarterly.

57/ Thomas Bice, "Risk Vulnerability and Enrollment in a Prepaid Group Practice," Medical Care, August 1975.

58/ Kirscht, Becker and Eveland, op. cit.

59/ Ibid., p. 430.

Scitovsky, McCall and Benham [60] examined the subscribers of two prepaid plans at Stanford University. One plan was a Kaiser plan providing service at a somewhat lower cost in three different facilities; the other was a large prepaid group practice that contained a standard Blue Cross hospital policy to cover inpatient care. Income and distance were found to be the two major determinants of choice. Preference for the less expensive Kaiser plan increased as family income decreased. Preference for the Kaiser plan also increased as the distance from the subscriber's home to the nearest Kaiser facility decreased and the distance to group practice facility increased. Additionally, continuity of care influenced preference as the Kaiser plan was newly offered. Based on the characteristics of those families who chose Kaiser, some of the families who subscribed to the other plan would have been expected to prefer the Kaiser plan, but didn't. Scitovsky, et al suggest that this will be the case whenever a new plan is offered when another is already well established.

Berki and associates [61] studied the factors affecting choice in a situation involving a quadruple choice -- Blue Cross/Blue Shield, one open panel plan and two closed panel plans. They reported no preferred differences according to health risks, but that low income families did prefer closed panel HMOs. Younger families, and those families that were larger, preferred HMOs. Those families that already reported a usual source of care preferred an arrangement where that relationship would continue (BC/BS or the open panel

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60/ Anne A. Scitovsky, Nelda McCall and Lee Benham, "Factors Affecting the Choice Between Two Prepaid Plan," Medical Care, August 1973.

61/ S. E. Berki, et al., "Enrollment Choice in a Multi-HMO Setting: The Roles of Health Risk, Financial Vulnerability, and Access to Care," Medical Care, February 1977.

plan). Other variables of health status, health concerns, and prior utilization were not supported by their data.

Berki et al [62/] continued this analysis to a second stage. Using a multi-variate probability model (logit) they showed five predictors of preference: source of care (increase of access), family life style, chronic conditions within a family (risk), per capital income, and health concern (beliefs). Having: a usual source of care (or preference to keep one); younger and larger families; higher incomes; and a chronic condition within the family, showed a preference for an open panel plan. On the other hand, a higher level of health concern influenced preference for a closed panel plan. This function predicted correctly enrollment in any HMO more than 50% of the time for 60% of the sample.

62/ S. E. Berki, et al., "Enrollment Choices in Different Types of HMO's: A Multi-variate Analysis," Medical Care, August 1978.

HYPOTHESES

After examination of the survey instrument in light of Schumaker's model, the following variables were selected to measure the effects he postulates in each of the four key influences on health behavior.

TABLE 1-6

VARIABLES TO BE EXAMINED

Social Background

- Ethnic Background of Family
- Religion
- Education of Sponsor
- Length of Service of Sponsor
- Branch of Service of Sponsor
- Beneficiary Category
- Age of Respondent
- Marital Status
- Family Size
- Family Cycle
- Geographic Location

Satisfaction

- Satisfaction with Quality of Care

Enabling Characteristics

- Access
  - Travel Time
  - Appointment Delay
  - Waiting Room Time
  - In/Out of a Catchment Area
  - Facility Size
- Income
- Insurance
- Unreimbursed Medical Expenses
- Usual Source of Care

Health Status

- Self-Reported Health Status
- Previous Utilization
  - Provider Visits
  - Facility Visits
  - Hospitalization

A. Preference for an alternative to the present form of organization of health services delivery in the MHSS varies according to the social background characteristics of the respondent's family. Man is, after all, the sum of his background and experiences, and they cannot but influence his behavior.

A.1.H_o: There is no difference in preference for alternatives to MHSS according to the ethnic background of the respondent.

Definition of illness, illness-behavior, the role of health professional all differ greatly between cultures. Sub-cultures of one society may view each of those three variables in a different way. Members of the sub-culture would then behave differently, based on the beliefs about those things that he learned from sub-cultures. The labels we, as a society, attach to an ethnic background provide an easily quantified (if over-simplified) summary of a person's cultural background. That label, in turn, should indicate the health-related values ingrained by the respective sub-culture.

A.2.H_o: There is no difference in preference for alternatives to the MHSS according to the religious practices of the respondent.

Certainly, religious beliefs influence health behavior. Those beliefs may affect only one particular area or may influence the use of all the services in a particular delivery system.

The Christian Scientists are the most obvious example of the latter. The effects of beliefs among others may be less obvious but are no less important.

A.3.H_o: There is no difference in preference for alternatives to the MHSS according to the level of formal education reported by the respondent.

The level of education of the respondent should affect health behavior as it affects other behaviors. Its effects are both direct and indirect. Direct effects would include ability to communicate prior knowledge about given conditions and/or treatments and the perceptions of the patient by the health professionals. Indirect affects would be through the level of income attained and attitudes about what the proper level of use of a health professional might be.

A.4.H_o: There is no preference for alternatives to the MHSS according to the length of service of the sponsor.

Length of service (total years in the military) should be a surrogate measure of socialization into the military sub-culture and into the MHSS. Socialization brings both knowledge and acceptance of the social systems. Knowledge about the details of MHSS should decrease the gap between what may be expected and what may be actually done. Increased acceptance, if only resignation, is the result.

A.5.H_o: There is no difference in preference for alternatives to the MHSS according to the branch of service of the sponsor.

The author's residency has provided ample evidence that there are major differences in health services delivery among the three Services. Some of these differences are the result of varying operational orientations. Aviation medicine is different from submarine medicine which is different from the care necessary for an infantry battalion, as an example.

Likewise, the nature of each service affects the practice settings. In peacetime the Army has large numbers of personnel in a relatively few number of locations -- a division is 25,000 personnel. On the other hand, the Air Force has many smaller units in geographically separated locations -- the typical wing having 5-10,000 personnel. The Army has 51 medical facilities and 771,000 personnel [63/] overall, while the Air Force has 81 facilities and 570,000 [64/] personnel. The Navy has a combination of both, having personnel on several hundred ships and a few relatively large land bases with large medical facilities (36 medical facilities and 721,000 personnel). [65/] Some of the other differences among the Services in health services delivery are more readily explained by history and tradition.

A.6.H_o: There is no difference in preference for alternatives to MHSS according to the beneficiary category of the respondent.

There are differences in law [66/] affecting the availability of care to differing categories of beneficiaries. The priorities in those paragraphs serve to implicitly ration scarce medical resources. The priorities are:

1. Active duty personnel.
2. Dependents and survivors of active duty personnel.
3. Retired personnel.
4. Dependents and survivors of retired personnel.

63/ Selected Manpower Statistics, p. 35.

64/ Ibid.

65/ Ibid.

66/ Title 10, USC, Chapter 55, Paragraph 1074 and 1076.

The offering of an alternative to the current configuration of the health care benefit should be attractive to those who may have been denied some health services because of limited resource availability.

A.7.H_o: There is no difference in preferences for alternatives to the MHSS according to the age of the respondent.

Age itself has obvious implications for the amount and levels of health service demands and has been a traditional surrogate for those variables. It also has indirect effects on other variables which influence health service demands (factors such as level of education, marital status, family size, and income). While the indirect effects are difficult to control in a study of this scope, the direct effects should be verifiable. It is assumed that the older the respondent the higher will be his/her level of use of health services. That different level of usage would then influence a choice of alternative forms of delivery.

A.8.H_o: There is no difference in preference for alternatives to the MHSS according to the marital status of the respondent.

The presence of any dependents in a family unit, and their attitudes, may affect a preference for an alternative, especially if desired health services are not available from the MHSS for whatever reasons. In fact, the presence of dependents should lead to demand for different health services than were previously used. Experience with different services should change the respondents view of the MHSS and may change his/her

preference for an alternative. The experience of a single serviceman whose sole use of the MHSS has been sick call and/or the emergency room will be different from the family with children who may have also used OB/GYN, pediatric services, and the general therapy clinic.

A.9.H_o: There is no difference in preference for alternatives to MHSS according to the number of people within a family unit.

An increasing family size will mean an increasing number of trips to seek care, making the ease of access to care more important. Likewise, if there are out-of-pocket or other costs involved with each trip, the presence of additional family members will create additional financial burdens.

The CHAMPUS deductible is $50 per person or $100 per family per year and, as such, does not differ according to family size. However, the 20% or 25% deduction will affect each occasion of service. Similar to health insurance, however, CHAMPUS does not cover routine pediatric cases or immunizations. These services are available at most military facilities. All of these factors make the military facility more attractive to a large family and may make an alternative seem more attractive, if a military facility is not available.

A.10.H_o: There is no difference in preference for an alternative to the MHSS according to the stage in the family cycle.

The stage in the family cycle of a particular family will affect the demands it places upon a health services delivery system. The addition of the first child to a family unit makes the access to a pediatrician assume an importance it lacked previously. Or, as another example, although all

the children have left the home, the health demands of the retired couple will be different than before they had any children. Clearly, the stage of a family cycle will affect the desired attributes of a health services delivery system.

A.11.H_o: There is no difference in preference for alternatives to the MHSS according to the geographic location of the residence of the respondent.

The ready availability of alternative forms of health service delivery systems (HMOs) is still not geographically uniform. It seemed unlikely to the author that respondent family units would prefer an alternative to which they had had no exposure. Given the recent publicity about the HMOs, the author expected more families would prefer them in those geographic areas where they were relatively more widespread. It was anticipated that those latter areas were the East and West coasts, since HMO's do not have as much market penetration in other parts of the country.

B. Preferences for alternatives to the MHSS vary according to the satisfaction with military medicine.

B.1.H_o: There is no difference in the preference for alternatives to the MHSS according to the satisfaction reported with the quality of care received in military facilities.

There are many aspects of satisfaction that might have been asked. Of the measures that were available in the survey instrument the logical choice was satisfaction with the quality of care received in military facilities. Dissatisfaction with this aspect of the MHSS would imply a strong preference for an alternative. The link between satisfaction/dissatisfaction with the

quality of care received in civilian setting has a much less obvious link in preference for something other than the present form of the MHSS.

C. Preference for alternatives to the MHSS vary according to the enabling characteristics of the responding family unit.

C.1.H_o: There is no differing preference for alternatives to the MHSS according to the length of time necessary to travel to the usual source of care.

Travel time as an access measure has been studied for several years. The literature is extensive and was only covered lightly in the preceding literature review section. It was anticipated that those who lived further away from a military facility would more often prefer an alternative, since it is likely that the alternative might have easier access (less travel time).

C.2.H_o: There is no difference in preference for alternatives to the MHSS according to the usual delay encountered in obtaining an appointment at the usual source of care.

Appointment delay serves as a measure of both access and consumer satisfaction. The length of the delay necessary to obtain an appointment is a fairly direct measure of ease of access into a particular system for a potential user. Lengthy delays force the patient with an acute condition to seek access through another point in the system (become a walk-in, go to the emergency room or sick call, etc.) or to seek care in another delivery system. Patients returning for routine visits or follow-ups may encounter problems in scheduling appointments suitable to their schedules. The patients feel pressured to take whatever is open, because they know they will have difficulty obtaining anything else. Appointment delay becomes an indirect measure of patient satisfaction with the complete system as well as generating feelings of satisfaction

dissatisfaction on its own. Patients may view appointment delay as a symbol of how responsive a system may or may not be to their needs.

C.3.H_o: There is no difference in preference for an alternative to the MHSS according to the length of time spent in the reception room waiting for an appointment at the usual source of care.

Waiting room time is another perceived measure of responsiveness to the beneficiaries' needs. The patient feels that he/she has kept his/her part of the bargain, if they present themselves anywhere near the scheduled appointment time. Repeated lengthy delays in being seen may give the impression to the patient that the system is not being responsive to his/her needs. It was expected that the longer the reported waiting room delays, the greater the preference for an alternative would be.

C.4.H_o: There is no difference in preference for an alternative to the MHSS according to whether or not the respondent lives within a catchment area of a military medical facility.

The catchment area is a 40-mile radius around any military medical facility. That particular figure is set in law. 67/ Any beneficiary living within the 40-mile radius of a facility must receive inpatient care in that facility. Only if that facility certifies that it cannot provide the necessary care will CHAMPUS reimburse a beneficiary for inpatient care received in a civilian hospital. Those families who live outside the 40-

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67/ The language setting the 40-mile limit has appeared yearly in the Defense Appropriation Acts beginning with the Act for Fiscal Year 1975.

mile limit do not need the certification. Nor is the certification necessary for outpatient care. The 40-mile limit is a measure, admittedly crude, of travel time and access to the direct care system. It is crude in the sense that it does not take into account any significant geographic barriers which may considerably lengthen actual travel time. It is also limited as designed and collected in this survey instrument; it is a simple dichotomous variable -- i.e., either one lives anywhere within the 40-mile circle or one does not. That design lumps together those who may live on-base and have a two-minute trip to receive care with those who may have a 55 or 60 minute trip to a military facility. A similar grouping results for those who reside outside of that limit -- those who live where no military facility is available are included with those who may use a military facility 40-50 miles away for all non-emergent care. The resulting assumption is that direct military care is not available to those outside of the 40-mile radius.

C.5.H_o: There is no difference in preference to the alternatives to the MHSS according to the size of the facility in the respondents' catchment area.

This variable was included to measure the level of care available to the respondents in military facilities within the local area. The MHSS is a highly regionalized system, ranging from 1,000-bed facilities with a complete range of services, to freestanding clinics offering primary care only. If space is available, the beneficiary may be transported

many miles to receive necessary care in a large facility (active duty personnel have no choice). The range of care readily available to the respondent at a military facility may be quite limited. It was postulated that those in areas served by smaller facilities would prefer an alternative that would cover a greater range of care.

C.6.H_o: There is no difference in preference for alternatives to the MHSS according to the level of income of the family unit.

This is one of the traditional explanations of differences in health service utilization. One would expect a family with a great deal of disposable income to approach a health service delivery system differently from another family who had much less income.

C.7.H_o: There is no difference in preference for alternatives to the MHSS according to the presence of alternative health insurance.

One of the original questions discussed during the development of this study was -- whether or not the proposed alternatives, if implemented, would in fact draw some of the excess demand away from the MHSS, or would an alternative simply pay for those who already have alternative health insurance? Those personnel who have already taken a positive step to indicate they may prefer an alternative.

C.8.H_o: There is no difference in preference for alternatives to the MHSS according to the unreimbursed cost of previous care.

The cost-sharing provisions of CHAMPUS and its reputation for not reimbursing at current rates have been a point of concern for beneficiaries

for the last several years. That concern has been expressed strongly enough that Congress recently increased the level of reimbursement. [68/] Another raise, to 90%, has been submitted as proposed legislation the past two years. Also, the variable seems an important one, a priori.

C.9.H_o: There is no difference in preference for alternatives to the MHSS according to whether the usual source of care is civilian or military.

The discussion about the presence of health insurance is applicable here also. Also pertinent is the question of whether or not someone already familiar with an alternative system might have a stronger preference for it. Some beneficiaries have chosen not to use the MHSS but have instead sought care in a civilian setting -- they are more familiar with alternatives and should have a greater preference for the choice they have already made.

D. Preference for alternatives for MHSS vary according to the health status of the family members.

Those families where one member is in poorer health should have a different view of possible alternative health organizations than those families who were in relatively good health. Certainly the former have the incentive to more closely examine systems they know they may shortly use as opposed to the latter who may or may not have to use one of the proposed systems at some unknown time in the future. Those families with members with chronic conditions will have much more knowledge on which to judge alternatives than those who may have only used a primary care clinic occasionally.

68/ The 80% level of reimbursement was set in the Defense Appropriation Act for Fiscal Year 1979 and has been continued since. That is, the allowable charge is set so that 80% of the bills submitted for a specific procedure in a specific location over a given time are covered.

D.2.H_o: There is no difference in preference for alternatives to the MHSS according to reported utilization of health service systems.

As with health status above, those families with higher utilization patterns would be expected to have a different view of the MHSS than those who do not use a health service system as often. This differing view, and the knowledge gained through use, might lead to different evaluations of possible alternatives.

CHAPTER II

STUDY DESIGN

The idea for this study germinated in a briefing describing the Cost and Value Study. The briefer speculated from his preliminary data that the same beneficiaries who preferred Alternative "C" also preferred Alternative "D," that they wanted an alternative at almost any cost. Further discussion revealed a lack of agreement as to just who those people might be, if they were, in fact, a homogeneous group. This study is a re-examination of the survey data collected for the Cost and Value Study to answer questions raised during that briefing.

The Cost and Value Study used three different approaches in asking respondents to place a value on the military health care benefit. Besides directly asking for a monetary judgment, the questionnaire proposed three hypothetical plans in addition to the current structure of the benefit. As the second approach, the respondents were asked to rank the plans in the order of preference. Thirdly, the respondents were asked, in turn, whether they preferred each of the alternatives compared to the current structure and what amount of compensation would make each pair equal.

Details of the three hypothetical alternatives were included in a separate sheet, inserted in the questionnaire, reproduced in Table 2-1.

TABLE 2-1

COMPARISON OF HYPOTHETICAL ALTERNATIVES

DEPENDENTS, RETIREES AND SURVIVORS

ALTERNATIVE PLANS		PHYSICIAN AND HOSPITAL SERVICES: INPATIENT	PHYSICIAN AND HOSPITAL SERVICES: OUTPATIENT	DENTAL SERVICES	LIMITATIONS OR SPECIAL PROVISIONS
	Uniformed Services Facilities	You pay $4.10 per day	No charge	No charge Retirees get complete care: but dependents get complete care only overseas or in underserved areas. Elsewhere dependents get only preventive and emergency care	Services on a space-available basis only. Covers dependent parents or parents-in-law, who are excluded by CHAMPUS and by Plans B, C and D
A. CURRENT SYSTEM	CHAMPUS	ACTIVE DUTY DEPENDENTS: You pay $4.10/day or $25 admission, whichever is greater	You pay first $50/person each year -- up to $100/family -- plus FOR ACTIVE DUTY DEPENDENTS: 20% of additional charges	NOT COVERED	Use of non-participating providers may increase your costs
		RETIREES, THEIR DEPENDENTS, SURVIVORS: You pay 25% of all charges	FOR RETIREES, THEIR DEPENDENTS, SURVIVORS: 25% of additional charges		Unreasonable charges not covered
		No charge	You pay first $100/person each year -- up to $200/family -- plus 20% of additional charges, for physicians' services	No charge for preventive, diagnostic or emergency services. For other services, you pay the first $25/person each year -- up to $100/family -- plus	Costs to you of covered services may not exceed $4,000 per year No extended nursing care facility coverage
		No charge	You pay first $100/person each year -- up to $200/family -- plus 20% of additional charges, for physicians' services	No charge for preventive, diagnostic or emergency services. For other services you pay the first $25/person each year -- up to $100/family -- plus	Costs to you of covered services may not exceed $4,000 per year No extended nursing care facility coverage
B. BLUE CROSS-TYPE PLAN WITH DENTAL SERVICE			No charge for hospital services	(A) 30% of excess for routine services, e.g., fillings (B) 75% of excess for orthodontic services (up to a $500 limit) (C) 50% of excess for other services	Hospital confinement in excess of 365 days subject to cost-sharing $50,000 limitation on psychiatric care, and $500,000 limitation on total lifetime payments for you and your dependen Unreasonable charges not covered
C. BLUE CROSS-TYPE PLAN -- NO DENTAL SERVICE		SAME AS PLAN B	SAME AS PLAN B	NOT COVERED	SAME AS PLAN B
D. GROUP HEALTH CARE PLAN -- PREPAID HEALTH MAINTENANCE ORGANIZATION		No charge -- if you use designated physicians and facilities	No charge -- if you use designated physicians and facilities	NOT COVERED	Use of facilities out of designated area may be only partially reimbursed No extended nursing care facility coverage

Plan B is the typical Blue Cross medical plan with dental coverage added. Plan C is the same Blue Cross plan without the dental coverage. Plan D is identified as an HMO but not specified as to which type. Given the publicity in the popular press about the Kaiser Permanent plans, the author must assume that the respondents were thinking of a closed-panel HMO rather than an independent practice association.

