

Determinants of Medical Care Utilization

by Merwyn R. Greenlick, Arnold V. Hurtado, Clyde R. Pope, Ernest W. Seward, and Samuel S. Yoshioka

A multidimensional approach to the study of the factors that determine medical care utilization is described, based on the hypothesis that different sets of social, economic, and situational background characteristics are significant determinants of utilization in different disease situations. The patterns of utilization are studied in the setting of a prepaid group practice plan for comprehensive medical care with a membership of over 100 000. Preliminary findings are presented on the characteristics of the sample population, the patterns of medical care utilization, and the utilization for various types of morbidity.

Various studies in recent years have investigated patterns of patient behavior in regard to medical care in American society. One group of studies has attempted to explain such behavior by applying traditional economic-demand analysis to medical care problems. These studies are exemplified by Feldstein and Severson in the *Report of the Commission on the Cost of Medical Care* [1]. This approach relates gross individual or aggregate medical care expenditure to simple economic and social-demographic variables in an attempt to discern the relative impact of these variables on such expenditures.

Other studies have attempted to explain medical care behavior on the basis of social or social-psychological variables. The work of Suchman [2] takes this approach, and studies of this type have been reviewed by Coe and Wessen [3]. These studies focus on the individual's attitudes, perceptions, and/or social situations and the impact of these on medical care behavior.

A third research orientation has focused on the differential impact of various organizational settings within which medical care has been received. An example of this approach is the so-called Trussel study of family medical care under health insurance [4]. These studies have been most useful in pointing up significant questions concerning methods of organizing medical care facilities and services and have provided much information about medical care phenomena.

Other studies investigating medical care patterns have attempted to provide empirical evidence that would allow increased understanding of the factors affecting medical care utilization. These studies, conducted within various

Paper presented to the Medical Care Section, American Public Health Association, 96th Annual Meeting, Detroit, Nov. 12, 1968.

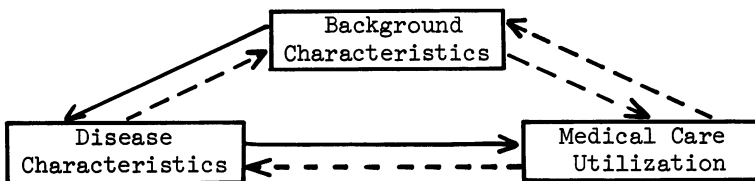
settings and focusing on a diversity of populations, have shown a variety of social, economic, situational, and attitudinal characteristics to be related to various aspects of medical care utilization. Most of these studies, however, deal with only a limited number of variables or pertain to small or select populations. In addition, they have often not adequately explored the theoretical basis for the relationships observed.

Further, the unavailability of comprehensive medical records to provide reliable background information for large population groups is a frequent and important practical limitation in these studies. Many of the studies of medical care utilization are based on utilization data gathered by survey. While the reliability of survey techniques for gathering certain kinds of data is well established, recent studies indicate that these techniques may be less useful for measuring such phenomena as medical care utilization [5-7].

This article is the preliminary report of a research effort, in progress since 1966, devoted to studying medical care in a situation where comprehensive medical records are available and where reliable background information can be obtained. The study builds on the methods and findings of the previous studies in investigating the complexities of medical care utilization but introduces a conceptual model that includes the intervening factor of disease.

Conceptual Framework

The objective of the study is to identify significant determinants of medical care utilization. The framework for this research is the belief that the individual's social, economic, situational, and attitudinal characteristics determine his pattern of medical care utilization when he is faced with perceived or existing disease. The interactions among background characteristics, disease characteristics, and medical care patterns can be represented as follows:



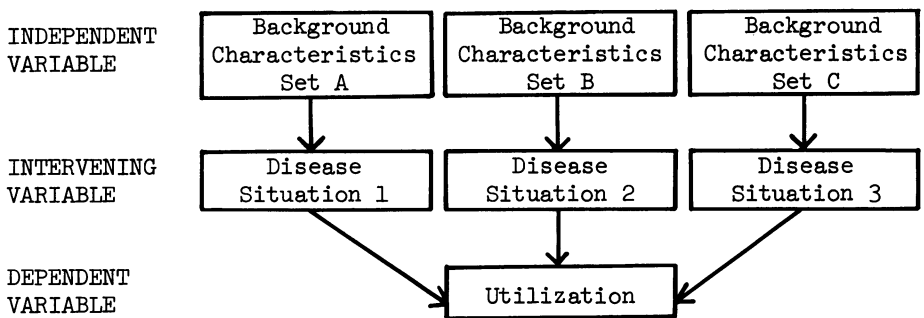
Many previous studies attempt to explain medical care utilization in terms of that interaction pathway depicted in the diagram by the arrow from Background Characteristics to Medical Care Utilization. This study investigates a new dimension by focusing on the pathway (depicted by the solid arrows) that begins with Background Characteristics and leads through Disease Characteristics to the patterns of Medical Care Utilization.