A basic premise was that any alternative offered would be offered for non-active duty beneficiaries only. No changes are foreseen in the way the MHSS delivers care to active duty personnel. Nor is any change foreseen in the MHSS in overseas areas, where often no alternative is available. In fact, in overseas areas several classes of beneficiaries, who would not otherwise be eligible, receive care in the MHSS. 69/ As a consequence, this study used only data from the families within the Continental U. S., 70/ eliminating 12% of the responses to the Cost and Value Study.

What follows in the Sample Selection and Data Collection sections not only borrows from the Cost and Value Study, but also relies on their description of what was done.

69/ For instance, civilian employees and their families, certain contractor personnel and their families, DOD teachers and their families are all eligible for care overseas but not stateside.

70/ DOD considers Alaska and Hawaii as overseas areas.

SAMPLE SELECTION

The survey sampling and stratification plan were designed to obtain information from each beneficiary population while ensuring that respondents were drawn from as wide a range as possible of geographic locations -- urban and rural settings, military health care service areas, etc.

The survey sampling design was a stratified clustered design involving eleven base hospitals and their surrounding catchment areas, and areas not within any military health care service area (i.e., "remote areas"). A "catchment area" refers to the approximately 40-mile circle around a military base or hospital.

The base hospitals in the survey were selected so that: (1) for each branch of service (i.e., Army, Air Force, Navy and Marines) a small, medium and large-sized hospital was selected, and (2) for each DOD region (with the exception of Region 6) [71/] at least one base hospital was selected. For purposes of this study a small hospital was defined as one with 115 operating beds or less in fiscal year 1976, a medium size hospital as one with between 116 and 270 operating beds, and a large hospital as one with 271 or more operating beds. It was felt that since regions of the country, service branch affiliation, and hospital size could have significant effects on beneficiary valuations of the military health care benefit, the sampling design should be balanced in relation to these three factors. In addition to selecting the catchment areas of one small, one medium, and one large-sized

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71/ Because of technical difficulties it was impossible to include a Region 6 base hospital catchment area in the study. However, a base hospital catchment area located relatively close to Region 6 (i.e., the Army hospital in Fort Leavenworth, Kansas) was included in the sample.

hospital for each of the service branches for inclusion in the study, the catchment areas of one Marine hospital and one Air Force freestanding clinic were also selected.

Table 2.2 presents information on the eleven selected base hospitals.

TABLE 2-2

DESCRIPTIVE DATA ON THE ELEVEN SELECTED BASE HOSPITALS

SELECTED CATCHMENT AREAS	FACILITY SERVICE BRANCH AFFILIATION	NO. OF OPERATING BEDS IN FY 1976	HOSPITAL SIZE [72/]
Base Hospitals			
NRMC Portsmouth, VA	Navy	729	Large
NRMC Memphis, TN	Navy	142	Medium
NMRC Bremerton, WA	Navy	113	Small
NMRC Camp Pendleton, CA	Marine	424	Large
AFH Travis AFB, CA	Air Force	333	Large
AFH Andrews AFB, MD	Air Force	240	Medium
AFH Holloman AFB, NM	Air Force	25	Small
AH Ft. Sam Houston, TX	Army	550	Large
AH Ft. Carson, CO	Army	174	Medium
AH Ft. Leavenworth, KS	Army	52	Small
Freestanding Clinic			
AFC Duluth International Airport, MN	Air Force	None	-

Within each catchment area, and within areas not included within any health care catchment area (i.e., "remote areas"), a sample of active duty personnel, retirees, survivors of active duty personnel, and survivors of retirees were drawn. Within each of these beneficiary populations a random sample was drawn. Branch of service of military sponsor was not explicitly used as a stratification variable for sampling purposes, for it was assumed that the base hospital selection

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72/ Small hospitals had 115 or less operating beds in Fiscal Year 1976, medium size hospitals had between 116 and 270 operating beds, while large hospitals had over 271 operating beds. Cost and Value Survey, p. 217.

procedure described above would guarantee that each branch of service would be adequately represented in the sample. It was also assumed that random sampling within beneficiary populations would ensure that minorities and women, as well as officers and enlisted men, would be present in the sample (in adequate numbers) in proportion to their representation in the beneficiary universe populations.

The basic unit for sampling purposes was the beneficiary family: that is, the military sponsor and all members of the household who are eligible for MHSS benefits. In the case of active duty personnel and retirees, the survey was addressed to the military sponsor. In the case of survivors, the survey was addressed to the spouse of the deceased military sponsor or to the guardian of children who were eligible for MHSS benefits. The questions in the survey referred both to the survey recipient and to his dependents, except in the case of surviving children where the guardian was not eligible for MHSS benefits.

The survey sample design called for a total of approximately 5,345 MHSS beneficiaries to receive the survey, with the total to be distributed as follows among the various beneficiary populations:

- 3,000 active duty personnel were to be sampled, with 250 beneficiaries to be samples from each of the 11 selected military hospital or clinic catchment areas, and 250 beneficiaries residing in remote areas to also be sampled.

- 1,625 retirees were to be sampled with 125 retirees to be sampled from each of the 11 selected military hospital or

clinic catchment areas, and 250 retirees residing in remote areas to also be sampled.

- 320 retiree survivors were to be sampled, divided equally between survivors residing in remote areas and survivors residing in the 11 military hospitals or clinic catchment areas. 73/

- 400 active duty survivors were to be sampled, divided equally between survivors residing in remote areas and survivors residing in the 11 military hospitals or clinic catchment areas. 74/

The survey was distributed to the selected beneficiaries during the early part of the Summer of 1978 in government franked envelopes, along with an introductory cover letter from the Office of the Assistant Secretary of Defense for Health Affairs explaining the purpose of the survey and urging the cooperation of the beneficiary (see Appendix A). Approximately three weeks following the mailing of the survey a follow-up letter was sent to the beneficiaries who had not yet responded emphasizing the importance of their responding to the survey and requesting that they mail back the completed survey as soon as possible (see Appendix B). Other follow-up measures included the mailing of another copy of the survey along with the cover letter described above, with an additional overprint (see Appendix C) to:

- All survivors of active duty personnel who had not responded to either the original mailing or to the follow-up letter.

73/ Sampling within these 11 catchment areas was random with no specific allocation of the sample to given catchment areas.

74/ Ibid.

- A sample of active duty personnel residing in the Memphis, TN, Travis AFB, CA and Camp Pendleton, CA catchment areas who had not responded to either the original mailing or to the follow-up letter.

Approximately 175 survivors of active duty personnel and over 150 active duty personnel received this second survey mailing. These groups were chosen because of their low response rates relative to other beneficiary populations.

DATA COLLECTION

Survey Response

Overall the response to the military health care benefit survey was acceptable with over 63% of those who received the survey actually completing and returning the instrument. For each of the beneficiary categories (i.e., active duty personnel, retirees, survivors of active duty personnel, and survivors of retirees) an adjusted response rate was computed.

The adjusted response rate takes into account such factors as bad addresses, discharge from the service, death or severe illness of the beneficiary, etc. For example, the adjusted response rate of active duty personnel is equal to the number of completed surveys returned by active duty personnel divided by the number of surveys mailed minus the number of surveys returned to sender because of a "bad address" multiplied by one hundred. The adjusted response rates for each of the beneficiary categories are presented in Table 2-3.

TABLE 2-3

ADJUSTED RESPONSE RATE BY BENEFICIARY CATEGORY

BENEFICIARY CATEGORY	ADJUSTED RESPONSE RATE
Active Duty	59.15%
Retirees	69.96
Survivors of Active Duty	53.61
Survivors of Retirees	79.74%

Survivors of retirees had the highest adjusted response rate of any beneficiary category with nearly 80% of the survivors who received the

survey completing and returning it. Retirees also have a very high adjusted response rate with nearly 70% of survey recipients completing the survey. The adjusted response rate for active duty personnel is 59%, while for survivors of active duty personnel it is approximately 54%. The relatively low adjusted response rate for survivors of active duty personnel may be partially a reflection of the inadequacy of the VA survivor lists used as a source for sampling. There apparently are some significant differences in rules of entitlement to VA and MHSS benefits; not all VA beneficiaries are eligible for MHSS benefits. In fact, approximately 8% of survivors of active duty personnel whose names had been drawn from VA lists wrote to the contractor stating that they are not eligible for MHSS benefits. This difference is due to different standards utilized by the VA and the MHSS in determining the dependency of parents on the deceased active duty member. Thus, the lower adjusted response rate for survivors of active duty personnel may not be indicative of disinterest in the subject matter of the survey -- at least not on the part of those who actually are MHSS beneficiaries.

The response rates were as high as they were because of the careful follow-up procedures which were undertaken in connection with this survey. Table 2-4 shows the impact of the follow-up letter which was sent to non-respondents and the second mailing of the survey by presenting adjusted response rates (broken down by beneficiary class) at three points in the administration of the survey: before follow-up letters were sent out, after follow-up letters were sent out but before the second mailing of the survey, and after the second mailing of the survey instrument. The survivors of retirees adjusted response rate showed the most dramatic increase, nearly increasing by two and one-half times as a result of both the follow-up

letter and a second survey mailing.

TABLE 2-4

ADJUSTED RESPONSE RATES [76]
ANALYZED BY WHEN COMPLETED
SURVEY WAS RECEIVED BY THE
CONTRACTOR

TIME AT WHICH COMPLETED SURVEY WAS RECEIVED	BENEFICIARY CATEGORY			
	ACTIVE DUTY	RETIREE	SURVIVORS OF ACTIVE DUTY	SURVIVORS OF RETIREES
Before Follow-up Letter	37.70	44.03	22.22	43.13
After Follow-up Letter but before Second Mailing of the Survey Instrument	19.35	25.63	23.61	38.89
After Second Mailing of the Survey Instrument	0.80	-	0.81	-

For active duty personnel the response rate was analyzed by branch of service of military sponsor and by rank (i.e., officers versus enlisted personnel). In order to ensure that the sample is relatively representative of the active duty beneficiary population, a set of stratification weights was developed which took account of the differences in response rates and in the number of servicemen sampled from each branch of the service. [75]

75/ Cost and Value Study, Appendix D.7.

76/ Adjusted response rate is defined as the number of completed surveys received divided by the number of surveys mailed minus the number of surveys with bad addresses minus the number of survey recipients who are severely ill or deceased multiplied by 100.

The study also found a significant difference in response rates between officers and enlisted men (pay grades E-1 to W-4). Officers have nearly a 20% higher adjusted response rate than enlisted men (74.00 versus 55.86). Although officers represent approximately 13.4% of all active duty personnel [77/] they constitute 20.7% of the sample because of this response difference.

In order to assess the extent of non-response bias and to analyze the reasons why beneficiaries failed to respond to the survey, a small sample of active duty non-respondents (approximately 1.6% of active duty non-respondents) and of retiree and survivor non-respondents (approximately 2% of retiree and survivor non-respondents) were contacted by telephone. Information was collected on their sex, age and number of dependents, education, marital status, and health care service useage. They were also asked -- Question 37 of the survey: "If all health care benefits were eliminated for dependents, retirees and survivors, how much additional compensation would the government have to provide you per year to keep you as well off as you are now."

Table 2-5 summarizes the efforts to contact active duty non-respondents. The study attempted to reach a total of 81 active duty non-respondents. Approximately one-third of the non-respondents had been transferred from the military base to which the survey(s) and follow-up letter had been mailed. An additional 10% could not be located because the "base locator" and/or personnel office had no information about them at all. Approximately 4% of the non-respondents may have never received the survey. We were unable to find telephone numbers for approximately 15% of the retirees and survivors. We do not know to what

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77/ Selected Manpower Statistics, p. 39.

extent this was caused by their having moved residences or died, or was caused by their having unlisted telephone numbers.

TABLE 2-5

TELEPHONE FOLLOW-UP OF ACTIVE DUTY NON-RESPONDENTS

STATUS OF NON-RESPONDENT	BRANCH OF SERVICE				
	ARMY	NAVY	AIR FORCE	MARINES	TOTAL
Number of Non-respondents who had been Transferred	-	18	2	2	26 (32.1%)
Number of Non-respondents who had been Discharged	3	-	-	-	3 (3.7%)
Number of Non-respondents for whom we had an Incorrect Address	4	1	2	1	8 (9.9%)
Number of Non-respondents we were Unable to Contact by Telephone although their Address was Correct	6	2	11	4	23 (28.4%)
Number of Non-respondents we Successfully Contacted by Telephone	5	6	10	-	21 (25.9%)
Local Number of Non-respondents we Attempted to Contact	22	27	25	7	81 (100.0%)

Survey Analysis

The analysis weighted beneficiary responses by three major stratification variables: (1) beneficiary category (i.e., active duty personnel and their dependents, retirees and their dependents, survivors of retirees and their dependents, and survivors of active duty personnel and their dependents), (2) military medical facility coverage (i.e., whether the beneficiary family is in a remote or in a catchment area, and if it is in a catchment area, whether it is served by a military clinic, small military hospital, medium-sized hospital, or by a large hospital), and (3) service branch affiliation of

military sponsor (i.e., in what branch of service the active duty member or retiree, or the deceased active duty member or retiree serves or served). For example, the responses of Navy active duty personnel stationed in the NRMC Bremerton, Washington base hospital catchment area were weighted by the number of naval active duty personnel serviced by small hospitals, while the responses of the Air Force retirees residing in the same catchment area were weighted by the number of Air Force retirees receiving medical care from small hospitals.

The details of the weighting scheme, including the methodology for calculating the weights and the actual weights themselves, are available in the Cost and Value Study. [78] The application of these weights makes the sample more precisely representative of the overall MTSS beneficiary population and of the individual beneficiary categories.

In Table 2-6 a summary of major population characteristics is presented. Since the sample was designed to be representative of the types and sizes of DOD establishments and was essentially random within establishment, the results should be representative of the entire population of military health care beneficiaries (within stratified groups and when weighted for stratification).

The tabulated results include about 1,500 active duty personnel, 1,100 retirees and 450 survivors. The sample, when analyzed from the point-of-view of service, included about 27% Navy, 27% Army, 35% Air Force, 9% Marines and 2% were more than one branch. The Air Force is obviously

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[78] Cost and Value Study, Appendix D.7.

TABLE 2-6

POPULATION CHARACTERISTICS OF THE WEIGHTED SAMPLE (NUMBER OF RESPONSES) [79]

	A.D.	Ret.	Surv. A.D.	Surv.-Ret.
Beneficiary Category	1157 (45.9)	1219 (48.3)	77 (3.1)	70 (2.8)

	Army	Navy	Air Force	Marines	Multiple Branches
Service	887 (35.2)	596 (23.6)	811 (32.2)	170 (6.7)	58 (2.3)

	E1-E3	E4-E6	E7-E9	W1-W4	O1-O3	O4-O6	O7-O10
Rank	129 (5.1)	918 (36.9)	659 (26.5)	67 (2.7)	161 (6.5)	539 (21.8)	13 (0.5)

	Male	Female
Gender	2328 (92.3)	189 (7.5)

	Never Married	Married Both Mil.	Married Military	Divorced	Separated	Widowed
Marital Status	88 (3.5)	37 (1.5)	2003 (79.7)	159 (6.3)	67 (2.7)	160 (6.4)

	0	1	2	3	4	5 or More
Number of Dependents	28 (11.2)	727 (29.0)	495 (19.7)	557 (22.2)	287 (11.4)	160 (6.3)

	Less Than HS Graduate	High School Graduate	Some College	College Graduate	More Than College
Education	176 (7.0)	806 (32.1)	823 (32.8)	252 (10.3)	447 (17.8)

	White	Black	Hispanic	Amer. Ind.	Islander (Other)
Ethnic Background	2111 (85.9)	230 (9.3)	69 (2.8)	11 (0.5)	38 (1.5)

	Protestant	Catholic	Jewish	Mormon	Christian Scientist	Other	No Preference
Religion	1862 (62.8)	692 (23.3)	26 (.9)	36 (1.2)	20 (.7)	55 (1.8)	275 (9.3)

	0-9,999	10-19,999	20-29,999	30-39,999	40 or More
Income	622 (26.0)	921 (38.5)	551 (23.0)	196 (8.2)	103 (4.3)

[79] Numbers in parentheses are percentage of sample respondents.

over-represented, both because of response rate and the sampling procedure; however, this was corrected in the weighted results. Females account for 17% of the sample and minorities 14%.

The data presented in the preceding section, Survey Response, describes the sampling procedure and response for the survey. The survey instrument, however, when describing the alternatives states that: "If you are on active duty you should also assume that you would continue to receive care only through uniformed services facilities -- the changes in benefits discussed below would apply only to your dependents." 80/ Specifically, single active duty personnel would not have a choice, they would continue to receive care in military facilities. Because of this and because any response to alternatives that would have no effect would be questionable, these responses (506) were not included in the analysis. Those responses are not included in Tables 2-6 through 2-10 but are included in the succeeding section of Sample Representativeness to provide a better basis for comparison.

In Tables 2-7 and 2-8 detailed data on medical visits and facility usage are presented. While the Military Health Care System collects certain data on usage which were utilized in this report, 81/ no data is available at this level of detail for all of the beneficiary groups. It should be noted here that this is self-reported data and thus may not be more accurate than any other system of recording. 82/

80/ See the Survey Instrument in Appendix A.

81/ DOD Health Services Demand Model.

82/ There are obvious differences of opinion on the most appropriate data collection method for determining this data.

TABLE 2-7

ANALYSIS OF CHARACTERISTICS BY BENEFICIARY CLASS (MEANS)

	Active Duty	Retirees	Surv. A.D.	Surv. Ret.	All
Years Served	11.5	21.2	9.3	23.2	16.4
Age of Respondent	31.9	52.7	59.1	59.4	43.5
Number of Dependents	2.6	1.9	.8	.4	2.1
Oldest Dependent Age	29.8	48.3	27.2	24.0	38.6
Second Oldest Dependent Age	9.5	18.0	14.9	15.7	12.8
Third Oldest Dependent Age	8.2	14.1	12.6	12.4	10.4
Fourth Oldest Dependent Age	7.3	11.3	10.9	11.7	8.9

TABLE 2-8

ANALYSIS OF RESOURCES BY BENEFICIARY CLASS (MEAN VALUES)

	Active Duty	Retirees	Surv. A.D.	Surv. Ret.	All
Travel Time Min. - Resp.	17.2	29.4	25.4	31.4	23.7
Travel Time Min. - Dep.	19.6	27.1	23.7	26.5	23.4
Appointment Time Days - Resp.	7.3	11.0	10.9	12.6	9.3
Appointment Time Days - Dep.	13.1	11.6	11.3	30.9	12.5
Waiting Time Min. - Resp.	31.3	35.5	41.3	40.6	33.8
Waiting Time Min. - Dep.	44.1	38.2	71.9	64.1	41.7
Medical Costs for Year	$147	$344	$310	$288	$251

TABLE 2-9

ANALYSIS OF OUTPATIENT UTILIZATION BY BENEFICIARY CLASS (MEAN VALUES)

	Active Duty	Retirees	Surv. A.D.	Surv. Ret.
Respondents				
Visits/Month	0.899	0.945	1.332	1.064
% to MHSS	90.8	51.1	29.9	43.7
Dependents				
Visits/Month	1.563	1.251	.950	1.084
% Visits to MHSS	79.5	44.8	36.3	30.0

TABLE 2-10

ANALYSIS OF INPATIENT UTILIZATION BY BENEFICIARY CLASS (MEAN VALUES)

	Active Duty	Retirees	Surv. A.D.	Surv. Ret.
Respondents				
Days Hospitalization/Year	0.878	2.888	3.154	4.288
Percent in MHSS	96.0	38.2	9.0	49.3
Dependents				
Days Hospitalization/Year	2.235	3.073	.819	2.389
Percent in MHSS	71.3	36.5	0	32.8

The usage numbers shown are probably high compared to the general population and "costing" them out using average civilian prices would yield costs in excess of typical insurance plans or HMOs. These differences may be due to a number of factors, e.g., (1) a high standard of living and health consciousness, leading to greater use, (2) free access or (3) a bias in the responses by those who are users. All of these elements may be causes and interact with each other, but they are stated above in order of believed importance.

The 1978 Utilization Survey was conducted during the same time frame as the Cost and Value Survey to obtain a base of knowledge about the MHSS beneficiaries. This study will make extensive use of the results of the utilization survey because, often times, it is the only reference data available. The two surveys did have differing methodologies in measuring utilization. Specifically, the Utilization Survey used a 12-month recall while this study used a 30-day period. Given that difference the utilization reported was not at all similar. However, when the respondents reported where they had received care, the two surveys reported similar data.

TABLE 2-11

DISTRIBUTION OF UTILIZATION - ACTIVE DUTY AND RETIRED CATEGORIES

	UTILIZATION SURVEY [83]	SAMPLE
Percent of Total Outpatient Visits/Month to a MHSS Facility		
Active Duty Personnel	93.9	90.8
Active Duty Dependents	78.2	79.5
Retirees	52.6	51.1
Retired Dependents	47.4	44.8
Percent of Total Days Hospitalized/Year in an MHSS Facility		
Active Duty Personnel	96.0	93.5
Active Duty Dependents	71.2	66.1
Retirees	55.3	38.2
Retired Dependents	40.1	36.4

Sample Representativeness

As a measure of the representativeness of the sample, selected demographic variables from the sample for active duty personnel were compared with those known for the active duty population. These population parameters were drawn from Selected Manpower Statistics. The selection of particular parameters examined was limited to what was available in that source. The statistics compared were gender, age, rank, educational level and branch of service.

Gender - The Selected Manpower Statistics indicate that 6.5% of the active duty personnel are females. [84] Of the active duty respondents in the sample 8.3% were females.

83/ Data is from the Utilization Survey Files.

84/ Selected Manpower Statistics, p. 64.

Age - This parameter indicates that there was a sample bias in response rates. The sample over-represents those thirty and above and under-represents those young men and women beginning their service careers (age 17-24). This over-representation is the result of low rates of response among the younger personnel and two other factors.

One is the survey procedure used to randomly select the personnel who were mailed a questionnaire. The names and addresses were drawn from tapes in the Defense Manpower Data Center (DMDC). These tapes are in turn generated from input from the Services personnel centers -- meaning the tapes are somewhat dated by the time they reach DMDC. The information aged even more by the time the survey instruments were mailed out and received. This is particularly important when examining the response rates of the lowest ranking enlisted/officer personnel who are generally in training and move to several different locations during their first year in the service. A typical experience would be two months basic training (three months officer candidate school), three to four months technical schooling, one month leave and then on to the first permanent assignment. All of that mobility presents ample opportunity for a self-administered, mailed questionnaire to miss the individual respondent. Even if it does reach the intended respondent, that mobility also increases the chance that the individual will misplace the instrument before it is completed and returned.

The second factor is also related to the sample design. The eleven facilities were selected to maximize the variety of settings in the MHSS. Some groups were intentionally over-represented, such as the remote and the Air Force freestanding clinic areas, so that beneficiaries residing in

these areas would be sampled. The original sample facilities were not intended to be representative of the population as a whole. Retroactively, weighting was applied to make the sample data more representative of the MHSS United States population as a whole. The weighting corrected for beneficiary category, type of military facility and service branch of sponsor, but not for rank.

TABLE 2-12

DISTRIBUTION OF AGE - ACTIVE DUTY CATEGORY (PERCENT OF RESPONDENTS)

AGE	SELECTED MANPOWER STATISTICS 85/	SAMPLE
17-19	14.7	6.1
20-24	37.6	30.1
25-29	18.5	19.5
30-34	12.5	16.5
35-39	10.0	14.6
40-44	4.5	9.0
45-49	1.6	3.1
50 and Over	0.4	0.9

The other selected demographic data also reflects the under-representation of the lower-ranking active duty.

Rank - Since the military is a two-tiered pyramid there are two entry levels (E-1 and O-1) and the under-representation is reflected at both of those levels. Since rank is to some (a large) extent a function of time in service and age, the under-representation of age is illustrated in the lowest (E1, E2, O1 and O2) ranks in the two hierarchies of the pyramid.

85/ Ibid, p. 48. This contains some survey data and is for the worldwide forces not just those in the forty-eight Continental United States as is the sample.

TABLE 2-13

DISTRIBUTION OF RANK
ACTIVE DUTY CATEGORY

(PERCENT OF RESPONDENTS)

RANK 86/	SELECTED MANPOWER STATISTICS 87/	SAMPLE
07-010	-	0.4
06	0.6	1.7
05	1.5	4.4
04	2.3	6.5
03	4.4	6.5
02	1.6	1.1
01	1.6	0.4
W1-W4	0.8	0.8
E9	0.6	1.2
E8	1.6	2.6
E7	5.7	9.7
E6	9.7	12.1
E5	15.7	18.5
E4	19.6	16.2
E3	17.0	14.7
E2	8.0	3.0
E1	7.7	0.2

Educational Level - The under-representation of younger personnel is also reflected in the educational level comparison.

TABLE 2-14

DISTRIBUTION OF EDUCATIONAL LEVEL
ACTIVE DUTY CATEGORY (PERCENT OF RESPONDENTS)

LEVEL OF EDUCATION	SELECTED MANPOWER STATISTICS 88/	SAMPLE
College Graduate or More	14.0	25.5
Some College	14.5	30.9
High School Graduate	60.1	41.0
Some High School or Less	0.6	0

86/ See Appendices D and E for an explanation of rank.

87/ Selected Manpower Statistics, p. 45. This contains worldwide data, not just the forty-eight Continental United States as is the sample.

88/ Ibid., p. 60. This data includes worldwide data, not just for the forty-eight Continental United States that are included in the sample.

The over-represented personnel have had the time and/or opportunity and incentive (promotions) to continue their education, while the younger personnel have enlisted right after completing high school.

Branch of Service - The sample was not representative of the known population and was weighted to correct for this known bias.

TABLE 2-15

DISTRIBUTION OF BRANCH OF SERVICE
ACTIVE DUTY CATEGORY
(PERCENT OF RESPONDENTS)

BRANCH OF SERVICE	SELECTED MANPOWER STATISTICS 39/	SAMPLE
Army	37.4	33.3
Navy	25.7	24.5
Marines	9.3	11.9
Air Force	27.6	29.6
Multiple Branches		0.7

This is a function of how representative the facilities sampled are of the known population since branch of service was one of the factors weighted. The sampling procedure was random selection within a stratified sample. Weighting has corrected for differing response rates within each cell, but is not designed to correct the universe. One of the criteria in selecting the status to insure that the full range of practice settings within the MHSS was included. An Air Force freestanding clinic and the Marines were specifically included for this purpose. What resulted was inclusive of the whole range of military medicine in the United States but not representative.

89/ Ibid., p. 35.

Next the accuracy of the variable measurements obtained for the retired population was examined. Since no population parameters are available, the sample data was compared to that from another survey completed at about the same time, with the same target population (the 1979 Utilization Survey).

As the following tables illustrate, the sample data closely resembles that from the comparison survey. The close match argues well for both the strength of each sample and for the probable population parameters.

TABLE 2-16

DISTRIBUTION BY GENDER
RETIRED CATEGORY (PERCENT OF RESPONDENTS)

GENDER	UTILIZATION 90/ SURVEY	SAMPLE
Male	97.2	97.6
Female	2.8	2.4

Ethnic Background

TABLE 2-17

DISTRIBUTION BY ETHNIC BACKGROUND
RETIRED CATEGORY (PERCENT OF RESPONDENTS)

ETHNIC BACKGROUND	UTILIZATION 91/ SURVEY	SAMPLE
White	89.4	89.9
Black	6.3	8.0
Hispanic	1.4	1.4
Other	2.3	1.0

90/ Danny Cook, Demographic Data of Military Beneficiaries, p. 10.

91/ Ibid., p. 13.

TABLE 2-18

DISTRIBUTION BY AGE
RETIRED CATEGORY (PERCENT OF RESPONDENTS)

AGE	UTILIZATION SURVEY [92]	SAMPLE
0-5	0	0
6-17	0	0
18-34 [93]	2.3	3.9
35-54	53.9	53.6
55-64	32.6	31.3
65-	11.4	12.3

TABLE 2-19

DISTRIBUTION BY RANK
RETIRED CATEGORY (PERCENT OF RESPONDENTS)

RANK [94]	UTILIZATION SURVEY [95]	SAMPLE
07-010	0.4	0.4
04-06	25.1	25.7
01-03 [96]	4.2	3.7
W1-W4	5.1	4.1
E7-E9	37.2	35.6
E4-E6	24.1	27.8
E1-E3 [97]		

92/ Ibid., p. 10.

93/ Ibid.

94/ See Appendices D and E for explanation of ranks.

95/ Demographic Data, p. 15.

96/ These are personnel who were medically retired with a disability pension with less than 20 years service.

97/ Ibid.

TABLE 2-20

DISTRIBUTION BY EDUCATIONAL LEVEL
RETIRED CATEGORY

(PERCENT OF RESPONDENTS)

EDUCATIONAL LEVEL	UTILIZATION SURVEY [98/]	SAMPLE
Some or Complete College Graduate	13.1	14.1
College Graduate	8.9	12.1
Some College	33.1	34.2
High School Graduate	37.9	30.8
Non-High School Graduate	6.8	9.2

TABLE 2-21

DISTRIBUTION BY MARITAL STATUS
RETIRED CATEGORY

(PERCENT OF RESPONDENTS)

MARITAL STATUS	UTILIZATION SURVEY [99/]	SAMPLE
Military Spouse	4.3	2.9
Civilian Spouse	85.0	81.9
Never Married	3.3	6.9
Divorced	5.3	6.9
Widowed	2.7	2.7

TABLE 2-22

DISTRIBUTION BY FAMILY INCOME
RETIRED CATEGORY

(PERCENT OF RESPONDENTS)

ANNUAL INCOME	UTILIZATION SURVEY [100/]	SAMPLE
$0-10,000	10.8	15.2
10,000-20,000	40.3	36.9
20,000-30,000	30.8	29.7
30,000-40,000	11.3	12.6
40,000-50,000	3.3	4.4
50,000 and More	4.0	4.3

98/ Demographic Data, p. 12.

99/ Ibid, p. 11.

100/ Ibid, p. 14.

A similar but more limited comparison was made on data gathered on the survivors category of beneficiaries. There are no known parameters for the survivor population, not even as to their total number. The results from the Utilization Survey were again used as a basis for comparison as no other data is available. The comparison was complicated by the differing methodologies used in the two studies. The Utilization Survey has data available on each member of the respondent's family, while this study's data reflect the family data in aggregate only. Some manipulation of some of the sample characteristics was necessary to allow for their use in a comparison.

The tables that follow indicate that the two surveys reached similar samples of survivor beneficiary class. However, the match-up is not nearly as close as it is with the retirees. This unclear area reflects the lack of knowledge about this beneficiary class throughout the MHSS. No one is sure how many survivors are eligible for care in the MHSS, let alone who or where they are. The lists of names and addresses used in sampling for both surveys came from the Veterans Administration for the survivor category. The Veterans Administration uses a different definition of eligibility for care, so that some families sent questionnaires were not eligible for care in the MHSS. Sampling for the retiree and active duty populations is easier, since they receive checks regularly and hence have relatively current names and addresses available.

More definitive data on the characteristics of the survivor population must wait implementation of the Defense Enrollment Eligibility Reporting System on a worldwide basis during the next five years. Until that time the comparisons made in Tables 2-23 through 2-28 are the best data available.

TABLE 2-23

DISTRIBUTION BY RANK
SURVIVOR CATEGORY

(PERCENT OF SPONSORS)

RANK [101]	UTILIZATION SURVEY [102]	SAMPLE
07-010	2.6	0.8
04-06	25.4	26.4
01-03	7.4	8.5
W1-W4	5.1	3.1
E7-E9	35.0	17.0
E4-E6	23.0	31.0
E1-E3	1.6	13.2

TABLE 2-24

DISTRIBUTION BY EDUCATIONAL LEVEL
SURVIVOR CATEGORY

(PERCENT OF RESPONDENTS)

EDUCATIONAL LEVEL	UTILIZATION SURVEY [103]	SAMPLE
Some or Completed Graduate School	16.9	11.1
College Graduate	10.9	7.6
Some College	25.6	21.5
High School Graduate	34.1	29.2
Non-High School Graduate	12.2	30.6

101/ See Appendices D and E.

102/ Demographic Data, p. 14.

103/ Ibid, p. 29.

TABLE 2-25

DISTRIBUTION BY GENDER
SURVIVOR CATEGORY

(PERCENT OF RESPONDENTS)

GENDER	UTILIZATION SURVEY [104]	SAMPLE
Male	5.8	13.0
Female	94.2	87.0

TABLE 2-26

DISTRIBUTION BY ETHNIC BACKGROUND
SURVIVOR CATEGORY

(PERCENT OF RESPONDENTS)

RACE	UTILIZATION SURVEY [105]	SAMPLE
White	90.7	38.9
Black	4.5	6.3
Hispanic	1.4	2.1
Other	3.4	2.8

TABLE 2-27

DISTRIBUTION BY AGE
SURVIVOR CATEGORY

(PERCENT OF SAMPLE)

AGE	UTILIZATION SURVEY [106]	SAMPLE
0-5	1.4	1.0
6-17	23.9	20.01
18-34	24.2	13.38
35-54	19.4	18.66
55-64	19.5	19.62
65-	21.5	26.79

104/ These data were extracted from the Utilization Survey data base.

105/ Ibid.

106/ Demographic Data, p. 27.

TABLE 2-28

DISTRIBUTION BY FAMILY INCOME
SURVIVOR CATEGORY

(PERCENT OF RESPONDENTS' FAMILIES)

ANNUAL INCOME	UTILIZATION SURVEY [107]	SAMPLE
$0-$10,000	44.4	58.3
10,000-20,000	41.0	30.5
20,000-30,000	11.5	8.4
30,000-40,000	2.5	1.5
40,000-50,000	0.3	0.8
50,000-And More	0.3	0

[illegible]

ANALYTICAL TECHNIQUES

The responses to all survey questions were recorded on coding sheets and the data was keypunched with 100% verification. The data cards were edited by a FORTRAN computer program which: (1) checked for logical consistencies between answers to various questions, (2) checked for impermissible punches for nominal data, (3) checked for extreme values for real variables, (4) computed total figures for health care service usage, and (5) transferred the edited data to computer tapes.

Automation of the data was accomplished through utilization of computer support services provided by the Air Force Data Services Center at the Pentagon. Primary computer support was provided on the IBM 360 system with communication accomplished through use of a time sharing, remote entry system.

The software package used to apply inferential and descriptive statistical treatment of the data was the Statistical Package for the Social Sciences (SPSS). [108] All procedures used in the five steps of the analysis were contained within the SPSS package. A brief discussion of each follows:

Chi-Square Test of Association. The chi-square statistic is a test of statistical significance. It is designed to provide grounds for inference as to whether or not there exists a relationship between two variables. Given the row and column totals presented, expected frequencies in each cell are derived under the assumption that no relationship exists. The expected totals and actual total in each cell are then contrasted against each other. Little

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108/ Norman H. Nie, et al. Statistical Package for the Social Sciences.

or no difference in the comparison leads to the inference that there is no relationship between those variables. There will be some differences due simply to chance, but a large chi-square value (a large variance from the expected values) would infer that there might be a relationship between the variables. The probability of obtaining a chi-square as large or larger than the one calculated from the sample (given the assumption of no relationship) is the result desired. However, it, in turn, is also influenced by the size (number of rows and columns) of the table (degree of freedom). By itself, the chi-square statistic does not measure the degree of association between two variables, only whether or not an association exists. [109]

Lambda. Lambda is a measure of the degree of association between the variables. The improvement in quality of prediction of the value of one variable, if the value of the other is known and is what Lambda measures. It does this by selecting the value of the model case; thereby eliminating the maximum number of wrong guesses. The statistic is based on the sum of the maximum values of the cell frequencies. Asymmetrical Lambda assumes an independent and a dependent variable, while Lambda assumes both are an independent. Symmetrical Lambda is an average of the asymmetrical measures and issued when prediction is to be made in both directions. [110]

TAU B - This statistic also measures the degree of association between two variables. The measure is derived by considering every pair of cases in the table. Each pair is checked to see if their relative ordering on the first variable is the same (concordant) as their relative ordering on the second variable or if the ordering is reversed (disconcordant). [111]

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[109] Ibid., pp. 223-4.

[110] Ibid., pp. 225-6.

[111] Ibid., pp. 227-8.

Pearson's R - This is a measure of association between two variables. It indicates both the degree of association and direction as it varies from 0 to $\pm$ 1.0. The stronger the degree of association, the higher the absolute value of R will be. The sign of R indicates the direction of the relationship. This is, if R is positive, the value of one variable will increase or decrease with the other variable. On the other hand, if R is negative, the values of the two variables will move in opposite directions. [112]

Multiple Regression - Multiple regression is a multi-variate technique which explores the linear relationship (if any) between the dependent and independent variables. The procedure devises that function which minimizes the sum of the distances each variable is from the function. The coefficients of the independent variables in that equation provide a measure of both the direction and strength of the relationship. Standardized coefficients (standard deviations of all variables equal to one) are used to allow comparisons among variables measured in different units. [113]

Discriminate Analysis - Discriminate analysis is designed to weight and combine variables in a linear function so as to make groups as statistically distinct as possible. This study was designed to "discriminate" between those who preferred an alternative and those who did not. The statistical separation was to be based on the grouping of cases based on the independent variables gathered in the survey instrument. Each variable was selected (or not selected) based on its contribution to separating the cases into preference

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112/ Ibid., pp. 279-281.

113/ Ibid., pp. 320-325.

versus no preference. The variables that were selected are then combined in a linear equation whose coefficients are similar to those in a regression equation. That is, those coefficients describe both the direction and strength of the contribution. [114]

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[114] Ibid., pp. 434-441.

LIMITATIONS

Three major limitations hampered the study: the use of hypothetical rather than actual alternatives, the use of a survey instrument designed for another purpose, the absence of detailed responses to some of the variables. A more detailed discussion of each follows.