Obviously, it is beyond the scope of any single study to develop a general theory of medical care utilization, and at this stage in the development of the field such a general theory does not exist. Therefore a multidimensional

approach to the study of medical care utilization is employed, and the results of many past correlational studies are taken into account in specifying the variables to be included.

It is posited that different sets of background characteristics (independent variables) are significant determinants of medical care utilization (dependent variable) in different disease situations (intervening variables). Thus the study will test the hypothesis that the determinants of utilization for chronic disease, for communicable acute disease, for trauma, for diseases with a high emotional component, and for preventive services are different and operate in different ways.

The interaction diagram shown below serves to illustrate the relationship posited between background characteristics and medical care utilization in different disease situations. This diagram elaborates the pathway depicted in the first diagram by the solid arrows beginning with Background Characteristics and leading through Disease Characteristics to patterns of Medical Care Utilization. In this second diagram different sets of background characteristics (containing some or none of the same background items) are shown as influencing the utilization of a given type of medical care service in different disease situations. A diagram identical to this could be presented for the utilization of each of the different types of medical care service.



Setting and Aims

This project explores the determinants of medical care utilization within a given medical care system. This system, the Oregon Region of the Kaiser Foundation Health Plan, provides a research setting in which comprehensive integrated medical care is provided by qualified medical personnel, central records are maintained, and a financial mechanism exists that minimizes economic deterrents to obtaining medical care.

The Oregon Region of the Kaiser Foundation Health Plan provides for the medical care needs of approximately 115 000 people. It offers prepaid full service benefits provided within the context of the group practice of medicine. The Plan was established in 1943 and enrolls approximately 15 percent of

the community on a prepaid basis. A broad-based population group, with up to 25 years' experience in using the services offered, is therefore available for study. Comprehensive medical services are provided by board-eligible or board-certified specialists practicing full time in modern, convenient settings. Complete hospital services are available in the Bess Kaiser Hospital [8].

Although the intent of this research is to explore the determinants of medical care utilization within a particular medical care system, the data from the project could also facilitate study of variation in medical care utilization between different systems. It is generally quite difficult to compare the effect of different methods of organizing and financing medical care because of major differences in population characteristics between different systems. Knowledge of the factors that determine differences in utilization among people within the same system could provide a means of assessing the effect of varying population characteristics when comparing systems.

The specific aims of the project are:

- To estimate parameters of the medical care utilization of a large population group receiving comprehensive medical care in the setting of a prepaid group practice.
- To estimate the amount and type of medical care services utilized by this population for various types of morbidity.
- To investigate the relationships between social, economic, and situational background characteristics and medical care utilization in different disease situations, testing the working hypothesis that different sets of background characteristics are significant determinants of medical care utilization in different disease situations.

The Sample

The membership records of the Health Plan are stored on magnetic tape to permit regular computer processing. Since both individual members and their family units (subscriber plus spouse and dependents when enrolled) are identified by unique numbers, a reliable sampling frame was readily available. Included in the basic record is such information as age, sex, place of residence, size of family unit, and enrollment group.

The sampling method used approximated a two-stage probability sample. A 5 percent sample of family units (the primary sampling unit) was selected by computer, using a simple random sampling technique. These units (approximating primary families) provide natural clusters of individual elements. Because many medical care phenomena are essentially family-oriented, all the individuals (elements) in the cluster are included in the sample. This is equivalent to subsampling with a sampling fraction of one in the second stage and provides an equal probability cluster sample of the Plan population, allowing estimates of utilization to be made on either a family or an individual basis when the appropriate variance formula is used [9].

The original sample was drawn from the list of people eligible for Health Plan service on Sept. 1, 1966. Each month a sample of 5 percent of all new families is added to the overall sample. Attempts are made to record continuous medical care utilization of those who have dropped out of the Health Plan, but the overall sample is designed to represent the overall Health Plan membership at any point in time.

The original sample was made up of 1487 family units, including 4123 total individuals. A total of 2025 families and 5832 individuals were in the sample at some time during the calendar year 1967. Of the 1640 families and 4597 individuals eligible for sampling on Jan. 1, 1967, 1425 families and 4010 individuals remained eligible for the full twelve months. As of July 1, 1968, 2311 families and 6514 individuals were eligible.

Medical Care Utilization Recording System

The total medical care activities of all sampled individuals are routinely recorded by medical record technicians. Many previous attempts to record data from medical records in the general medical community have been thwarted [10] by a high incidence of illegible, missing, and incomplete records, but this has not been the experience in this group practice setting.