First, the study used hypothetical alternatives rather than examining the actual enrollment choices of a given population. This raised three difficulties. The respondents did not have much detail available on the specifics of each alternative. Since the alternatives offered were hypothetical, there were, in fact, no other details to be had. Since the alternatives were only presented in a self-administered survey instrument, there was no source for the respondent to turn to for clarification and/or further details. If these were to be offered in a normal work setting there would be various handouts available to explain details and a point-of-contact in the union hall or personnel department or both to provide explanations and to answer inquiries.

More importantly, however, the use of hypothetical alternatives leads to the difficulty of the difference between what the sample population says it might do as opposed to what it actually would do when presented with the concrete choice. [115] No attempt was made to assess the actual dimensions of this gap. It is significant in this study since sizeable proportions of the beneficiary population may not have had substantial experience with other systems, especially HMOs, and may not be willing to change to an

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115/ Irwin Deutscher, What We Say/What We Do.

unfamiliar alternative when given the actual choice. Showing a preference for an alternative in an anonymous questionnaire is not as threatening as an actual change and may even be seen as a way of expressing dissatisfaction with the present system without a threat of reprisal. In any event, the size of the gap between what people say they might do and what they actually will do went unmeasured in this effort.

The second limitation is that of using a survey instrument that was designed for another purpose. Schuman and Presser's recent work [116] pointed out the difficulties in response to the same question worded in a differing manner. What effect different wording of the alternative questions might have had is unknown. Likewise, the responses might have been different, if the questions had been presented as a separate section of another survey instrument or in a survey instrument of their own.

And, thirdly, the survey questionnaire did not contain data elements to define some of the variables as precisely as would have been desired. A different measure of geographic location would have allowed an inspection of varying preferences along with the differing utilization patterns and market penetrations of HMOs that exist in different regions of the United States. Similarly, a rural/urban variable would be appropriate. Given the importance of the presence of a usual source of care in previous studies, [117] a specific question about a primary source of care would have been preferable

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116/ Howard Schuman and Stanley Presser, "The Open and Closed Question," American Sociological Review, October 1979.

117/ Berki, et al., "Enrollment Choice in a Multi-HMO Setting," and "Enrollment Choices in Different Types of HMOs," Scitovsky, McCall and Benham, "Choice Between Two Prepaid Plans." Roghmann, et al., "Who Chooses Prepaid Medical Care"?

in this instrument. Instead, the variable had to be inferred. No questions were asked about other experiences with alternative delivery systems. This would be particularly important in analyzing a stated preference for an HMO. And, similarly, responses to only one aspect of satisfaction were gathered. There are several others (such as courtesy of the staff and the provider) that one expects would influence a preference that were not measured. Further studies should note this and include additional queries in the area of satisfaction.

CHAPTER III

INTRODUCTION

After summarizing the descriptive statistics that characterized the sample, analysis of the data was performed using a five-step methodology. The purpose of the analysis was to derive a model that would predict the expressed preference for an alternative health service benefit. The Statistical Package for the Social Sciences was used to perform the analyses.

First, each variable postulated in the hypotheses was tested to determine if there was any association with the dependent variable -- preference for one or both of the alternatives. Second, each independent variable that was associated with the dependent variable was then compared to all other associated independent variables to check for, and to eliminate, any harmful colinearity. Next, those associated variables which did not exhibit harmful colinearity were tested with the sub-function DISCRIMINANT to identify those which were predictive of preference for an alternative. Fourthly, those variables that proved predictive were again tested with the DISCRIMINANT subfunction to obtain a parsimonious grouping of predictive variables. Additionally, those variables that emerged from Step 4 were analyzed using multiple regression techniques as a check against the results of the other four steps. And, fifth, as a further check, a third discriminant function was derived, using all independent variables that did not display harmful colinearity.

After discussion of the operational definitions of each variable, the results of each step of the analysis are detailed in separate sections of this chapter.

OPERATIONAL DEFINITION OF VARIABLES

The exact wording of each question is available in Appendix A which contains a copy of the questionnaire that was utilized. Therefore, the questions will not be repeated in the discussion that follows. The number in parenthesis following possible responses are the percentages of responses.

Social Background

Ethnic Background - This variable was the response to Question 11. Possible answers were White, Black, Hispanic, American Indian, or Alaskan Native, Asian or Pacific Islander. Because of the relatively small numbers in the latter three categories, the data were grouped to White (85.9), Black (9.3), and Other (4.8).

For the Discriminant and Regression analyses in Steps 3, 4 and 5 dummy variables were developed for each of the possible responses to this variable. That is, those dummy variables were White and Black; Other was the residual. References to dummy variables and residuals in the following paragraphs are for these steps of the analysis.

Religious Preference - The responses to Question 12 were used to measure this variable. Possible answers were Protestant, Catholic, Jewish, Mormon, Christian Scientist, Other, and None/No Preference. As in the case of ethnic background, small numbers of responses to several categories forced the grouping of data. The following groups resulted: Protestant (65.5), Catholic (22.0), Other (4.7), and No Preference (7.8). The dummy variables were Protestant, Catholic and Other; the residual was No Preference.

Level of Education - The question (10) concerning the level of education attained asked for a response from among grouped answers, rather than for the

number of years of schooling. The choices presented were: some elementary school, elementary school graduate, some high school, high school graduate or equivalent, some college, college graduate, some professional or graduate school, or professional or graduate school, or professional or graduate school degree. To simplify statistical analysis, the following groupings were used: some high school or less (7.0), high school graduate (32.1), some college (32.8), college graduate (10.3), and some graduate school or more (17.8).

Length of Service - Although this question (3) collected raw (not grouped) data, it presented some difficulty during analysis. For Steps 3, 4, and 5 no difficulty was presented, since these are multiple regressions techniques which require ungrouped data. However, since the range was 45 years, the data were grouped for the first two steps which were tests of association. And it was this grouping that created some ambiguity. Each of the Services differ in the length of its enlistment contracts. The Army and Marines have contracts of 2, 3, and 4 years; the Navy, 3 years; and the Air Force, 4 years. Any grouping then becomes arbitrary, as an example, at the 4-year point the soldier may have already made the initial decision, while the airman will be right at that point. The obligations for officers are more uniform across the services, but differ greatly by the amount of training the individual has received -- a pilot being obligated for up to 6 years, a physician for only 2 years, most others 3 years, and so on. With those points in mind these groups were used: 0-4 years, the first obligation (13.3); 5-10 years, the second decision point (15.7); 11-19 years, career but not eligible to retire (18.2); 20 years or more, retired or eligible to (52.9).

Branch of Service - The only complication in this measure (Question 2) was that category of individuals who served in more than one branch of service during their careers. This is possible (and maybe desirable, especially if one wants a different training), since all previous time in the service counts toward pay, retirement, and to some extent, rank, if one were to reenlist in a second service after discharge from the first. The percentages were: Army (35.2), Navy (23.6), Air Force (32.2), Marines (6.7), and more-than-one-branch (2.3). The dummy variables were Army, Navy, Marines and Air Force; the residual was more-than-one-service.

Beneficiary Category - The explanation of this category is in the Introduction in Chapter I. The answers to this question (1) were: Active Duty (45.9), Retired (48.3), Survivors of Active Duty Personnel (3.1), and Survivors of Retired Personnel (2.8). The dummy variables were Active Duty, Retiree and Survivors of Active Duty; the residual was survivors of Retired personnel.

Age of Respondent - The values of this variable were obtained from Question 5. The responses were grouped for Steps 1 and 2 in the following manner: 0-16 years, Survivors (0-2); 17-44 years, Adults (54.0); 45-64 years, Older Adults (37.8); 65 years and more, Retired 8.1). Here, retired means something different than just retired from active duty. It is assumed that the respondent has retired from any full-time job. He/she would also be old enough so that, perhaps, some more medical care is or will be needed than was true before that age. An anomoly of the MHSS is that the retiree loses his/her eligibility for CHAMPUS at this point, the assumption is that

he she would then be covered by Medicare. He or she may continue to receive care in military facilities; however, if space is available. At age 17 an individual may join the military service, if he or she stays in until he/she is eligible for retirement (currently 20 years) than they may "retire" at age 37. More often the military members retire from the service between the ages of 38 to 45. [118] That 20-year career is the reason the middle two groups were divided at the point they were. The very small 0-16 year group are, probably, surviving children of a military member where the spouse has also died. Although the small numbers in this group presented a problem, they could not be logically included with any other group.

Marital Status - Question 7 was used to obtain the value for this variable. The categories presented in the questionnaire were: never married (3.5), married (both military) (1.5), married (one military) (79.7), divorced (6.3), separated (2.7) and widowed (6.4). The dummy variables were Never Married, Two Military, One Military, Divorced, and Separated. Widowed was the residual.

Family Cycle - The stage in the family cycle represented by the respondent's family was derived from Question 9 and was defined to be the age of the youngest dependent. In an attempt to separate those families that had dependent parents, the age of the oldest dependent was also examined, as well as a combination of both the youngest and oldest family members. Ever, because of the high degree of association between the ages [illegible]

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118 Retired members serve an average of 22.[illegible] years. [illegible] ally retired average 1[illegible] years of service, and [illegible] voluntarily average 2[illegible] years. These [illegible] Times, 25 February 1980.

AD-A092 544 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH F/G 6/5
EVALUATING THE IMPACT OF ALTERNATIVE FORMS OF THE MILITARY HEAL--ETC(U)
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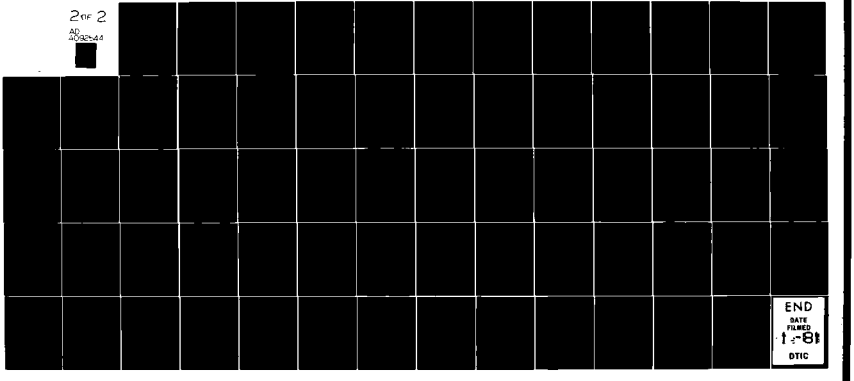

youngest and oldest family members (chi square 2576.504 with 8 degrees of freedom and a significance of 0.0000 and Kendall's TAU B of .64006 with a significance of 0.0000), the age of the youngest family member was selected as the definition of the variable. The data were grouped as: 0-10 years, pediatrics (36.9). 11-16 years, teens (15.7), 17-44 years, adults (20.9), 45-64 years older adults (20.7), and 65 years or more, retired from all jobs (5.8). The same rationale that called for the grouping of age of respondent applies to family cycle with the additional refinement of separating pediatrics from teens.

Geographic Location - The sampling strategy was to insure that all practice settings within the MHSS were sampled; hence, a wide geographic pattern of responses was available. The groupings that follow list not the facility itself, but rather the metropolitan center it is located in or near: Norfolk, VA and Washington, DC were the East coast (16.3); Duluth, MN, Kansas City, KS and Memphis, TN were the Midwest (13.1); Colorado Springs, CO, Alamogordo, NM and San Antonio, TX were the Old West (29.5); Seattle, WA, San Francisco, CA and Oceanside, CA were the West Coast (17.7); and all remote (i.e., do not live within 40 miles of a military facility), no matter where the location, were coded as Remote (23.4). The dummy variables were East, Midwest, Old West and West; Remote was the residual.

Satisfaction

Satisfaction - Since the dependent variable is preference for an alternative to military medicine, satisfaction was measured as the respondent's

satisfaction with the quality of care he/she received in military facilities. Question 24 asks that question of the respondent and of his/her dependents. The choices presented are: excellent, very good, fair. poor, did not receive any care, and no opinion. Since satisfaction with military medicine was what was being sought, the no-care received and no opinions were treated as missing data. The satisfaction with care received were reported in a similar manner between the respondent and his/her dependents. (Chi square value was 1961.452 with 24 degrees of freedom and a significance of 0.0000. Kendall's TAU B was 0.59497 with a significance of 0.0000.) Based on that close association the variable was defined as the response to the quality of care received by the respondent.

Enabling Characteristics

Access

Travel Time - Policy decisions, some set in law, greatly affect any discussion of travel time within the MHSS. An arbitrary limit of 40 miles has been set in an attempt to insure the use of military inpatient facilities. Any beneficiary who lives within 40 miles of a military hospital must obtain a form certifying that the care he/she needs is not available at that particular facility before CHAMPUS will reimburse him/her for inpatient care received in a civilian facility. That 40-mile limit is absolute, no consideration is given to actual travel time and/or physical barriers.

Another factor affecting travel time measures within the MHSS is the fact that there are usually large numbers of active duty personnel living on the base where any given medical facility is located. This means large numbers

of the population served by that facility are living nearby. All families living in the "neighborhood" rely on the facility in that neighborhood for care.

No question as to where the respondent considered his/her usual source of care to be was included in the questionnaire. The usual source of care was derived from the answers to Question 17, which asked for the number of visits to various facilities in the 30-day recall period. If a majority of visits reported were within the MHSS (to a military or Public Health Service) facility, the respondent's usual source of care was assumed to be military. If the majority of visits were to civilian facilities, the usual source of care was assumed to be civilian. If there was a response to the dependents' half of Question 17, the family unit was assumed to have whichever source of care there indicated. The respondent and dependent determinations were associated, as one would expect (chi square 168,045 with 1 degree of freedom and a significance of 0.0000; Kendall's TAU B 0.27828 with a significance of 0.0000). Although the question asked for a 30-day recall, only 16 responses (0.6%) reported no care received and hence were coded as missing. This variable was defined as the Source of Care. Since Questions 19, 20 and 21 specified that the response was to be in terms of the usual source of care, definition of that variable was necessary at this stage. The responses to Question 19 were grouped to form the definition of the variable travel time. The result was: 0-14 minutes (28.4), 15-29 minutes (56.4), 30-44 minutes (2.9), 45 minutes or more (12.3).

Appointment Delay - The delay in obtaining an appointment was asked in Question 20 and used for the definition of the variable. The discussion in the preceding paragraph, in regards to the definition of usual source of care, is also applicable to this variable. The variable was grouped into periods of one week's duration: one week (55.1), two weeks (18.1), three or four weeks (11.0), and five or more weeks (15.8).

Waiting Room Time - The delay in being seen after arrival at the medical facility was the target of Question 21 and was used for the definition of the variable waiting room time. The data was grouped as follows: 0-15 minutes (26.8), 16-30 minutes (32.0), 31-45 minutes (11.8), 46-60 minutes (17.9), more than 1 hour (11.6). The same determination of usual source of care that was discussed above also applies to waiting room time.

In/Out Catchment Area - The 40-mile radius discussed previously describes the catchment area of a military facility. This variable is a dichotomous one, an individual either lives in or out of a catchment area of a military facility. The sampling technique was a stratified random sample from a variety of catchment areas (practice settings, including "remote"); the variable was defined from the respondent's identification number, i.e., whether or not the respondent lived in a "remote" area. The identification number contained a code which specified the catchment area. If he or she did, they were coded out (23.4); otherwise, the respondent was coded as being in a catchment area (76.67).

Facility Size - Here again the sampling technique insured a coverage of all practice settings. The responses were grouped according to the size of

the facility in whose catchment area they resided. The criteria groupings used were: remote (23.4), freestanding clinic (0), small (27.7), medium (20.8) and large (28.1). For statistical reasons freestanding clinic category was not used and those responses were included in the small category because of the small number of responses - eleven (0.4).

The classification of hospitals as "small, "medium," and "large," was based upon a distributional analysis of mean operating hospital beds in fiscal year 1976. In that year the mean number of operating hospital beds for a military hospital was 135.66, with a standard deviation of 179.27, a minimum of 2 and a maximum of 1.129. For purposes of this study, a small hospital was defined as one with 115 operating beds or less in fiscal year 1976, a medium size hospital as one with between 116 and 270 operating beds, and a large hospital as one with 271 or more operating beds. The reader is reminded that, since a military medical facility is responsible for all of the health service needs to the community it serves, a 300-bed facility is indeed, a large organization, which may serve as a referral center for a large geographic area within the MHSS.

Income - Question 13 obtained responses that were grouped in $5,000 intervals. This survey covered family units in each stage of the family cycle. Income measured against family cycle would yield differing results. That is, a given income for a couple just married would represent a different standard of living than that same income for a family with four children. It was additionally recognized that there are certain overhead costs in setting-up a household and that later additions to that family will not increase those overhead costs by the same proportion. In other words, there are

economies of scale in a household. The responses (mid-points of the groups) to Question 13 were divided by a weighted adjusted family size to arrive at an adjusted per capita income. The adjusted family size was arrived at by adding a weight of one for the respondent; one for the spouse, if any, and one-half weight for each additional dependent. The resulting data were then grouped: 0-$5,000 (42.8), $5,001-7,000 (8.9), $7,000-10,000 (27.8), $10,001-45,000 (20.5).

Health Insurance - The act of obtaining other health insurance indicates less than complete satisfaction with the military health benefit. Question 26 asked if either the respondent or his/her dependents were covered by health insurance -- either no, prepaid group practice, private medical insurance, dental insurance, Medicare, Medicaid or their State or local programs, CHAMPUS "wrap-around," Medicare "wrap-around," or Other. For statistical analysis these responses were grouped into: Private (4.7), Government (7.9), Prepaid (10.7), Other (6.4), None (70.2). The response of the respondent was used as a measure of health insurance coverage. There was a high level of association with that response and that of the dependent (chi square of 3882.66577 with 16 degrees of freedom and a significance of 0.0000, Kendall's TAU B was 0.68264 with a significance of 0.0000). The dummy variables were Prepaid, Private, Government and Other; None was the residual.

Unreimbursed Medical Costs - This variable was defined as the response to Question 22, which asked for this information for the past year. The responses presented in the question were grouped with $100 intervals. Altogether a range of more than $2,000 was presented, the data was further

aggregated to: $0 (35.4), $100 (20.3), $200 (12.5), $300 (9.1), $400 or more (17.7). As the percentages indicate, the distribution of responses to this question presented a long tail toward the high side of the range.

Usual Source of Care - Whether the usual source of care was military or civilian was determined by which type of facility the majority of visits were as reported in Question 17. The derivation and rationale of this variable are discussed in the definition of Travel Time,

Health Status

Health Status - A proxy, self-reported health status was obtained from each family whereby the respondent indicated the health status of himself/herself, spouse, dependent children, and other dependents separately in Question 15. Possible responses for each were excellent, very good, good, fair and poor. It was hypothesized that the health status of each member of the family affect the family unit. The health status of the family was defined to be the worst status reported for any of the four parts of Question 15. The distribution was: excellent (26.9), very good (31.8), good (25.2), fair (11.5), and poor (4.7)

Provider Visits - The number of outpatient visits to health care providers was collected in Question 16. The pattern of difference in utilization between the respondents and their dependents was first demonstrated in the variable source of care continued in each of the three utilization variables.

The association between the respondent's answers and those for their dependents were significant. The chi-square value was 433.84692 with

100 degrees of freedom and a significance of 0.0000. Pearson's R was 0.5620 with a significance of 0.0000. To eliminate the long tail towards the high end of the distribution the data was grouped. The distribution is listed in Table 3-1. Both the visits reported for the respondent and those reported for dependents were used, separately, as a definition of this variable.

TABLE 3-1

DISTRIBUTION OF MEASURES OF OUTPATIENT UTILIZATION
IN A 30-DAY PERIOD

NUMBER OF VISITS	RESPONDENT MEDICAL VISITS	DEPENDENT MEDICAL VISITS	RESPONDENT FACILITY VISITS	DEPENDENT FACILITY VISITS
0	51.4	33.5	57.0	39.8
1	22.1	18.9	22.0	17.9
2	11.7	16.9	10.3	16.7
3	6.4	10.7	4.8	9.4
4	2.6	7.5	2.4	6.8
5	1.6	4.1	1.1	3.3
6 or More	4.2	8.4	2.4	6.1
	100.0	100.0	100.0	100.0

Facility Visits - Both the respondents and dependent answers to Question 17 were used to define facility visits. The association between the two was significant. (The chi-square value was 516.48462 with 100 degrees of freedom and a significance of 0.0000. Pearson's R was 0.7410 with a significance of 0.0000.) Distribution of both measures are in Table 3-1. This measure is different from provider visits in that Question 17 asked for the number of visits to a facility rather than to a specific provider. In the large outpatient setting in military facilities, a single trip to a facility may be to see more than one provider -- perhaps by more than one member of the family.

Hospitalization - Days of hospitalization during the last year for both respondents and their dependents were collected in Question 18. Both were used as definitions of the variable. The distribution of responses to both is in Table 3-2.

TABLE 3-2

DISTRIBUTION OF MEASURES OF INPATIENT UTILIZATION IN A ONE-YEAR PERIOD

NUMBER OF DAYS	RESPONDENT	DEPENDENTS
0	38.2	75.5
1-7	5.9	16.6
7-14	2.3	4.2
15 or More	3.6	3.7
	100.0	100.0

Dependent Variable

Dependent Variable - Preferences for one or both of the alternatives were obtained by responses to Questions 34 and 35. Registering a preference for either of the alternatives versus the present health benefit resulted in the family being placed in the alternative (29.7) category. Those who did not register a preference in one question were coded as having preferred the present system for that particular question. Those who answered none of the questions were also coded as no change (71.0). It was assumed that those who did not understand one or both alternatives would not be likely to choose an alternative they didn't understand.

STEP 1

The first stage of analysis was a bivariate test of association between each of the independent variables and the dependent variables. Nine of the variables failed the screen, i.e., did not demonstrate a significant degree of association with the dependent variable. The results of this first stage area is summarized in Table 3-3.

Four (ethnic background, religion, beneficiary category and age of respondent) were from the social background variables. Two (travel time and appointment delay) were enabling characteristics variables. And, the last three were the prior utilization measures from the health status variables. Despite these "losses" the basic model remained intact. Those variables that were not significantly associated with dependent variable were dropped from further analysis.

TABLE 3-3

RESULTS OF FIRST ANALYSIS STEP-BIVARIATE TESTS OF ASSOCIATION BETWEEN THE INDEPENDENT AND DEPENDENT VARIABLES

	CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANCE	KENDALL'S TAU B	SIGNIFICANCE
SOCIAL BACKGROUND					
Ethnic Background	3.22427	2	0.1995	-0.00236	0.4528
Religion	1.58940	3	0.6618	0.02170	0.1296
Education	20.23987	4	0.0004	-0.03857	0.0170
Length of Service	14.47696	3	0.0023	-0.02434	0.0971
Branch of Service	18.51640	4	0.0010	0.04116	0.0126
Beneficiary Category	4.79153	3	0.1877	-0.02673	0.0843
Age of Respondent	3.90655	3	0.2717	-0.01664	0.1963
Marital Status	18.09825	5	0.0028	-0.03310	0.0424
Family Size	11.07817	5	0.0499	0.00560	0.3769
Family Cycle	9.48905	4	0.0500	-0.01029	0.2855
Geographic Location	61.30286	4	0.0000	-0.07122	0.0000
SATISFACTION					
Satisfaction	44.42004	4	0.0000	-0.11978	0.0000
ENABLING CHARACTERISTICS					
Access					
Travel Time	4.45663	3	0.2162	-0.00115	0.4761
Appointment Delay	4.12498	3	0.2483	0.02557	0.0901
Waiting Room Time	20.06247	4	0.0005	-0.07699	0.0000
In/Out Catchment	49.91048	1	0.0000	0.14171	0.0000
Facility Size	55.63728	3	0.0000	-0.13883	0.0000
Income	18.94191	3	0.0003	-0.07524	0.0000
Health Insurance	29.54567	4	0.0000	0.08438	0.0000
Unreimbursed Medical Costs	63.44450	4	0.0000	-0.13115	0.0000
Source of Care	17.45505	1	0.0000	-0.08439	0.0000
HEALTH STATUS					
Health Status	10.32757	4	0.0324	0.00448	0.4029
Previous Utilization					
Provider Visits	18.05862	10	0.0540	0.01365	0.2287
Facility Visits	17.55446	10	0.0630	0.02219	0.4531
Hospitalization	21.32462	15	0.1268	0.03540	0.0340

STEP 2

The next step was also a bivariate test of association. During this stage each surviving independent variable was compared to all of the other independent variables to identify all of those instances of potentially harmful colinearity. The results of this step of the analysis are presented in Appendix F.

Three areas of potentially harmful colinearity were detected. They are presented in Table 3-4.

Of the variables in Part A of Table 3-4, In/Out of a Catchment Area is the one variable that is subject to influence by administrative policy. Changes in the other variables (geographic location, branch of service and facility size) would result from much more basic, long-range shifts in policy. Therefore, because of its susceptability to administrative or legislative action, In/Out of a Catchment remained in the analysis and geographic location and facility size were removed from further consideration.

The relationship of variable family cycle with four other variables is presented in Part B of Table 3-4. Because of the potentially harmful colinearity of its interactions with family size and because it also had some affect on income, insurance and marital status, the variable family cycle was also eliminated from further analysis.

TABLE 3-4

HARMFUL COLINEARITY BETWEEN INDEPENDENT VARIABLES

VARIABLES	CHI SQUARE	DEGREES OF FREEDOM	LAMBDA (SYMMETRICAL)	KENDALL'S TAU B	PEARSON'S R
A.					
Geographic Location, Facility Size	3427.26196	12	0.44752	-0.47436	
Geographic Location, In/Out Catchment	2522.13574	4	0.49888	-0.67680	
Facility Size, In/Out Catchment	2522.12280	3	0.49155	0.69329	
Branch of Service, Geographic Location	785.15698	16	0.16009	0.11678	
B.					
Family Cycle, Marital Status	533.22656	20	0.04886	0.12410	
Family Cycle, Family Size	1918.14795	20	0.27112	-0.60925	-0.7323
Family Cycle, Income	555.85913	13	0.11481	0.33288	0.3793
Family Cycle, Insurance	1290.10596	12	0.13347	-0.31612	
C.					
Marital Status, Family Size	533.22656	20	0.13566	-0.24325	

Even though the degree of association between the variables, marital status and family cycle appeared significant in the chi-square test of association, neither variable was withdrawn based on the values of Lambda and Kendall's TAU B. The latter two statistics indicated that the degree of association would not result in harmful interaction between the two variables.

Three variables were removed to eliminate potentially harmful co-linearity. The basic model remained; however, with variables remaining in each of the four general categories.

STEP 3

A discriminant function analysis was performed to determine which of the variables that had survived Steps 1 and 2 were significant predictors of respondent preference for alternatives. Discriminant analysis is a technique to distinguish between two groups on the basis of values of several variables. Discriminant analysis involves a nominal dependent variable, whereas classical regression analysis involves a continuous dependent variable. Both attempt to describe, using a linear model, the relationship between the dependent and the several independent variables. Only those variables with a value of the F statistic of 1.0 to remove using a stepwise discriminant analysis were included in the resulting function of those variables -- this standardized discriminant function coefficients and their F value to be removed from analysis and listed in Table 3-5. 119/

Each coefficient represents the relative contribution of that particular variable to the resulting function. The sign denotes the direction (positive or negative) of that contribution. That function correctly predicted 63.50 of the responses, 58.3 of those who preferred alternative and 65.3 of those who did not. Table 3-6 details the predictive results.

119/ Nie, Statistical Package for the Social Sciences, pp. 447-8.

TABLE 3-5

DISCRIMINANT FUNCTION COEFFICIENTS FROM STEP 3 ANALYSIS

VARIABLES	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS
Special Background	
Education	0.12118
Length of Service	-0.17020
Branch of Service	-0.32790
Marital Status	-0.20450
Family Size	-0.10264
Satisfaction	
Satisfaction	0.40187
Enabling Characteristics	
Waiting Room Time	0.41264
In/Out Catchment	0.28052
Income	0.22606
Insurance	0.22669
Unreimbursed Costs	0.37249
Health Status	
Health Status	-0.18835

TABLE 3-6

PREDICTIVE ABILITY OF STEP 3 DISCRIMINANT FUNCTION

ACTUAL GROUP	NO. OF CASES	PREDICTED NO CHANGE	PREDICTED ALTERNATIVE
No Change	1,234	806 65.3%	428 34.7%
Preferred Alternative	429	179 41.7%	250 58.3%

Percent of "grouped" cases currently classified: 63.50%.

Of the twenty-five originally hypothesized variables, nine were not significantly associated with the dependent variable and three had to be eliminated because of potentially harmful colinearity. The model was strongly supported as only one of the remaining variables (Source of Care) was not in the predictive function derived by the Discriminant Program. Each of the four categories of variables -- Social Background, Satisfaction, Enabling Characteristics and Health Studies were included in the resulting function. That function correctly predicted 63.5% of the grouped cases.

STEP 4

In an attempt to derive a more parsimonious predictive function, further analysis was performed again using the discriminant function. Only those variables that resulted in a significant change in RAO'S V in the Step 3 analysis were used. RAO'S V measures the change in the centroids of the resulting function, i.e., the higher the value of RAO'S V, the more the variable has contributed to separation (prediction) of the dependent variables. Those variables so indicated in Table 3-7 were used as the independent variable in a second discriminant analysis stage. The object of the second run was to derive a more efficient predictive function. The results are in Tables 3-8, 3-9 and 3-10. The more efficient function (using nine variables instead of the twelve in Step 3) predicted 63.12% of the cases -- a decrease of 0.38% over the first model.

As a check against the method of analysis the nine variables used in Step 4 were also used as independent variables in a multiple regression analysis. The direction and relative values of the coefficients of both functions are similar and are displayed in Table 3-11.

Schumaker's Model has been supported throughout this analysis. Even during reduction of the function to a smaller, hopefully, more useful size, the framework of his model has remained. In the nine remaining variables, each of the four categories was still represented. Further, almost half (four of the nine) were enabling characteristics, as would be expected. The author would suggest that the effects of the social background variables were probably more indirect and perhaps better explored with other procedures, such as path analysis.

TABLE 3-7

SIGNIFICANT VARIABLES FROM DISCRIMINATE ANALYSIS FROM STEP 3

VARIABLE	F TO ENTER OR REMOVE	WILKS LAMBDA	RAO'S V	CHANGE TO RAO'S V	SIGNIFICANCE OF CHANGES IN RAO'S V
Waiting Room Time	39.98239	0.97648	39.68790	39.68790	0.000
Unreimbursed Cost	16.72427	0.96673	56.83876	17.15086	0.000
Satisfaction	12.71013	0.95938	70.13759	13.29383	0.000
Branch of Service	13.28982	0.95175	83.94911	13.81152	0.000
Income	8.52304	0.94687	92.94087	8.99176	0.003
Insurance	5.47855	0.94375	98.74332	5.80244	0.016
Family Size	5.13385	0.94083	99.47263	0.72931	0.393
Health Status	6.29056	0.93726	105.60608	6.13345	0.013
In/Out Catchment	6.06387	0.93383	112.03372	6.42764	0.011
Marital Status	3.98736	0.93158	116.28023	4.24651	0.039
Education	2.87366	0.92996	117.937.03	1.65680	0.198
Length of Service	2.18878	0.92873	120.52373	2.58679	0.198

TABLE 3-8

PARSIMONIOUS DISCRIMINANT FUNCTION COEFFICIENTS FROM STEP 4 ANALYSIS

VARIABLES	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS
Social Background	
Branch of Service	-0.29419
Marital Status	-0.18532
Satisfaction	
Satisfaction	0.45300
Enabling Characteristics	
Waiting Room Time	0.43788
In/Out Catchment	0.31964
Income	0.21699
Insurance	0.20102
Unreimbursed Cost	0.36775
Health Status	
Health Status	-0.23695

TABLE 3-9

PREDICTIVE ABILITY OF PARSIMONIOUS DISCRIMINANT FUNCTION FROM STEP 4

ACTUAL GROUP	NO. OF CASES	PREDICTED NO CHANGE	PREDICTIVE ALTERNATIVE
No Change	1,242	830 66.8%	413 33.2%
Preferred Alternative	435	206 47.4%	229 52.6%

Percent of "Grouped" Cases Correctly Classified 63.12%.

TABLE 3-10

VARIABLES FROM PARSIMONIOUS DISCRIMINATE ANALYSIS
FROM STEP 4

VARIABLE	F TO ENTER OR REMOVE	WILKS LAMBDA	RAO'S V	CHANGE TO RAO'S V	SIGNIFICANCE OF CHANGES IN RAO'S V
Waiting Room Time	42.76816	0.09751	42.41428	42.41428	0.000
Unreimbursed Costs	18.10216	0.96467	61.01031	18.59604	0.000
Satisfaction	13.40413	0.95700	74.95944	13.94913	0.000
Branch of Service	10.48470	0.95104	85.86517	10.90573	0.001
In/Out Catchment	8.39743	0.94628	94.72749	8.86432	0.003
Health Status	6.10185	0.94284	101.31966	6.59016	0.010
Insurance	5.48987	0.93975	107.16154	5.84189	0.016
Income	4.62017	0.93715	112.07274	4.91119	0.027
Marital Status	3.77605	0.93503	116.12209	4.04935	0.044

TABLE 3-11

PARSIMONIOUS DISCRIMINANT FUNCTION COEFFICIENTS VS.
REGRESSION FUNCTION COEFFICIENTS

VARIABLE	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS	STANDARDIZED REGRESSION FUNCTION COEFFICIENTS
Social Background		
Branch of Service	-0.29419	-0.06309
Marital Status	-0.18532	-0.24290
Satisfaction		
Satisfaction	0.45300	0.05502
Enabling Characteristics		
Waiting Room Time	0.43788	0.00097
In/Out Catchment	0.31964	0.16000
Income	0.21699	0.00007
Insurance	0.20102	0.15088
Unreimbursed Cost	0.36775	0.00369
Health Status		
Health Status	-0.23685	-0.02254

TABLE 3-12

SUMMARY OF THE RESULTS OF INDIVIDUAL INDEPENDENT VARIABLES

VARIABLE	OUTCOME
Social Background	
Ethnic Background	Not significant in bivariate analysis
Religion	Not significant in bivariate analysis
Education	Change in RAO'S V not significant
Length of Service	Change in RAO'S V not significant
Branch of Service	In Discriminant function
Beneficiary Category	Not significant in bivariate analysis
Age of Respondent	Not significant in bivariate analysis
Marital Status	In Discriminant function
Family Size	Change in RAO'S V not significant
Family Cycle	Harmful colinearity
Geographic Location	Harmful colinearity
Satisfaction	
Satisfaction	In Discriminant function
Enabling Characteristics	
Access	
Travel Time	Not significant in bivariate analysis
Appointment Delay	Not significant in bivariate analysis
Waiting Room Time	In Discriminant function
In/Out Catchment	In Discriminant function
Facility Size	Harmful Colinearity
Income	In Discriminant function
Insurance	In Discriminant function
Unreimbursed Costs	In Discriminant function
Source of Care	Not significant in Discriminant function
Health Status	
Health Status	In discriminant function
Utilization	
Provider Visits	Not significant in bivariate analysis
Facility Visits	Not significant in bivariate analysis
Hospitalization	Not significant in bivariate analysis

STEP 5

As a check to insure that the four previous steps did not go astray, a third discriminant analysis and a second regression analysis were made with all of the original independent variables (except those that exhibited potentially harmful colinearity). The results are not much different than the previous steps. In all, nineteen variables were found to be significant as opposed to nine in the four-step analysis. The resulting function predicted 64.69% of the cases correctly while the function from the four-step analysis predicted 63.12%. The results of this fifth step of analysis are listed in Tables 3-13, 3-14 and 3-15.

Table 3-16 compares the significant variables from the discriminant analyses run in Steps 4 and 5. The comparison reveals similar results; thereby providing additional support to the findings using the four-step methodology.

TABLE 3-13

DISCRIMINANT FUNCTION COEFFICIENTS FROM STEP 5

Variables	Standardized Discriminant Function Coefficients
Social Background	
Ethnic Background	0.13387
Religion	0.10639
Education	-0.13585
Length of Service	Not significant
Branch of Service	0.28772
Beneficiary Category	Not significant
Age of Respondent	0.30248
Marital Status	0.19990
Family Size	0.16093
Family Cycle	Harmful Colinearity
Geographic Location	Harmful Colinearity
Satisfaction	
Satisfaction	-0.36296
Enabling Characteristics	
Access	
Travel Time	Not significant
Appointment Delay	0.10233
Waiting Room Time	-0.39321
In/Out Catchment	-0.26287
Facility Size	Harmful Colinearity
Income	-0.26504
Insurance[120]	-0.26034
Unreimbursed Costs	-0.29350
Source of Care	0.10172
Health Status	
Health Status	0.14476
Utilization	
Provider Visits	Not significant
Facility Visits[121]	-0.14205
Hospitalization[121]	0.15680
	-0.04944

120/ This variable had more than one significant value because more than one of its dummy variables was significant.

121/ Both the respondents' and his dependents' hospitalization and facility visits were significant values.

TABLE 3-14

SIGNIFICANT VARIABLES FROM DISCRIMINATE ANALYSIS FROM STEP 5

SUMMARY TABLE

VARIABLE (Entered/Removed)	F TO ENTER OR REMOVE	WILKS LAMBDA	RAO'S V	CHANGE TO RAO'S V	SIGNIFICANCE OF CHANGES IN RAO'S V
Waiting Room Time	35.41397	0.97658	35.45566	35.45565	0.00
Unreimbursed Costs	13.54818	0.96770	49.34682	13.89116	0.00
Satisfaction	13.10170	0.95918	62.98274	13.63593	0.00
Branch of Service	10.67937	0.95228	74.12012	11.13737	0.00
Income	8.82096	0.94661	63.42105	9.60096	0.00
Insurance 123/	6.96333	0.94216	90.80360	7.33252	0.00
Age of Respondent	8.26564	0.93689	100.01340	9.20979	0.00
In/Out Catchment	6.79907	0.93258	107.32224	7.30584	0.00
Family Size	5.47801	0.92911	108.06276	0.74052	0.38
Marital Status	4.45300	0.92630	112.85661	4.79385	0.02
Education	4.29766	0.92360	115.38773	2.53111	0.11
Respondent's Hospitalization	3.19473	0.92159	118.80370	3.41606	0.06
Health Status	1.69466	0.92052	120.15285	1.34906	0.24
Dependents' Facility Visits	1.58280	0.91953	121.86833	1.71548	0.19
Ethnic Background	1.62230	0.91851	123.64311	1.77478	0.18
Religion	1.55232	0.91754	125.61077	1.36766	0.24
Appointment Delay	1.28418	0.91673	126.46776	1.45699	0.22
Dependents Hospitalization	1.05294	0.91607	127.62263	1.15488	0.28
Insurance 123/	1.02193	0.91543	128.88759	1.26495	0.26
Source of Care	1.02195	0.91479	129.99768	1.11009	0.29

123/ Two of the dummy variables in these variables had significant values.