The medical record technicians have had little difficulty recording information from the medical records. The information can be derived directly by the project staff for more than 95 percent of all medical care services. The attending physician or his nurse is contacted in the small proportion of cases in which information is not readable or is not in the medical record. The total medical record of this population has been computerized on an ongoing basis, and all contacts (including telephone calls and letters) have been recorded since Jan. 1, 1967. Data for each contact include time, place, type of service, type of provider, presenting and associated morbidity, symptoms, episodes, and content of the visit. The coding system used is an adaptation of the California Relative Value Fee Schedule.

Background Characteristics

A household interview survey of sampled families will be undertaken late in 1969 to gather the demographic, social, economic, situational, and attitudinal data that serve as the basic set of independent variables. The questionnaire for this interview survey has been designed and pretested as part of the first phase of the study. The National Opinion Research Center of the University of Chicago assisted in this task and administered the pretest field work.

The design of the survey calls for separate but simultaneous interviews with the husband and wife in two-parent families, using two related but different questionnaires. This approach is employed because some of the data sought will be more reliable and valid if obtained from the husband/father and some if obtained from the wife/mother. Other data, especially perceptual/attitudinal data, must be obtained from each person independently. The separate but simultaneous interview approach is not commonly reported in the

literature but is especially useful for this study, which focuses on both family and individual determinants and patterns of medical care utilization.

The questionnaire includes items pertaining to many variables that have been shown to have a bearing on medical utilization, as well as some that have not previously been explored. To a certain extent a general theoretical framework has guided the selection of these variables. This framework draws upon those areas of sociology and social psychology which have to do with the individual within the social structure and culture. That is, the general focus of the study is upon the individual's social positions, social roles, and social relationships. The independent variables that are the focus of the questionnaire include the usual demographic variables as well as items to measure social, economic, situational, and attitudinal variables.

Disease Classification (Intervening Variable)

Among the data from the medical records are the diagnoses recorded by the physician for each medical care service. The diagnoses of the presenting morbidity and all associated diseases were coded according to the *International Classification of Diseases, Adapted for Indexing of Hospital Records* (ICDA). If the diagnosis indicated was subsequently changed, the revised diagnosis was also recorded. This allows analysis for all services on the basis of either the original or the most recently revised diagnosis.

The ICDA is used in this study as the basic recording system in order to provide comparability with other studies, since this classification system is the most commonly used and most widely accepted in reporting medical care data. However, it contains subclasses that are not meaningful for many medical care purposes. A modified system, preserving the basic structure of the ICDA, has therefore been developed for the data relating to the second objective of the study (estimation of the amount and type of medical care services utilized by the population for various types of morbidity). This modification regroups all ICDA numbers into 33 general categories. As with ICDA, these categories, based on etiologic agent, region of the body, or special type of morbidity, are fairly homogeneous.

Even this reorganization of ICDA groups, however, is inadequate for the analysis of data relative to the third objective, the investigation of the relationships between background characteristics and medical care utilization in different disease situations. Since the general analytical framework is based on the working hypothesis that different sets of background characteristics are significant determinants of medical care utilization in different disease situations, an additional classification is being developed to form categories of diseases that produce relative homogeneity of impact on individuals. To the extent that this is achieved, each category will contain those diseases which produce a similar behavior pattern in the use of medical care services by persons with like background characteristics. The disease categories in this classification system should, in addition, be as heterogeneous as possible. This system will not maintain the ICDA structure.

Preliminary Findings

The preliminary findings presented here and in the tables at the end of this article are from a very few of the large number of tables already produced. This preliminary analysis is to lead toward the development of relevant summary files and to point the direction to the future analytical design.

Population Characteristics

The sociodemographic information for this section comes from three sources. (1) The Kaiser Health Plan records provided date of birth, sex, effective date of enrollment, the type, date, and premium of the classification under the Health Plan, and number of dependents covered. (2) The medical record chart gave date of chart; subscriber's place of birth, race, religion, marital status, employment status, and occupational classification; and employment and occupational status of spouse. (3) The city directory was used for additional information on employment and occupational status when necessary.

The population covered by the Kaiser Health Plan of Portland, Ore. is presently more than 100 000; during 1967 it averaged 94 083. The majority of the members of the sample (64 percent) come from the central county (Multnomah) of the Portland Standard Metropolitan Statistical Area (SMSA); 32 percent come from the adjacent counties (Clackamas, Clark, and Washington); and the remaining 4 percent reside outside the SMSA.

The Health Plan membership (hence the sample group also) has a slightly larger proportion in the under-25 age group and a slightly smaller proportion in the over-65 group than the Portland SMSA population (Table 1). The racial distribution of the sample is similar to that of the 1960 census of the area: of the total sample, 4 percent were nonwhite, as were 3 percent of the SMSA population (Table 2). Protestants make up 81 percent of the sample of subscribers and Catholics 16 percent. By place of origin, 92 percent of the subscribers and their spouses were born in the United States, 3 percent in Canada, and 5 percent in Europe. Over half were native to the U.S. West.