TABLE 3-15

PREDICTIVE ABILITY OF DISCRIMINANT FUNCTION FROM STEP 5

ACTUAL GROUP	NO. OF CASES	PREDICTED NO CHANGE	PREDICTED ALTERNATIVE
No Change	1,100	731 66.4%	369 33.6%
Alternative	379	153 40.3%	226 59.7%

Percent of "grouped" cases correctly classified: 64.69%.

TABLE 3-16

PREDICTIVE ABILITY OF DISCRIMINANT FUNCTION FROM STEP 5

PARSIMONIOUS FUNCTION		LARGE FUNCTION	
VARIABLES	WILKS LAMBDA	VARIABLES	WILKS LAMBDA
Waiting Room Time	0.97510	Waiting Room Time	0.97658
Unreimbursed Costs	0.96467	Unreimbursed Costs	0.96770
Satisfaction	0.95700	Satisfaction	0.95918
Branch of Service	0.95104	Branch of Service	0.95228
In/Out Catchment	0.94628	Income	0.94661
Health Status	0.94284	Insurance 1/	0.94216
Insurance	0.93975	Age of Respondent	0.93639
Income	0.43715	In/Out Catchment	0.93258
Marital Status	0.93503	* Family Size	0.92911
		Marital Status	0.92630
		* Education	0.92360
		* Respondent's Hospitalization	0.92159
		* Health Status	0.92052
		* Dependents' Facility Visits	0.91953
		* Ethnic Background	0.91851
		* Religion	0.91754
		* Appointment Delay	0.91673
		* Respondent's Hospitalization	0.91607
		* Insurance 1/	0.91543
		* Source of Care	0.91479

* Reference Table 3-13. None of these variables resulted in a significant change in RAO'S.

1/ Two of the dummy variables of this variable had significant values.

SUMMARY

A brief summary of the outcome of each variable is in Table 3-12. A detailed discussion of each hypothesis variable follows. As with Galvin and Fan [125] a large number of variables in four different classes explained only a small amount of the variance observed in the study.

A.1.H_o: There is no difference in preference for alternatives to MHSS according to the ethnic background of the respondent.

There was no significant degree of association between ethnic background and the dependent variable. The chi square value was 3.22427 with 2 degrees of freedom and a significance of 0.1995. One of the dummy variables, Black, did appear in the discriminant function in the fifth stage of the analysis, but it did not result in a significant change in RAO'S V (significance 0.183, Table 3-13).

A.2.H_o: There is no difference in preference for alternatives to the MHSS according to the religious practices of the respondent.

The bivariate test of association in the first stage of analysis eliminated this variable. The chi square value was 1.53940 with 3 degrees of freedom

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125/ Galvin and Fan, op. cit.

and a significance of 0.6618. As with ethnic background and nine other variables, this variable (dummy variable - Protestant) did appear in the Step 5 discriminant function, but did not effect a significant change in RAO'S V (significance 0.242, Table 3-13).

A.3.H_o: There is no difference in preference for alternatives to the MHSS according to the level of formal education reported by the respondent.

The level of education attained was significantly associated with the dependent variable (chi square 20.23987, 4 degrees of freedom, 0.00045 significance) and did appear in the first discriminant function (Step 3, Table 3-5). However, it did not contribute significantly to the change in RAO'S V (significance 0.198) and was therefore not included in the parsimonious discriminant function. Similarly, education was included in the Step 5 discriminant function, but it did not result in a signficant change in RAO'S V (significance 0.112, Table 3-13); that is, it did not contribute toward separating the two groups.

A.4.H_o: There is no preference for alternatives to the MHSS according to the length of service of the respondent.

As a measure of socialization, length of service was significantly associated with preference to an alternative (chi square 14.47696 with 3 degrees of freedom and a significance of 0.0023) and did appear in the first discriminant function (Step 3, Table 3-5). As with level of education, the length of service did not have a significant change in RAO'S V (significance 0.108). However, unlike level of education (and family size), length of

service did not appear in the Step 5 function. Given the close association with age of respondent (which did not pass the bivariate screen but did appear in the Step 5 function), the author suspects that the respondent's age substituted for length of service in the Step 5 function.

A.5.H_o: There is no difference in preference for alternatives to the MHSS according to the branch of service of the sponsor.

The variable branch of service is included in the parsimonious discriminant function (Step 4, Table 3-10, an Air Force dummy variable). It retained its relative rank (fourth) in the Step 5 function as well. (Table 3-13.)

This finding surprised the author and cannot be readily explained. The relationship was the opposite of what would be expected. The typical Air Force medical facility is small, located in an undesirable place and offers only limited specialties, if any. However, the coefficient of the Step 4 and 5 discriminant functions was negative. This indicates the direction of the dummy variable with a value of 1 and the dependent variable with a value of 0, meaning the person desires no change. Similarly, a dummy variable having a value of 0 (reflecting that the respondent was not affiliated with the Air Force) and the dependent variable with a value of 1 (reflecting that the individual desired the alternative) also provide a like indication of direction. Either situation indicates the desire of Air Force families to stay with the current system.

A.6.H_o: There is no difference in preference for alternatives to the MHSS according to the beneficiary category of the respondent.

The lack of association with the dependent variable (chi square of 4.79153 with 3 degrees of freedom and a significance of 0.1877) surprised the author. It had been a commonly accepted stereotype that the person who preferred a change was the retiree who had other health benefits from his second career and was not using the MHSS anyway. Evidently, there are enough disgruntled families in the other categories to balance those who fit the stereotype.

A.7.H_o: There is no difference in preferences for alternatives to the MHSS according to the age of the respondent.

Another unexpected outcome was the lack of association (chi square 3.90655 with 3 degrees of freedom, significance 0.2717) between age and preference for an alternative. Age did, however, become a significant variable in the Step 5 analysis (Table 3-13 with a significance of 0.002 in the change in RAO'S V). Further discussion of this variable is in Length of Service.

A.8.H_o: There is no difference in preference for alternatives to the MHSS according to the marital status of the respondent.

This variable remained in each step of the analysis, including the parsimonious function (Step 4, Table 3-8). It also retained its relative position in the Step 5 analysis (Table 3-13). The dummy variable in both cases was "never having been married." The coefficient of the functions in both Step 4 and 5 is negative, that is, the independent and dependent variables

were acting in opposite directions. Those who had never married preferred no change. A possible explanation is that this group is the one that receives the highest priority within the MHSS. Those who have never married are by definition the active duty and retired personnel. The reader is referred to the Introduction where the priorities of each beneficiary class is enumerated. This group of never married will fall in the two highest classes, receiving benefits within the system unavailable to others because of limited resources. The provision of dental services and optometry are two ready examples of commonly limited services available to only some beneficiaries.

A.9.H_o: There is no difference in preference for alternatives to the MHSS according to the number of people in a family unit.

Family size did pass the bivariate screen (chi square 11.07817, 4 degrees of freedom, significance 0.499) was in the first discriminant function (Step 3, Table 3-5). However, the change in RAO'S V resulting from it was not significant (0.393). Similarly, family size was included in the Step 5 function but, again, it did not contribute to a significant change in RAO'S V (significance 0.389, Table 3-13).

A.10.H_o: There is no difference in preference for an alternative to the MHSS according to the relative age of the family.

This one of three variables that passed the bivariate test (chi square 9.48905, 4 degrees of freedom, 0.0500 significance) was removed during the second stage of analysis (see Step 2, Table 3-4). Because of harmful colinearity with marital status, family size, income and insurance, the variable family cycle was eliminated from further analysis.

A.11.H_o: There is no difference in preference for alternatives to the MHSS according to the geographic location of the residence of the respondent.

Although alternative forms of health care delivery (HMOs) are becoming more popular in certain parts of the United States, this study was unable to measure this effect. Although the variable geographic location passed the first step of analysis (chi square 61.30286, 4 degrees of freedom, 0.0000 significance), it was not used in any of the discriminant functions, because of harmful colinearity with size of facility, in/out catchment area and branch of service (see Step 2, Table 3-4).

Satisfaction

B.1.H_o: There is no difference in the preference for alternatives to the MHSS according to the satisfaction reported with the quality of care received in military facilities.

The measure of satisfaction used (the respondents' satisfaction with the quality of care received in military facilities) was the third most powerful predictor or preference for an alternative in both the parsimonious discriminant function (Step 4, Table 3-10) and the Step 5 function (Step 5, Table 3-13). This finding was in the expected direction. Those who expressed dissatisfaction with the quality of care were more likely to have preferred an alternative.

Enabling Characteristics

Access

C.1.H_o: There is no differing preference for alternatives to the MHSS

according to the length of time necessary to travel to the usual source of care.

The length of time necessary to travel to the usual source of care was not significantly associated with the dependent variable (chi square 4.45663, 3 degrees of freedom, significance 0.2162) in the bivariate analysis. Nor did it appear as a significant variable in the multivariate Step 5 analysis.

C.2.H_o: There is no difference in preference for alternatives to the MHSS according to the usual delay encountered in obtaining an appointment at the usual source of care.

As with travel time, the delay in obtaining an appointment was significant in both the bivariate and the multivariate analysis. (In the bivariate analysis the measure of association was: chi square of 4.12498 with 3 degrees of freedom and a significance of 0.2483. The variable was not significant in the Step 5 function (see Table 3-13).

C.3.H_o: There is no difference in preference for an alternative to the MHSS according to the length of time spent in the reception room waiting for an appointment at the usual source of care.

Waiting room time was the most powerful predictor in both the parsimonious function and in the Step 5 function (see Table 3-10 and 3-13). The relationship is in the expected direction. Increased waiting time led to a higher probability of selecting an alternative. The placing of the variable at the top of the list indicates a strength of feeling among the respondents that they would prefer a system that minimizes their waiting time, or that

they expect that an alternative would reduce the time they presently spend in the waiting room.

C.4.H_o: There is no difference in preference for an alternative to the MHSS according to whether or not the respondent lives within a catchment area of a military medical facility.

Whether or not the respondent lived within a 40-mile radius of a military medical facility was significant in both the parsimonious discriminant function (Table 3-10) and the larger function (Table 3-13). This variable behaved as expected. Those who lived in "remote" areas were most likely to prefer an alternative. By definition those remote families were the families who do not live conveniently near a medical facility. The proposed alternatives would have offered them substantially the same benefits as those who live in more convenient locales.

C.5.H_o: There is no difference in preference to the alternatives to the MHSS according to the size of the facility in the respondents catchment area.

The author's previous experience indicated that this should have been a good measure of access to sophisticated specialists within the MHSS and therefore a good prediction of preference for an alternative. However, because of potentially harmful colinearity with the variables geographic location and in/out of a catchment area (see Table 3-4), this variable was not tested further than Step 2.

C.6.H_o: There is no difference in preference for alternatives to the MHSS according to the level of income of the family unit.

An adjusted per capita measure of income was significant in both the parsimonious function and the Step 5 function (Table 3-8 and 3-13). The higher the level of income the more likely the preference for an alternative. This was not unexpected, the rationale being that, if the economic barrier is removed, more individualized care is available in the civilian sector as opposed to the bureaucratic medicine found in the MHSS.

C.7.H_o: There is no difference in preference for alternatives to the MHSS according to the presence of alternative health insurance.

Whether or not the respondents family had additional health insurance appeared in both parsimonious and large functions (Table 3-8 and 3-13). The dummy variable private insurance was significant in both functions. Additionally, the dummy variable government programs (Medicare, Medicaid and other government assistance programs) was selected in the large function but did not create a significant change in RAO'S V (0.261 in Table 3-13). This was as expected. A pre-selection process was in effect; those who had alternative health insurance had already made their choice -- they already had expressed preference.

C.8.H_o: There is no difference in preference for alternatives to the MHSS according to the unreimbursed cost of previous care.

This variable was the second most powerful predictor in both the Step 4 and Step 5 discriminant functions (Tables 3-8 and 3-13). The amount of out-of-pocket expenses would seem to indicate the preference for an alternative system as would be expected.

C.9.H_o: There is no difference in preference for alternatives to the MHSS according to whether the usual source of care is civilian or military.

Whether the usual source of care was civilian or military was not a good predictor of preference for an alternative system of health service delivery. Although the source of care was significantly associated with the dependent variable (chi square 17.45505, 1 degree of freedom, 0.0000 significance), it was not significant in the first discriminant function (Step 3, Table 3-5). Although this variable was significant in the larger function, it was the twentieth variable out of twenty to be selected and its contribution to the change in RAO'S V was not significant (0.292, Table 3-13).

Health Status

D.1.H_o: There is no difference in preference for alternatives to the MHSS according to the health status of the family member with the worst self-reported health status.

The health status of the family unit, as measured by the worst health status of any family member, was a significant predictor in the parsimonious function (Step 4, Table 3-8).

Although it was also significant in the large function, its change in RAO'S V in that function was not significant (0.245, Table 3-13). Bureaucratic medicine, as practiced in the military can present a lot of obstacles to those who are considered to be the "worried well." However, a high quality of care, in the experience of the author, is given to those with serious problems. Then, too, after some experience, those in poorer health will have learned how to make the military system more responsive to their needs. Additionally, those with serious and/or chronic health problems may have built-up a relationship with a provider or particular clinic, which they would now not like to change.

D.H.H_o: There is no difference in preference for alternatives to the MHSS according to previous reported utilization.

Provider Visits - Neither the number of respondents nor dependents' medical visits passed the bivariate screen in Step 1 (chi square 13.05862, 10 degrees of freedom, 0.0540 significance and chi square 16.15761, 10 degrees of freedom, 0.0952 significance, respectively). Nor were either of these variables included in the Step 5 function (Step 5, Table 3-13).

Facility Visits - The number of visits to any kind of medical facility or office (respondents/dependents) within the 30-day period did not pass the Step 1 screen (chi square 17.55446, 10 degrees of freedom, 0.06300 significance and chi square 16.11246, 10 degrees of freedom, 0.0965 significance, respectively). Dependents facility visits did appear as a variable in the Step 5 analysis, but it did not have a significant change

Hospitalization - Although both respondents and dependents hospitalization appeared as significant variables in the larger discriminant function (Table 3-13), neither was significantly associated with the dependent variable as measured by chi square (21.32462, 15 degrees of freedom, 0.1268 significance and 13.05537, 15 degrees of freedom, 0.5980 significance, respectively). In the Step 3 function neither variable contributed significantly to a change in RAO'S V (0.065 and 0.283 respectively).

CHAPTER IV

SUMMARY

This study examined the application of a health services behavior model to a survey where MHSS beneficiaries were presented alternative forms of their health care benefit. The model stated that preference for an alternative of the benefit would be based on social background modified by satisfaction with previous encounter, enabling characteristics and present health status. A stratified random sample was taken that represented the known MHSS beneficiary population.

A five-step procedure was used to analyze the data:

1. A bivariate test of association between the independent and dependent variables.
2. A bivariate test of association between the independent variables to eliminate those that exhibited potentially harmful colinearity.
3. Discriminant analysis to derive a predictive function.
4. A smaller discriminant function to derive a more parsimonious predictor.
5. A third discriminant analysis with all variables as a check against the previous four steps.

Nine independent variables were not significantly associated with the dependent variable in a bivariate test of association. Four (ethnic background, religion, beneficiary category, and age of respondent) were from the social background variables. Two (travel time and appointment delay) were enabling characteristics. And the last three were the prior utilization measures from the health status variables. Despite these "losses" the basic model remained intact.

Three variables (geographic location, facility size and family cycle) were removed to eliminate potentially harmful colinearity. Only one of the other remaining variables (source of care) was not in the predictive function derived by the discriminant program. Each of the four categories of variables: social background, satisfaction, enabling characteristics and health status remaining were included in the resulting function. That function correctly predicted 63.5% of the grouped cases.

Schumaker's model has been supported throughout this analysis. Even during reduction of the function to a smaller, more useful size, the framework of his model has remained. In the nine remaining variables each of the four categories was still represented. Further, almost half (four of the nine) were enabling characteristics as would be expected. The author would suggest that the effects of the social background variables were probably more indirect and perhaps better explored with other procedures, such as path analysis.

As a check to insure that the four previous steps did not go astray, a third discriminant analysis and a second regression analysis were

made with all of the original independent variables (except those that exhibited potentially harmful colinearity). The results were not much different from the previous steps. All together nineteen variables were found to be significant, as opposed to nine in the four-step analysis. The resulting function predicted 64.69% of the cases correctly, while the function from the four-step analysis predicted 63.12%.

CONCLUSIONS

This study has provided support for a general health service model -- specifically Schumaker's. That model provided a theoretical framework within which to analyze behavior (stated preference in this instance).

Not only did this study support the use of behavioral framework, but it also illustrated the application of that framework to a situation of consumer choice. Previous studies of such choices have lacked an overall framework -- rather they have sought to explore a specific theory, often economic in nature. That, in this case, the alternatives were hypothetical does not affect the applicability of the framework to a dual or multi-choice situation. The only complication arising from the study of what is an opinion survey is the unknown amount of the difference between stated preferences and actual behavior.

It is possible to differentiate those who state a preference for an alternative to the present for the military health care benefit. Having said that, it must quickly be added that the distinction is not as clear as would be wished. Both conclusions have implications for health planners within the MHSS. First, evaluation of the effects of any proposed alternatives is possible. That evaluation should be made within the confines of a

general behavioral framework (Schumaker's or another). And, the variables examined and survey instrument used, must be refined to achieve more accurate predictive functions.

Secondly, if there is a commitment to the present form of the MHSS, and the author senses there is, this study has pointed out three areas where responsiveness to beneficiaries might be improved. Each of the top three variables in the predictive functions (waiting room time, quality of care received) are subject to change by administrative or legislative action. If dissatisfaction in these areas can be said to be "driving" beneficiaries into preferring something else, then there is opportunity to correct problems in these areas. Improvements might then increase satisfaction and loyalty to the present system. Closer examination of each area should reveal improvements that may be implemented. Indeed, the Military Health Benefits Study has addressed some of the problem areas. If its recommendations are implemented, the perceptions of a large number of beneficiaries may be changed.

RECOMMENDATIONS

Further analysis of determinants of consumer choice of health care delivery systems is necessary. The study of methodology in this area of health utilization behavior appears to be at the point that other health utilization efforts were before the theoretical frameworks were put together by Anderson and others. Future analysis in this area should be done within one of these frameworks. Details of alternatives and each offering varying in all instances make replication difficult. Therefore, it becomes that much more important that studies of consumer choice between alternatives be done within a framework to allow some basis of comparison.

Similarly, progress in examining the wide field of health utilization behavior will be slow until consensus is reached on a framework that can accommodate further research. The shortest path to that consensus would seem to be replication and/or testing of frameworks already presented. Only such confirmation testing can provide the basis for judging the accuracies and inaccuracies of each model.

Given the accuracy of the predictive function resulting from this effort, further study of the MHSS beneficiaries is necessary to ascertain what proportion of them might sign up for a specific alternative to the present form of the health care benefit.

Improvements in the areas highlighted in the predictive functions can and should be implemented to reduce beneficiary dissatisfaction with the present form of the benefit. Waiting room time, unreimbursed medical costs and satisfaction with the quality of care received are all subject to policy decisions, and, as such, should be studied with an eye toward improvements.

TABLE OF APPENDICES

A. OASD(HA) Letter to Respondent and Survey Instrument

B. Cooper and Co. Follow-up Letter

C. Second Copy of OASD(HA) Letter to Respondent

D. Titles of Enlisted Ranks

E. Titles of Officer and Warrant Officer Ranks

F. Results of Step of Analysis: Bivariate Test of Association Between Independent Variables

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

HEALTH AFFAIRS

Dear User of the Military Health Services System:

You have been selected to participate in a survey of a representative sample of beneficiaries of the Military Health Services System. Your support of this study will help the Department of Defense to make decisions related to the medical benefits offered to active duty personnel, retirees, dependents, and survivors.

Your participation and thoughtful responses to the enclosed questions will help us understand your views on the military health care benefit. The replies will be processed so that your individual response will be absolutely confidential and only the summary results, without names and identifiers, will be retained by the Department of Defense.

Please try to complete every question. If you are not sure of an answer, provide the best estimate you can make. If for some reason you cannot or choose not to answer a question, do not discard the questionnaire. Please complete the rest of it and return it as soon as you are finished. Since some of the questions have to do with your dependents, you may want to consult with them, and you are urged to do so.

Although this is a voluntary survey I would like to personally request your cooperation since the aggregate results are extremely important in helping us understand your evaluation of the Military Health Services System.

Sincerely,

John E. Murphy

John E. Murphy
Colonel, USAF MSC
Director, Office of Planning & Policy Analysis

Enclosure

RCS: DD-HA(QT) 783

MILITARY HEALTH CARE BENEFIT SURVEY

OMB No. 022-S-78001
Expiration Date 1 July 1978

PROTECTION OF PRIVACY

PUBLIC LAW 93-579, ENTITLED THE PRIVACY ACT OF 1974, REQUIRES THAT ALL INDIVIDUALS BE INFORMED OF THE PURPOSES AND USES TO BE MADE OF THE INFORMATION WHICH IS SOLICITED.

AUTHORITY: THE DEPARTMENT OF DEFENSE IS EMPOWERED TO SOLICIT THE INFORMATION REQUESTED UNDER THE AUTHORITY OF 10 UNITED STATES CODE 136.

PURPOSE: TO OBTAIN INFORMATION ABOUT THE VALUE AND UTILIZATION OF THE MILITARY HEALTH SERVICES SYSTEM.

USES: INFORMATION OBTAINED WILL BE STATISTICALLY ANALYZED AT AGGREGATE LEVELS ONLY. RESULTS WILL BE PROVIDED TO DOD AND TO THOSE AUTHORIZED BY DOD. NO PERSONAL IDENTIFYING INFORMATION WILL BE RETAINED.

EFFECTS OF NON-DISCLOSURE: PARTICIPATION IN THE SURVEY IS VOLUNTARY. NO PENALTY WILL BE IMPOSED FOR FAILURE TO RESPOND TO THESE QUESTIONS.

A. BACKGROUND DATA

I.D. # 10037

PLEASE ANSWER THE FOLLOWING QUESTIONS. WHERE APPROPRIATE, PLEASE (CIRCLE) THE CORRECT ANSWER.

1. Are you on Active Duty, a Retiree, or a Survivor? ACTIVE DUTY RETIREE SURVIVOR OF ACTIVE DUTY SURVIVOR OF RETIREE

2. In which branch of the Armed Forces do you, or did you, serve? (If you are a survivor, answer for the deceased.) ARMY NAVY AIR FORCE MARINES

3. How many years have you served, or did you serve, in the Armed Forces? (If you are a survivor, answer for the deceased.) _____ YEARS

4. What is or was your highest pay grade? (If you are a survivor, answer for the deceased. If pay grade is not known, write in rank.)

E1 E2 E3 E4 E5 E6 E7 E8 E9 W1 W2 W3 W4 O1 O2 O3 O4 O5 O6 O7 O8 O9 O10 RANK _____

IN ALL OF THE FOLLOWING QUESTIONS ANSWER FOR YOURSELF WHETHER YOU ARE A SURVIVOR OR NOT

5. What is your sex? MALE FEMALE → 6. How old were you on your last birthday? _____ YEARS OLD

7. What is your marital status? NEVER MARRIED MARRIED (BOTH MILITARY) MARRIED (ONE MILITARY)
DIVORCED SEPARATED WIDOWED

8. Not counting yourself, how many dependents do you have? 0 1 2 3 4 5 6 IF MORE THAN 6, SPECIFY____

9. Please list the age (as of their last birthday) of each of your six oldest dependents, not including yourself. Circle NOT APPLICABLE if you have no dependents.

NOT APPLICABLE

_____YEARS OLD _____YEARS OLD _____YEARS OLD _____YEARS OLD _____YEARS OLD _____YEARS OLD

10. What is the highest educational level that you have reached?

SOME ELEMENTARY SCHOOL ELEMENTARY SCHOOL GRADUATE SOME HIGH SCHOOL HIGH SCHOOL GRADUATE OR EQUIVALENT

SOME COLLEGE COLLEGE GRADUATE SOME PROFESSIONAL OR GRADUATE SCHOOL PROFESSIONAL OR GRADUATE SCHOOL DEGREE

11. Which of the following do you consider yourself?

WHITE (NOT OF HISPANIC ORIGIN) BLACK (NOT OF HISPANIC ORIGIN) HISPANIC

AMERICAN INDIAN OR ALASKAN NATIVE ASIAN OR PACIFIC ISLANDER

12. What is your religious preference?

PROTESTANT CATHOLIC JEWISH MORMON

CHRISTIAN SCIENTIST OTHER _____ NONE/NO PREFERENCE

WHERE APPROPRIATE, PLEASE (CIRCLE) THE CORRECT ANSWER

13. What is your and your dependents' yearly income — from all sources — before taxes?

0 - $4,999 $5,000 - $9,999 $10,000 - $14,999 $15,000 - $19,999 $20,000 - $24,999 $25,000 - $29,999

$30,000 - $34,999 $35,000 - $39,999 $40,000 - $44,999 $45,000 - $49,999 $50,000 OR OVER

14. Where are you living? ON BASE, POST OR SHIP OFF BASE, POST OR SHIP

B. STATE OF HEALTH

ANSWER THE FOLLOWING QUESTION ABOUT YOURSELF IN THE FIRST (LEFT-HAND) COLUMN, ABOUT YOUR SPOUSE IN THE SECOND COLUMN, ABOUT YOUR DEPENDENT CHILDREN IN THE THIRD COLUMN, AND ABOUT YOUR OTHER DEPENDENTS IN THE FOURTH (RIGHT-HAND) COLUMN.

15. In general, comparing persons of the same age, describe the current state of health of:

YOURSELF	YOUR SPOUSE	YOUR DEPENDENT CHILDREN	YOUR OTHER DEPENDENTS
EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD
GOOD	GOOD	GOOD	GOOD
FAIR	FAIR	FAIR	FAIR
POOR	POOR	POOR	POOR

C. USAGE OF HEALTH SERVICES

ANSWER THE FOLLOWING QUESTIONS FOR YOURSELF IN THE LEFT-HAND COLUMN AND FOR YOUR DEPENDENTS IN THE RIGHT-HAND COLUMN. IF YOUR ANSWER TO A QUESTION IS "NONE," ENTER THE NUMBER ZERO (0).

16. Excluding overnight or longer hospital stays, how many times during the past 30 days did you visit the following types of doctors or other medical personnel, whether civilian or military, for treatment or examination?

YOU		YOUR DEPENDENTS	
GENERAL PRACTITIONER	_____TIMES	GENERAL PRACTITIONER	_____TIMES
INTERNIST	_____TIMES	INTERNIST	_____TIMES
OBSTETRICIAN/GYNECOLOGIST	_____TIMES	OBSTETRICIAN/GYNECOLOGIST	_____TIMES
DENTIST	_____TIMES	DENTIST	_____TIMES
PSYCHIATRIST/PSYCHOLOGIST	_____TIMES	PSYCHIATRIST/PSYCHOLOGIST	_____TIMES
SURGEON	_____TIMES	SURGEON	_____TIMES
ORTHOPEDIST	_____TIMES	ORTHOPEDIST	_____TIMES
OPHTHALMOLOGIST/OPTOMETRIST	_____TIMES	OPHTHALMOLOGIST/OPTOMETRIST	_____TIMES
PHYSICIAN ASSISTANT/NURSE PRACTITIONER	_____TIMES	PHYSICIAN ASSISTANT/NURSE PRACTITIONER	_____TIMES
		PEDIATRICIAN	_____TIMES
ANY OTHER MEDICAL PERSONNEL	_____TIMES	ANY OTHER MEDICAL PERSONNEL	_____TIMES
PLEASE SPECIFY _____		PLEASE SPECIFY _____	

WHERE APPROPRIATE, PLEASE (CIRCLE) THE CORRECT ANSWER

17. Excluding overnight or longer hospital stays, how many times during the past 30 days were you treated or examined in each of the following kinds of facilities:

YOU		YOUR DEPENDENTS	
MILITARY MEDICAL OR DENTAL FACILITY	____ TIMES	MILITARY MEDICAL OR DENTAL FACILITY	____ TIMES
U.S. PUBLIC HEALTH SERVICE FACILITY	____ TIMES	U.S. PUBLIC HEALTH SERVICE FACILITY	____ TIMES
VETERANS' HOSPITAL	____ TIMES	VETERANS' HOSPITAL	____ TIMES
CIVILIAN HOSPITAL	____ TIMES	CIVILIAN HOSPITAL	____ TIMES
CIVILIAN DOCTOR'S OFFICE	____ TIMES	CIVILIAN DOCTOR'S OFFICE	____ TIMES
CIVILIAN DENTIST'S OFFICE	____ TIMES	CIVILIAN DENTIST'S OFFICE	____ TIMES
OTHER	____ TIMES	OTHER	____ TIMES

18. During the past year how many days were you hospitalized overnight or longer in the following types of facilities:

YOU		YOUR DEPENDENTS	
MILITARY HOSPITAL	____ DAYS	MILITARY HOSPITAL	____ DAYS
U.S. PUBLIC HEALTH SERVICE HOSPITAL	____ DAYS	U.S. PUBLIC HEALTH SERVICE HOSPITAL	____ DAYS
VETERANS' HOSPITAL	____ DAYS	VETERANS' HOSPITAL	____ DAYS
CIVILIAN HOSPITAL	____ DAYS	CIVILIAN HOSPITAL	____ DAYS

D. COSTS AND TIME

ANSWER THE FOLLOWING THREE QUESTIONS FOR YOURSELF IN THE LEFT-HAND COLUMN AND FOR YOUR DEPENDENTS IN THE RIGHT-HAND COLUMN.

19. How long does it actually take you to get from your home to your usual source of medical treatment or examination, which may either be a doctor, clinic, or hospital emergency room?

YOU _____ MINUTES YOUR DEPENDENTS _____ MINUTES

20. Except for emergencies and sick call, how many days do you usually have to wait, on the average, for an appointment?

YOU _____ DAYS YOUR DEPENDENTS _____ DAYS

21. When you have an appointment, how long do you have to wait, on the average, for medical treatment or examination once you have arrived?

YOU _____ MINUTES YOUR DEPENDENTS _____ MINUTES

22. Approximately how much money did you spend in the past year for medical care, for yourself and for your dependents, for which you were not reimbursed?

$0 $100 $200 $300 $400 $500 $600 $700 $800 $900 $1000 $1100 $1200 $1300 $1400 $1500

$1600 $1700 $1800 $1900 $2000 IF MORE THAN $2,000, PLEASE SPECIFY _____

23. Approximately how much money did you spend in the past year for dental care, for yourself and for your dependents, for which you were not reimbursed?

$0 $100 $200 $300 $400 $500 $600 $700 $800 $900 $1000 $1100 $1200 $1300 $1400 $1500

$1600 $1700 $1800 $1900 $2000 IF MORE THAN $2,000, PLEASE SPECIFY _____

E. CONSUMER SATISFACTION

ANSWER THE FOLLOWING QUESTIONS FOR YOURSELF IN THE LEFT-HAND COLUMN AND FOR YOUR DEPENDENTS IN THE RIGHT-HAND COLUMN. WHERE APPROPRIATE, PLEASE (CIRCLE) THE CORRECT ANSWER.

24. In general, how would you describe the quality of medical care that you and your dependents received in the past year from Uniformed Services Facilities or doctors?

YOU	YOUR DEPENDENTS
EXCELLENT VERY GOOD GOOD FAIR POOR	EXCELLENT VERY GOOD GOOD FAIR POOR
DID NOT RECEIVE ANY CARE NO OPINION	DID NOT RECEIVE ANY CARE NO OPINION

25. In general, how would you describe the quality of medical care that you and your dependents received in the past year from civilian facilities or doctors?

YOU	YOUR DEPENDENTS
EXCELLENT VERY GOOD GOOD FAIR POOR	EXCELLENT VERY GOOD GOOD FAIR POOR
DID NOT RECEIVE ANY CARE NO OPINION	DID NOT RECEIVE ANY CARE NO OPINION

F. INSURANCE COVERAGE

ANSWER THE FOLLOWING QUESTIONS FOR YOURSELF IN THE LEFT-HAND COLUMN AND FOR YOUR DEPENDENTS IN THE RIGHT-HAND COLUMN.

26. Not counting CHAMPUS, are you covered by any insurance or health care plan that pays any part of the costs of doctors', dentists' or hospital services charges? (If applicable, you may circle more than one answer.)

YOU	YOUR DEPENDENTS
NO	NO
YES, BY A PREPAID GROUP PRACTICE	YES, BY A PREPAID GROUP PRACTICE
YES, BY PRIVATE MEDICAL INSURANCE	YES, BY PRIVATE MEDICAL INSURANCE
YES, BY DENTAL INSURANCE	YES, BY DENTAL INSURANCE
YES, BY MEDICARE	YES, BY MEDICARE
YES, BY MEDICAID OR OTHER STATE OR LOCAL PROGRAM	YES, BY MEDICAID OR OTHER STATE OR LOCAL PROGRAM
YES, BY A SUPPLEMENTAL INSURANCE POLICY THAT COVERS CHARGES NOT COVERED BY CHAMPUS	YES, BY A SUPPLEMENTAL INSURANCE POLICY THAT COVERS CHARGES NOT COVERED BY CHAMPUS
YES, BY A SUPPLEMENTAL INSURANCE POLICY THAT COVERS CHARGES NOT COVERED BY MEDICARE	YES, BY A SUPPLEMENTAL INSURANCE POLICY THAT COVERS CHARGES NOT COVERED BY MEDICARE
YES, BY (AN)OTHER PLAN(S) OR INSURANCE	YES, BY (AN)OTHER PLAN(S) OR INSURANCE

27. If you have this additional coverage, why do you have it? (If applicable, you may circle more than one answer.)

YOU	YOUR DEPENDENTS
NOT APPLICABLE	NOT APPLICABLE
EMPLOYER OFFERS IT FREE OR AT VERY LOW CHARGE	EMPLOYER OFFERS IT FREE OR AT VERY LOW CHARGE
QUALITY OF CARE IN FEDERAL HEALTH FACILITIES INADEQUATE	QUALITY OF CARE IN FEDERAL HEALTH FACILITIES INADEQUATE
CERTAIN MEDICAL OR DENTAL SERVICES ARE UNAVAILABLE IN FEDERAL HEALTH FACILITIES	CERTAIN MEDICAL OR DENTAL SERVICES ARE UNAVAILABLE IN FEDERAL HEALTH FACILITIES
HAVE REACHED AGE AT WHICH I AM COVERED BY MEDICARE	HAVE REACHED AGE AT WHICH THEY ARE COVERED BY MEDICARE
ADDITIONAL COVERAGE NEEDED TO COVER EXPENSES	ADDITIONAL COVERAGE NEEDED TO COVER EXPENSES
OTHER REASON. PLEASE SPECIFY _____	OTHER REASON. PLEASE SPECIFY _____

G. HEALTH ATTITUDES

ANSWER QUESTION 28 FOR YOURSELF ONLY

28. For each statement, answer whether you strongly agree, agree, disagree or strongly disagree.

(a) If you wait long enough you can get over almost any disease without getting medical aid.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(b) Some home remedies are still better than prescribed drugs for curing illness.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(c) A person understands his own health better than most doctors do.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(d) Most doctors are more interested in their incomes than in making sure everyone receives adequate medical care

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(e) Modern medicine can cure almost any illness.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(f) No matter how well a person follows his doctor's orders, he has to accept a good deal of illness in his lifetime.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

IF YOU ARE LIVING WITH YOUR SPOUSE, PLEASE HAVE YOUR SPOUSE ANSWER QUESTION 29 FOR HIMSELF/HERSELF ONLY. IF YOU ARE NOT LIVING WITH YOUR SPOUSE, OR YOU HAVE NO SPOUSE, SKIP TO SECTION H.