Because of the nature of the Health Plan the sample subscribers were generally employed (87 percent). Their most frequent occupations were clerical-sales (23 percent) and semiskilled (24 percent). Most of the subscribers (81 percent) were married.

Medical Care Utilization Patterns

Estimates of the parameters of medical care utilization in this population group are derived from the compilation of the medical care services received by all members of the sample who were eligible under the Health Plan at any time during 1967. However, the services were compiled only for the utilization that took place within the period in which these members were eligible for Health Plan coverage.

Ninety-five percent of medical care services were rendered during clinic hours; 4 percent at night during the week (3 percent between 5 p.m. and

midnight); and 1 percent on Sundays and holidays. Direct contacts at the clinic accounted for 68 percent of total services; 24 percent were by telephone or letter; and 5 percent took place in the emergency department either during regular clinic hours or on Sundays, holidays, or at night (Table 3).

The internists were the most frequently utilized of the specialists involved in the medical care of this sample (42 percent), followed by the pediatricians (21 percent) and surgeons (11 percent). The extent of use of the various specialties is shown in Table 4. Furthermore, 88 percent of all services were primarily performed by physicians (Table 5), and 80 percent of the physician contacts were with the regular attending physician (Table 6).

Regularly scheduled appointments represented 46 percent of medical care services; 16 percent were unscheduled visits during clinic hours.

Use of Service, by Disease

The frequency and percentage distributions of the 33 classifications of disease in physician clinic visits (for the sample members eligible for the full 12 months) are shown in Table 7. A large proportion of visits (15 percent) were in the general medical category, which includes preventive physical checkups. Each morbidity category had an average of 337 services, ranging from a low of 19 to a high of 1624.

To illustrate some relationships between various sociodemographic variables and disease, several cross tabulations between medical care services for the disease categories and age, sex, occupation, and religious preference are shown in Tables 8 to 11.

Parameters of Medical Care Utilization

Of all those in the sample who were eligible for the full 12 months, 77 percent used the medical care facilities at least once during the year (Table 12). There are slight differences in this rate between males (74 percent) and females (80 percent). The proportion of males using service ranged from 89 percent for the group under 5 years of age to 68 percent for the 15-to-24 age group. For females, utilization ranged from 90 percent in the under-5 group to 76 percent in the 5-to-14 group.

Tables 13 to 15 show the utilization for the various age groups broken down by type of appointment, time of service, and place of service. The number of associated diseases recorded in addition to the presenting morbidity at each visit is tabulated for the various ages in Table 16.

Summary

Significant innovations in the organization of health care services depend on the understanding of medical care utilization patterns. Winter and Metzner [11] have pointed out that in order to explain the dynamics of total medical care demand it is first necessary to identify those factors which determine the volume of services required in a population. Second, it is necessary to identify

and explain the processes through which the factors operate individually to determine the volume of services required. And third, it is necessary to explain the interactions among the factors and how these interactions influence the impact of the individual variables on the demand for services.

This research attempts to move toward the achievement of these objectives. It investigates the factors determining utilization, using a multidimensional approach. By including the disease variable, it will attempt to specify the processes through which the factors operate individually. And finally, it will investigate the interactions among the factors by identifying those sets of characteristics which are determinants of medical care utilization in different disease situations.

Acknowledgment. The authors wish to acknowledge the substantial contributions of Joseph F. Jones, director of the Center for Social Research, Portland State College, Portland, Ore., toward the development of this research.

REFERENCES

1. Feldstein, P. J. and R. N. Severson. The Demand for Medical Care. Chapter 4 in *Report of the Commission on the Cost of Medical Care*, Vol. 1, p. 57. Chicago: The American Medical Association, 1964.
2. Suchman, E. A. Sociomedical variations among ethnic groups. *Am. J. Sociol.* 19:319 November 1964. Social patterns of illness and medical care. *J. Health and Human Behavior* 6:2 Spring 1966.
3. Coe, R. M. and A. F. Wessen. Social-psychological factors influencing the use of community health resources. *Am. J. Pub. Health* 55:1024 July 1965.
4. Columbia University, School of Public Health and Administrative Medicine, with the cooperation of the National Opinion Research Center of the University of Chicago. *Family Medical Care under Three Types of Health Insurance*. New York: Foundation on Employee Health, Medical Care, and Welfare, 1962.
5. Suchman, E. A., B. S. Phillips, and G. F. Streib. An analysis of the validity of health questionnaires. *Social Forces* 36:223 March 1958.
6. *Health Statistics from the U. S. National Health Survey*. Series D, No. 4, May 1961, *Reporting of Hospitalization in the Health Interview Survey*; Series D, No. 5, June 1961, *Health Interview Responses Compared with Medical Records*. Washington, D.C.: Department of Health, Education, and Welfare.
7. *Vital and Health Statistics*. Series 2, No. 7, *Health Interview Responses Compared with Medical Records*. Washington, D. C.: National Center for Health Statistics, July 1965.
8. Saward, E. W., J. D. Blank, and M. R. Greenlick. Documentation of twenty years of operation and growth of a prepaid group practice plan. *Med. Care*. 6:231 May-June 1968.
9. Hopkins, C. E., R. P. Walkley, D. N. Wilner, and J. T. Gold. Intrafamily correlation and its significance in the interpretation of sample surveys. *Am. J. Pub. Health* 53:1112 July 1963.
10. Altman, I. Assessing the Quality of Records in the Physician's Office. Paper presented at the 94th Annual Meeting of the American Public Health Association, San Francisco, Nov. 3, 1966.
11. Winter, K. B. and C. A. Metzner. *Institutional Care for the Long-Term Patient: A Study of Hospitals and Nursing Facilities in Michigan*. Bureau of Public Health Economics, Research Series No. 7. Ann Arbor, Mich.: School of Public Health, University of Michigan, 1958.

Table 1. Percentage Distribution by Sex and Age for Sample Population, Total Kaiser Plan Membership, and Portland SMSA (1960)

Age	Full 12 mo. sample	Less than 12 mo. sample	Total Kaiser membership	Portland SMSA
TOTAL SAMPLE				
All ages . . .	100% (N=4 004*)	100% (N=1 820†)	100% (N=94 083)	100% (N=821 897)
0-4	7	14	9	10
5-14	22	22	22	20
15-24	15	21	16	12
25-44	25	25	24	25
45-64	22	14	22	22
65-74	7	3	5	7
75+	2	1	2	4
MALE				
All ages . . .	100% (N=1 979)	100% (N=857)	100% (N=45 884)	100% (N=400 582)
0-4	8	15	10	11
5-14	23	21	23	20
15-24	15	20	15	11
25-44	24	26	24	25
45-64	21	13	21	22
65-74	6	4	5	7
75+	3	1	2	4
FEMALE				
All ages . . .	100% (N=2 025)	100% (N=963)	100% (N=48 199)	100% (N=421 315)
0-4	7	14	9	10
5-14	20	23	21	19
15-24	16	22	17	12
25-44	25	24	24	25
45-64	22	14	22	22
65-74	7	2	5	8
75+	2	1	2	4

*Unknown: 6.
†Unknown: 1.

Table 2. Distribution by Race for Sample Population Eligible for 12 Full Months (1967) and for Portland SMSA (1960)

(Percentages rounded; no entry for less than 1%)

Race	Subscribers in sample		Total sample		Portland SMSA	
	No.	%	No.	%	No.	%
All races . . .	1 348*	100	3 804†	100	821 897	100
White	1 302	97	3 658	96	797 381	97
Negro	39	3	132	4	16 675	2
Other	7		14		7 841	1

*Unknown: 77.
†Unknown: 206.

Table 3. Distribution of Total Medical Care Services*
by Place of Service (1967)

(Percentages rounded; no entry for less than 1%)

Place of service	No.	%
All locations	23 297	100
Clinic	15 749	68
Home	129	
Nursing home	6	
Emergency department	1 160	5
Telephone or letter	5 547	24
Kaiser inpatient†	449	2
Kaiser extended care facility†	20	
Other	237	1

*Excluding laboratory, x-ray, EKG, and EEG services.

†Counted as only one service per admission.

Table 4. Distribution of Total Medical Care Services*
by Department of Physician Ordering and
Rendering Service (1967)

Department	No.	%
All departments	23 142†	100
Internal medicine	9 759	42
Ob-Gyn.	2 082	9
Ophthalmology	1 260	5
Orthopedics	1 372	6
Pediatrics	4 814	21
Surgery	2 454	11
Urology	468	2
ENT	448	2
Other	485	2

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 155.

Table 5. Distribution of Total Medical Care Services* by Primary Type of Service (1967)

(Percentages rounded; no entry for less than 1%)

Primary type of service	No.	%
All types	23 286†	100
Physician	20 556	88
Physical therapy	281	1
Nurse	1 510	7
Mental health	139	1
Optometry	719	3
Other	81	

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 11.

Table 6. Distribution of Total Medical Care Services* by Status of Physician Ordering and Rendering Service (1967)

Status of physician	No.	%
All categories	23 117†	100
Regular attending	18 523	80
Temporary attending	4 048	18
Consultant	546	2

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 180.