29. For each statement, answer whether you strongly agree, agree, disagree or strongly disagree.

(a) If you wait long enough you can get over almost any disease without getting medical aid.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(b) Some home remedies are still better than prescribed drugs for curing illness.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(c) A person understands his own health better than most doctors do.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(d) Most doctors are more interested in their incomes than in making sure everyone receives adequate medical care.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(e) Modern medicine can cure almost any illness.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

(f) No matter how well a person follows his doctor's orders, he has to accept a good deal of illness in his lifetime.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

COMPARISON OF PLANS FOR DEPENDENTS, RETIREES AND SURVIVORS

ALTERNATIVE PLANS	PHYSICIAN AND HOSPITAL SERVICE — INPATIENT	PHYSICIAN AND HOSPITAL SERVICE — OUTPATIENT	DENTAL SERVICES	LIMITATIONS OR SPECIAL PROVISIONS
A. CURRENT SYSTEM — UNIFORMED SERVICES FACILITIES	YOU PAY $4.10 PER DAY	NO CHARGE	NO CHARGE. RETIREES GET COMPLETE CARE; BUT DEPENDENTS GET COMPLETE CARE ONLY OVERSEAS OR IN UNDERSERVED AREAS. ELSEWHERE DEPENDENTS GET ONLY PREVENTIVE AND EMERGENCY CARE	SERVICES ON A SPACE-AVAILABLE BASIS ONLY. COVERS DEPENDENT PARENTS OR PARENTS-IN-LAW, WHO ARE EXCLUDED BY CHAMPUS AND BY PLANS B, C AND D
A. CURRENT SYSTEM — CHAMPUS	ACTIVE DUTY DEPENDENTS: YOU PAY $4.10/DAY OR $25 ADMISSION, WHICHEVER IS GREATER RETIREES, THEIR DEPENDENTS, SURVIVORS: YOU PAY 25% OF ALL CHARGES	YOU PAY FIRST $50/PERSON EACH YEAR -- UP TO $100/FAMILY -- PLUS FOR ACTIVE DUTY DEPENDENTS: 20% OF ADDITIONAL CHARGES FOR RETIREES, THEIR DEPENDENTS, SURVIVORS: 25% OF ADDITIONAL CHARGES	NOT COVERED	USE OF NON-PARTICIPATING PROVIDERS MAY INCREASE YOUR COSTS UNREASONABLE CHARGES NOT COVERED
B. BLUE CROSS-TYPE PLAN WITH DENTAL SERVICE	NO CHARGE	YOU PAY FIRST $100/PERSON EACH YEAR -- UP TO $200/FAMILY -- PLUS 20% OF ADDITIONAL CHARGES, FOR PHYSICIANS' SERVICES NO CHARGE FOR HOSPITAL SERVICES	NO CHARGE FOR PREVENTIVE, DIAGNOSTIC OR EMERGENCY SERVICES. FOR OTHER SERVICES YOU PAY THE FIRST $25/PERSON EACH YEAR -- UP TO $100/FAMILY -- PLUS (A) 30% OF EXCESS FOR ROUTINE SERVICES, E.G., FILLINGS (B) 75% OF EXCESS FOR ORTHODONTIC SERVICES (UP TO A $500 LIMIT) (C) 50% OF EXCESS FOR OTHER SERVICES	COSTS TO YOU OF COVERED SERVICES MAY NOT EXCEED $4,000 PER YEAR NO EXTENDED NURSING CARE FACILITY COVERAGE HOSPITAL CONFINEMENT IN EXCESS OF 365 DAYS SUBJECT TO COST-SHARING $50,000 LIMITATION ON PSYCHIATRIC CARE, AND $500,000 LIMITATION ON TOTAL LIFETIME PAYMENTS FOR YOU AND YOUR DEPENDENTS UNREASONABLE CHARGES NOT COVERED
C. BLUE CROSS-TYPE PLAN -- NO DENTAL SERVICE	SAME AS PLAN B	SAME AS PLAN B	NOT COVERED	SAME AS PLAN B
D. GROUP HEALTH CARE PLAN PREPAID HEALTH MAINTENANCE ORGANIZATION	NO CHARGE -- IF YOU USE DESIGNATED PHYSICIANS AND FACILITIES	NO CHARGE -- IF YOU USE DESIGNATED PHYSICIANS AND FACILITIES	NOT COVERED	USE OF FACILITIES OUT OF DESIGNATED AREA MAY BE ONLY PARTIALLY REIMBURSABLE NO EXTENDED NURSING CARE FACILITY COVERAGE

CHARGES FOR CIVILIAN MEDICAL CARE

In order to help you judge the relative value to you of the alternative health care plans, we provide typical costs of some health services:

Office visit to a general practitioner	$ 15	Physician's charge for a hospital visit	$ 25
Office visit to a specialist	$ 25	Hospital charge per day	$ 200

H. VALUE OF MILITARY HEALTH CARE

IN ORDER TO ASSESS THE VALUE OF THE MILITARY HEALTH CARE BENEFIT, WE ARE PRESENTING FOUR HEALTH CARE PLANS FOR YOU TO COMPARE AND EVALUATE IN DOLLARS. IT IS EXTREMELY IMPORTANT THAT YOU TAKE A LITTLE EXTRA TIME TO READ AND UNDERSTAND EACH OF THESE PLANS AND TO ANSWER THE ACCOMPANYING QUESTIONS.

ON THE YELLOW INSERT, YOU WILL FIND A CHART COMPARING THE FOUR PLANS — THE CURRENT HEALTH CARE PLAN AND THE THREE ALTERNATIVE PLANS. THE FIRST PLAN (PLAN "A") IS THE ONE CURRENTLY OFFERED BY THE MILITARY; THE OTHER THREE PLANS ARE NOT CURRENTLY OFFERED BY THE MILITARY. IF YOU ARE ON ACTIVE DUTY, YOU SHOULD REMEMBER THAT THE QUESTIONS PRESUME THAT YOU ARE, AND WOULD CONTINUE TO BE, ELIGIBLE FOR CARE ONLY THROUGH UNIFORMED SERVICES FACILITIES, ALTHOUGH YOUR DEPENDENTS AND SURVIVORS WOULD BE ELIGIBLE FOR ALL FOUR PLANS. IF YOU ARE A RETIREE OR SURVIVOR, YOU AND YOUR DEPENDENTS WOULD BE ELIGIBLE FOR ALL FOUR PLANS.

ROW "A" OF THE CHART DESCRIBES THE CURRENT HEALTH CARE SYSTEM — UNIFORMED SERVICES FACILITIES AND CHAMPUS. UNDER THIS PLAN YOU MAY RECEIVE INPATIENT CARE THROUGH CHAMPUS ONLY WHEN THE SERVICE YOU WANT IS UNAVAILABLE FROM A UNIFORMED SERVICES FACILITY. ROWS "B" AND "C" DESCRIBE TWO ALTERNATIVE PLANS, BOTH BASED ON BLUE CROSS PLANS. UNDER THESE PLANS, YOU AND YOUR DEPENDENTS WOULD BE FREE TO SEEK CARE FROM ANY CIVILIAN SOURCE. ROW "D" DESCRIBES ANOTHER ALTERNATIVE PLAN. THIS PLAN IS A GROUP HEALTH CARE PLAN (ALSO KNOWN AS A PREPAID HEALTH MAINTENANCE ORGANIZATION — HMO). UNDER IT, YOU AND YOUR DEPENDENTS WOULD HAVE TO SEEK CARE THROUGH CERTAIN DESIGNATED FACILITIES AND PHYSICIANS.

ON THE YELLOW INSERT YOU WILL ALSO FIND SOME TYPICAL CHARGES FOR PRIVATE HEALTH CARE IN THE UNITED STATES. READ THE MATERIAL ON THE YELLOW INSERT, THEN ANSWER THE QUESTIONS BELOW AND ON PAGE 7.

IN ANSWERING THE QUESTIONS BELOW, YOU SHOULD ASSUME THAT THE GOVERNMENT WILL PAY ANY PREMIUMS (OR MEMBERSHIP FEES) FOR THE PLANS. IF YOU ARE ON ACTIVE DUTY, YOU SHOULD ALSO ASSUME THAT YOU WOULD CONTINUE TO RECEIVE CARE ONLY THROUGH UNIFORMED SERVICE FACILITIES — THE CHANGES IN BENEFITS DISCUSSED BELOW WOULD APPLY ONLY TO YOUR DEPENDENTS. IF YOU ARE A RETIREE OR SURVIVOR, THE CHANGES DISCUSSED BELOW WOULD APPLY BOTH TO YOU AND TO YOUR DEPENDENTS.

30. If the Government gave you the option of selecting coverage under the current system or any of the three alternative plans, which plan would you choose? If this first choice were not available, which would you choose second? (Etc.) Rank the four plans below in the order that you would choose them by placing their letters in the appropriate spaces on the right.

A. UNIFORMED SERVICES FACILITIES AND CHAMPUS (CURRENT SYSTEM)	FIRST CHOICE _____
B. BLUE CROSS-TYPE PLAN WITH COMPLETE DENTAL CARE	SECOND CHOICE_____
C. BLUE CROSS-TYPE PLAN	THIRD CHOICE _____
D. GROUP HEALTH CARE PLAN (PREPAID HEALTH MAINTENANCE ORGANIZATION — HMO)	FOURTH CHOICE_____

31. If the Government changed your health care benefit from Uniformed Services Facilities and CHAMPUS (Plan A, the Current System) to the Blue Cross-type Plan with Complete Dental Care (Plan B), would you be better off or worse off? (Circle) your choice, then follow the arrows. Remember, you would not pay any premiums for either plan.

BETTER OFF

32. If better off, how much would you be willing to pay per year to get the additional benefits that Plan B gives you over Plan A?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3750 $4000 $4250 $4500 $4750 $5000

If more than $5000, specify_____

WORSE OFF

32. If worse off, how much additional compensation would the Government have to provide you per year to keep you as well off as you are now?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3570 $4000 $4250 $4500 $4750 $5000

If more than $5000, specify _____

WHERE APPROPRIATE, PLEASE (CIRCLE) THE CORRECT ANSWER

33. If the Government changed your health benefit from the Current System (Plan A) to the Blue Cross-type Plan (Plan C), would you be better off or worse off? Remember, you would not pay any premiums for either plan.

BETTER OFF

34. If better off, how much would you be willing to pay per year to get the additional benefits that Plan C gives you over Plan A?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3750 $4000 $4250 $4500 $4750 $5000

IF MORE THAN $5000, SPECIFY _____

WORSE OFF

34. If worse off, how much additional compensation would the Government have to provide you per year to keep you as well off as you are now?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3750 $4000 $4250 $4500 $4750 $5000

IF MORE THAN $5000, SPECIFY _____

35. If the Government changed your health care benefit from the Current System (Plan A) to the Group Health Care Plan (Plan D), would you be better off or worse off? Remember, you would not pay any premiums for either plan.

BETTER OFF

36. If better off, how much would you be willing to pay per year to get the additional benefits that Plan D gives you over Plan A?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3750 $4000 $4250 $4500 $4750 $5000

IF MORE THAN $5000, SPECIFY _____

WORSE OFF

36. If worse off, how much additional compensation would the Government have to provide you per year to keep you as well off as you are now?

$0 $250 $500 $750 $1000 $1250 $1500 $1750

$2000 $2250 $2500 $2750 $3000 $3250 $3500

$3750 $4000 $4250 $4750 $5000

IF MORE THAN $5000, SPECIFY _____

37. If all health care benefits were eliminated for dependents, retirees and survivors, how much additional compensation would the Government have to provide you per year to keep you as well off as you are now?

$0 $250 $500 $750 $1000 $1250 $1500 $1750 $2000 $2250 $2750 $3000 $3250 $3750 $4000 $4250 $4500

$4750 $5000 IF MORE THAN $5000, SPECIFY _____

38. Are there any other comments you wish to make about the Military Health Care System, the alternative plans presented above, or any of the subjects identified in this survey?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

WHERE APPROPRIATE, (CIRCLE) THE CORRECT ANSWER

COOPER AND COMPANY CONSULTANTS TO MANAGEMENT

Dear User of the Military Health Services System:

Approximately two weeks ago we mailed to you a survey for completion, regarding the military health services system. We have not as yet received a response from you. Your participation in this study is vitally important, whether or not you currently receive health care services from military health care facilities, U. S. public health service facilities, VA hospitals, or through CHAMPUS.

Please take a few minutes of your time to complete the survey. Your answers are extremely important in helping us to understand your evaluation of the military health services system and health care benefit and to recommend possible improvements.

Your replies will be absolutely confidential and only the summary results, without names or identifiers, will be forwarded to the Department of Defense.

We thank you in advance for your cooperation in this important study.

Sincerely,

Morris S. Whitcup

Dr. Morris S. Whitcup
Management Scientist
COOPER AND COMPANY

MSW:rc

112 HOYT STREET STAMFORD, CONNECTICUT 06905 203 328-1575

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

HEALTH AFFAIRS

Dear User of the Military Health Services System:

You have been selected to participate in a survey of a representative sample of beneficiaries of the Military Health Services System. Your support of this study will help the Department of Defense to make decisions related to the medical benefits offered to active duty personnel, retirees, dependents, and survivors.

Your participation and thoughtful responses to the enclosed questions will help us understand your views on the military health care benefit. The replies will be processed so that your individual response will be absolutely confidential and only the summary results, without names and identifiers, will be retained by the Department of Defense.

Please try to complete every question. If you are not sure of an answer, provide the best estimate you can make. If for some reason you cannot or choose not to answer a question, do not discard the questionnaire. Please complete the rest of it and return it as soon as you are finished. Since some of the questions have to do with your dependents, you may want to consult with them, and you are urged to do so.

Although this is a voluntary survey I would like to personally request your cooperation since the aggregate results are extremely important in helping us understand your evaluation of the Military Health Services System.

Sincerely,

John E. Murphy

John E. Murphy
Colonel, USAF MSC
Director, Office of Planning & Policy Analysis

Enclosure

2 WEEKS AGO WE MAILED A COPY OF THIS SURVEY TO YOU. WE HAVEN'T RECEIVED YOUR RESPONSE YET. YOUR ANSWERS ARE VERY IMPORTANT TO THIS RESEARCH. WON'T YOU PLEASE TAKE A FEW MINUTES TO COMPLETE THE QUESTIONNAIRE, IF YOU HAVEN'T ALREADY DONE SO?
BERNARD N. SAMERS, COOPER AND COMPANY
(203) 325-1575

TITLES OF ENLISTED PERSONNEL 5/

PAY GRADE	ARMY		NAVY 2/	MARINE CORPS	AIR FORCE
	NCOS	SPECIALISTS 1/			
E-9	Command Sergeant Major Sergeant Major		Master Chief Petty Officer	Sergeant Major; Master Gunnery Sergeant	Chief Master Sergeant
E-8	First Sergeant; Master Sergeant		Senior Chief Petty Officer	First Sergeant; Master Sergeant	Senior Master Sergeant
E-7	Platoon Sergeant; Sergeant First Class	Specialist 7	Chief Petty Officer	Gunnery Sergeant	Master Sergeant
E-6	Staff Sergeant	Specialist 6	Petty Officer, 1st Class	Staff Sergeant	Technical Sergeant
E-5	Sergeant	Specialist 5	Petty Officer, 2nd Class	Sergeant	Staff Sergeant
E-4	Corporal	Specialist 4	Petty Officer, 3rd Class	Corporal	Sergeant
E-3	PRIVATE FIRST CLASS		Seaman 3/	Lance Corporal	Airman First Class
E-2	PRIVATE, PV-2		Seaman Apprentice 4/	Private First Class	Airman
E-1	PRIVATE, PV-1		Seaman Recruit 4/	Private	Airman Basic

1/ For rank and precedence, within the Army, specialist grades fall between staff sergeant and private first class. Among the services, however, rank and precedence are determined by pay grade.

2/ In general, titles for petty officers are according to "rating" (naval skill) such as boatswain, gunner's mate, yoeman, storekeeper, etc. Personnel in pay grades E-3, E-2 and E-2 are not considered as possessing ratings. The titles listed denote the "rate" or pay grade.

3/ E-3 pay grade also includes airman, construction man, dental man, fireman, hospital man and stewardsman.

4/ E-1 and E-2 pay grades also include recruits and apprentices in 6 rates.

5/ Extracted from Selected Manpower Statistics.

TITLE OF OFFICER RANKS

Grade	Army, Air Force Marines	Navy
O-10	General	Admiral
O-9	Lieutenant General	Vice Admiral
O-8	Major General	Rear Admiral
O-7	Brigadier General	Rear Admiral
O-6	Colonel	Captain
O-5	Lieutenant Colonel	Commander
O-4	Major	Lieutenant Commander
O-3	Captain	Lieutenant
O-2	1st Lieutenant	Lieutenant (JG)
O-1	2nd Lieutenant	Ensign

	All Services
W-4	Chief Warrant Officer
W-3	Chief Warrant Officer
W-2	Chief Warrant Officer
W-1	Warrant Officer

RESULTS OF SECOND STAGE OF ANALYSIS

BIVARIATE TEST OF ASSOCIATION

BETWEEN INDEPENDENT VARIABLES

IN EACH SQUARE: CHI SQUARE VALUE
DEGREES OF FREEDOM
SIGNIFICANCE

	EDUCATION LEVEL	LENGTH OF SERVICE	BRANCH OF SERVICE	MARITAL STATUS	FAMILY SIZE	FAMILY CYCLE	GEOGRAPHIC LOCATION	SATISFACTION	WAITING ROOM TIME	IN/OUT CATCHMENT AREA	FACILITY SIZE	INCOME	INSURANCE	UNREIMBURSED COSTS	SOURCE OF CARE	HEALTH STATUS
EDUCATIONAL LEVEL																
LENGTH OF SERVICE	136.56745 12 0.0000															
BRANCH OF SERVICE	103.56926 16 0.0000	99.48883 12 0.0000														
MARITAL STATUS	129.25948 20 0.0000	115.30133 15 0.0000	41.19601 20 0.0035													
FAMILY SIZE	144.90225 20 0.0000	351.18652 15 0.0000	31.86319 20 0.0450	1492.14185 25 0.0000												
FAMILY CYCLE	203.05608 16 0.0000	996.72656 12 0.0000	69.14539 16 0.0000	533.22656 20 0.0000	1918.14795 20 0.0000											
GEOGRAPHIC LOCATION	109.00575 16 0.0000	234.99710 12 0.0000	785.15698 16 0.0000	138.71693 20 0.0000	182.39830 20 0.0000	225.87842 16 0.0000										
SATISFACTION	61.74857 16 0.0000	170.28104 12 0.0000	31.11913 16 0.0730	39.46803 20 0.0058	54.06111 20 0.0001	119.20752 16 0.0000	30.08711 16 0.0176									
WAITING ROOM TIME	55.85892 16 0.0000	27.33563 12 0.0000	73.47217 16 0.0000	36.79333 20 0.0124	30.11041 20 0.0681	48.92293 16 0.0000	54.43643 16 0.0000	117.86377 16 0.0000								
IN/OUT CATCHMENT AREA	61.62679 4 0.0000	192.27765 3 0.0000	3.57686 4 0.4663	105.96704 5 0.0000	71.66383 5 0.0000	188.20174 4 0.0000	2522.13574 4 0.0000	13.79070 4 0.0080	8.02562 4 0.0906							
FACILITY SIZE	75.55883 12 0.0000	198.35863 9 0.0000	259.90161 12 0.0000	138.02252 15 0.0000	101.74138 15 0.0000	202.49435 12 0.0000	3427.26196 12 0.0000	28.28146 12 0.0050	67.56329 12 0.0000	2522.12280 3 0.0000						
INCOME	328.06441 12 0.0000	379.23706 9 0.0000	13.15836 12 0.3577	122.02090 15 0.0000	1168.61353 12 0.0000	555.85913 12 0.0000	109.55293 12 0.0000	110.42618 12 0.0000	37.11643 12 0.0002	60.89725 3 0.0000	77.68658 9 0.0000					
INSURANCE	138.88434 16 0.0000	269.86963 12 0.0000	38.51976 16 0.0013	269.22974 20 0.0000	309.31962 20 0.0000	1290.10596 16 0.0000	407.64819 16 0.0000	41.01315 16 0.0006	21.56461 16 0.1670	356.15137 4 0.0000	361.96702 12 0.0000	188.10327 12 0.0000				
UNREIMBURSED COSTS	75.69719 16 0.0000	162.65390 12 0.0000	19.52618 16 0.2623	68.49448 20 0.0000	71.48991 20 0.0000	75.14140 16 0.0000	243.21837 16 0.0000	22.13232 16 0.1393	47.36310 16 0.0001	200.90562 4 0.0000	215.59860 12 0.0000	106.03754 12 0.0000	156.63083 16 0.0000			
SOURCE OF CARE	12.81447 4 0.0122	76.86710 3 0.0000	4.49233 4 0.3435	35.12765 5 0.0000	27.05157 5 0.0000	127.65683 4 0.0000	232.98268 4 0.0000	13.52316 4 0.0090	9.53218 4 0.0491	211.74077 1 0.0000	213.56315 3 0.0000	44.13837 3 0.0000	113.78725 4 0.0000	68.10068 4 0.0000		
HEALTH STATUS	178.51101 16 0.0000	157.87134 12 0.0000	30.77643 16 0.0144	111.91858 20 0.0000	86.11505 20 0.0000	242.76012 16 0.0000	139.07690 16 0.0000	39.39490 16 0.0010	29.81332 16 0.0190	120.75146 4 0.0000	139.98963 12 0.0000	28.17323 12 0.00052	213.84636 16 0.0000	157.03644 16 0.0000	18.00767 4 0.0200	

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