Table 7. Distribution of Presenting Morbidity: Physician-Clinic Visits*
for Total Sample Eligible for 12 Full Months (1967)

(Percentages rounded; no entry for less than 1%)

Classification (ICDA Modified)	No.	%
All classifications	11 111†	100
Venereal diseases	26	
Viral infections	107	1
Parasites and other infestations	57	
Tuberculosis	61	1
Malignant neoplasms	176	2
Benign and unspecified neoplasms	163	1
Allergic conditions	163	1
Endocrine disorders	118	1
Obesity	150	1
Anemias and other diseases of blood	55	
Emotional disorders	333	3
Organic diseases of central nervous system	76	1
Diseases of nerves, peripheral ganglia	23	
Diseases of eye	353	3
Diseases of ear	514	5
Rheumatic fever, heart diseases	562	5
Diseases of arteries and veins	179	2
Diseases of respiratory system	1 309	12
Diseases of G.I. tract and digestive system	460	4
Diseases of G.U. tract	366	3
Breast disease (non-neoplastic)	29	
Diseases of female genitals	188	2
Pregnancy	628	6
Diseases of skin	623	6
Diseases of bones, joints, and muscles	580	5
Congenital malformation, birth injuries	76	1
Burns, traumatic injuries to body	973	9
Adverse effects of chemicals, drugs, etc.	72	1
Complications of surgical procedure and medical care	19	
No disease present	48	
General medical	1 624	15
Other	20	
Symptoms	980	9

*Excluding emergency department services.

†Unknown: 89.

Table 8. Distribution of Morbidity by Age: Physician-Clinic Visits*
for Total Sample Eligible for 12 Full Months (1967)
(Percentages rounded; no entry for less than 1%)

Classification (ICDA Modified)	All ages (100%)		0-4 (7%)		5-14 (22%)		15-24 (15%)		25-44 (25%)		45-64 (22%)		65-74 (7%)		75+ (2%)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All classifications	11 105†	100	1 016	9	1 759	16	1 320	12	2 754	25	2 775	25	1 008	9	473	4
General medical	1 619	100	358	22	309	19	182	11	342	21	300	19	108	7	20	1
Dis. of resp. system	1 309	100	220	17	357	27	161	12	295	23	202	15	51	4	23	2
Symptoms	980	100	72	7	185	19	104	11	283	29	227	23	77	8	32	3
Burns & traumatic inj.	973	100	59	6	223	23	147	15	228	23	242	25	54	6	20	2
Pregnancy	628	100	0	0	0	0	254	41	373	59	1	1	0	0	0	0
Diseases of skin	623	100	17	3	118	19	140	22	149	24	143	23	34	5	22	4
Diseases of bones, joints, & muscles	580	100	19	3	26	4	32	6	122	21	271	47	69	12	41	7
Heart diseases	562	100	0	0	2	0	0	0	57	10	261	47	143	25	99	18
Diseases of ear	514	100	146	28	214	42	18	4	61	12	42	8	30	6	3	0
Dis. of G.I. tract	459	100	16	4	16	4	24	5	103	22	170	37	79	17	51	11
Dis. of G.U. tract	366	100	11	3	36	10	20	5	90	25	107	29	64	18	38	10
Diseases of eye	353	100	19	5	84	24	11	3	67	19	85	24	56	16	31	9
Emotional disorders	333	100	1	0	21	6	24	7	102	31	143	43	36	11	6	2
Dis. of fem. genitals	188	100	0	0	1	1	29	15	64	34	71	38	14	7	9	5
Diseases of arteries & veins	179	100	0	0	0	0	8	4	46	26	74	41	24	14	27	15
Malignant neoplasms	176	100	0	0	1	1	2	1	44	25	84	48	32	18	13	7
Benign & unspecified neoplasms	163	100	0	0	14	8	13	8	54	33	63	39	14	9	5	3
Allergic conditions	163	100	4	2	32	20	15	9	37	23	51	31	18	11	6	4
Obesity	150	100	0	0	20	13	14	9	50	34	59	39	4	3	3	2
Other	787	100	74	9	100	13	122	15	187	24	179	23	101	13	24	3

*Excluding emergency department services.

†Unknown: 95.

Table 9. Distribution of Morbidity by Sex: Physician-Clinic Visits* for Total Sample Eligible for 12 Full Months (1967)

Classification (ICDA Modified)	Total sample (100%)		Male (49%)		Female (51%)	
	No.	%	No.	%	No.	%
All classifications	11 096†	100	4 744	43	6 352	57
General medical	1 623	100	662	41	961	59
Diseases of resp. system	1 308	100	643	49	665	51
Symptoms	979	100	408	42	571	58
Burns & traumatic injuries	973	100	539	55	434	45
Pregnancy	628	100	0	0	628	100
Diseases of skin	623	100	280	45	343	55
Diseases of bones, joints & muscles	580	100	322	56	258	44
Heart diseases	562	100	276	49	286	51
Diseases of ear	513	100	242	47	271	53
Diseases of G.I. tract	460	100	243	53	217	47
Diseases of G.U. tract	360	100	217	60	143	40
Diseases of eye	353	100	160	45	193	55
Emotional disorders	332	100	130	39	202	61
Diseases of female genitals	188	100	0	0	188	100
Diseases of arteries & veins	179	100	87	49	92	51
Malignant neoplasms	176	100	60	34	116	66
Benign & unspecified neoplasms ...	163	100	53	33	110	67
Allergic conditions	162	100	83	51	79	49
Obesity	150	100	44	29	106	71
Other	784	100	295	38	489	62

*Excluding emergency department services.

†Unknown: 104.

Table 10. Distribution of Morbidity by Usual Occupation: Physician-Clinic Visits* for Subscribers and Spouses Eligible for 12 Full Months (1967)

(Percentages rounded; no entry for less than 1%)

Classification (ICDA Modified)	All categories 100%		Exec.-Prof. (4%)		Mgr.-Tchr. (12%)		Admin.- Small bus. (6%)		Clerical- Sales (26%)		Skilled labor (17%)		Mach. op.- Semiskilled (24%)		Unskilled (11%)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All classifications	4 357†	100	182	4	570	13	217	5	1 292	30	670	15	977	23	449	10
General medical	454	100	19	4	71	16	23	5	147	32	70	15	89	20	35	8
Dis. of resp. system	377	100	19	5	56	15	15	4	95	25	78	21	86	23	28	7
Symptoms	386	100	26	7	49	13	17	4	111	29	55	14	87	22	41	11
Burns & traumatic inj.	387	100	11	3	26	7	25	6	115	30	61	16	95	24	54	14
Pregnancy	217	100	0	0	85	39	0	0	102	47	4	2	25	12	1	1
Diseases of skin	274	100	15	5	34	12	16	6	86	31	29	11	62	23	32	12
Diseases of bones, joints & muscles	340	100	5	1	34	10	23	7	83	25	88	26	58	17	49	14
Heart diseases	288	100	19	7	30	10	20	7	63	22	44	15	67	23	45	16
Diseases of ear	91	100	2	2	8	9	9	10	19	21	28	31	18	20	7	7
Diseases of G.I. tract	277	100	20	7	14	5	3	1	66	24	55	20	74	27	45	16
Diseases of G.U. tract	197	100	7	3	22	11	5	3	53	27	29	15	55	28	26	13
Diseases of eye	142	100	12	8	17	12	5	4	50	35	18	13	29	20	11	8
Emotional disorders	183	100	1	1	24	13	13	7	57	31	22	12	49	27	17	9
Diseases of female genitals	71	100	0	0	12	17	5	7	36	51	1	1	15	21	2	3
Diseases of arteries & veins	123	100	0	0	13	11	16	13	40	32	11	9	35	28	8	7
Malignant neoplasms	66	100	9	14	2	3	1	2	36	55	4	6	7	10	7	10
Benign & unspecified neoplasms	78	100	4	5	16	21	3	4	18	23	13	17	19	24	5	6
Allergic conditions	61	100	8	13	5	8	1	2	16	26	14	23	13	21	4	7
Obesity	55	100	0	0	7	13	2	4	25	45	9	16	4	7	8	15
Other	290	100	5	2	45	15	15	5	74	26	37	13	90	31	24	8

*Excluding emergency department services.

†Unknown: 6843.

Table 11. Distribution of Morbidity by Religion: Physician-Clinic Visits* for Total Sample Eligible for 12 Full Months (1967)

Classification (ICDA Modified)	Total sample (100%)		Protestant (81%)		Catholic (16%)		Other (3%)	
	No.	%	No.	%	No.	%	No.	%
All classifications	9 976†	100	7 852	79	1 827	18	297	3
General medical	1 474	100	1 154	78	287	20	33	2
Dis. of resp. system	1 172	100	914	78	222	19	36	3
Symptoms	891	100	713	80	158	18	20	2
Burns & traumatic inj.	875	100	685	78	167	19	23	3
Pregnancy	565	100	401	71	142	25	22	4
Diseases of skin	563	100	442	79	108	19	13	2
Diseases of bones, joints & muscles	494	100	399	81	73	15	22	4
Heart diseases	508	100	391	77	103	20	14	3
Diseases of ear	462	100	365	79	93	20	4	1
Diseases of G.I. tract	423	100	324	76	80	19	19	5
Diseases of G.U. tract	322	100	284	88	36	11	2	1
Diseases of eye	300	100	222	74	58	19	20	7
Emotional disorders	288	100	249	86	34	12	5	2
Diseases of female genitals	170	100	146	86	19	11	5	3
Diseases of arteries & veins	173	100	130	75	30	17	13	8
Malignant neoplasms	151	100	117	77	34	23	0	0
Benign & unspecified neoplasms	150	100	106	71	32	21	12	8
Allergic conditions	151	100	128	85	13	8	10	7
Obesity	135	100	108	80	27	20	0	0
Other	709	100	574	81	111	16	24	3

*Excluding emergency department services.

†Unknown: 1224.

Table 12. Distribution, by Age and Sex, of Persons Receiving Any Medical Care Service, in Total Sample Eligible for 12 Full Months (1967)

Category	All ages		0-4		5-14		15-24		25-44		45-64		65-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
TOTAL SAMPLE	4 004*	100	303	100	871	100	608	100	988	100	911	100	263	100	97	100
No utilization	903	23	32	11	211	24	165	27	232	23	199	22	57	22	14	14
Utilization	3 101	77	271	89	660	76	443	73	756	77	712	78	206	78	83	86
MALE	1 979	100	157	100	457	100	290	100	479	100	423	100	113	100	60	100
No utilization	506	26	18	11	111	24	94	32	140	29	108	26	26	23	9	15
Utilization	1 473	74	139	89	346	76	196	68	339	71	315	74	87	77	51	85
FEMALE	2 025	100	146	100	414	100	318	100	509	100	488	100	150	100	37	100
No utilization	397	20	14	10	100	24	71	22	92	18	91	19	31	21	5	14
Utilization	1 628	80	132	90	314	76	247	78	417	82	397	81	119	79	32	86

*Unknown: 6.

Table 13. Age Distribution of Total Medical Care Services* by Type of Appointment, for Total Sample Eligible for 12 Full Months (1967)

Type of appointment	All ages		0-4		5-14		15-24		25-44		45-64		65-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All types	19 620†	100	1 719	100	3 073	100	2 254	100	4 923	100	5 023	100	1 772	100	856	100
Regularly scheduled	9 048	46	652	38	1 242	40	1 059	47	2 246	46	2 477	49	960	54	412	48
Unscheduled visit during clinic hours	3 142	16	375	22	676	22	388	17	785	16	646	13	172	10	100	12
Hospital emergency department	971	5	145	8	274	9	131	6	225	4	137	3	41	2	18	2
Telephone or letter	4 617	24	424	25	667	22	475	21	1 242	25	1 256	25	378	21	175	20
Other	1 842	9	123	7	217	7	201	9	425	9	507	10	221	13	151	18

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 23.

Table 14. Age Distribution of Total Medical Care Services* by Time of Service, for Total Sample Eligible for 12 Full Months (1967)

(Percentages rounded; no entry for less than 1%)

Time of service	All ages		0-4		5-14		15-24		25-44		45-64		65-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All periods	19 418†	100	1 690	100	3 033	100	2 238	100	4 877	100	4 995	100	1 760	100	825	100
During clinic hours	18 474	95	1 549	92	2 797	93	2 112	94	4 636	95	4 865	97	1 710	97	805	98
5 p.m.-midnight																
Monday-Saturday	541	3	93	5	154	5	68	3	133	3	52	1	31	2	10	1
Midnight-9 a.m.																
Monday-Saturday	110	1	4		10		20	1	38	1	28	1	7		3	
Sundays and holidays	293	1	44	3	72	2	38	2	70	1	50	1	12	1	7	1

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 225.

Table 15. Age Distribution of Total Medical Care Services* by Place of Service, for Total Sample Eligible for 12 Full Months (1967)

(Percentages rounded; no entry for less than 1%)

Place of service	All ages		0-4		5-14		15-24		25-44		45-64		65-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All locations	19 637†	100	1 719	100	3 075	100	2 254	100	4 930	100	5 030	100	1 772	100	857	100
Clinic	13 427	68	1 132	66	2 071	67	1 577	70	3 319	67	3 504	70	1 269	72	555	65
Home	100		0	0	0	0	0	0	4		1		10	1	85	10
Emergency department	971	5	145	8	274	9	131	6	225	5	137	3	41	2	18	2
Telephone or letter	617	24	424	25	667	22	475	21	1 242	25	1 256	25	378	21	175	20
Other	522	3	18	1	63	2	71	3	140	3	132	2	74	4	24	3

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 6.

Table 16. Age Distribution of Total Medical Care Services* by Number of Associated Diseases, for Total Sample Eligible for 12 Full Months (1967)

(Percentages rounded; no entry for less than 1%)

Number of associated diseases	All ages		0-4		5-14		15-24		25-44		45-64		65-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All categories	19 636†	100	1 719	100	3 075	100	2 254	100	4 929	100	5 030	100	1 772	100	857	100
None	15 486	79	1 397	81	2 616	85	1 930	86	3 979	81	3 691	73	1 266	72	607	71
One	3 138	16	280	16	398	13	276	12	735	15	956	19	325	18	168	20
Two	694	3	31	2	56	2	42	2	163	3	254	5	93	5	65	6
Three	207	1	7	1	4		6		38	1	87	2	50	3	15	2
Four or more	111	1	4		1		0		14		42	1	38	2	12	1

*Excluding laboratory, x-ray, EKG, and EEG services.

†Unknown: 7.