

1976

Comparative cost and financial analysis of ambulatory care providers.

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Heaton HL. Rhodes JH. Dobson A. Comparative cost and financial analysis of ambulatory care providers. Indian Health Service, Staff Office of Planning, Evaluation and Research, Rockville, MD 20857 (E-10). 1976

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COMPARATIVE COST AND FINANCIAL
ANALYSIS OF AMBULATORY
CARE PROVIDERS

DRAFT OF FINAL REPORT
PHASE I
PHASE III

1974

GEOMET, Incorporated

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GAITHERSBURG, MARYLAND 20760
301/948-0755

GEOMET Report Number HF-360

January 14, 1976

COMPARATIVE COST AND FINANCIAL
ANALYSIS OF AMBULATORY
CARE PROVIDERS

DRAFT OF FINAL REPORT
PHASE I
PHASE III

1974

for

Office of the Administrator
Office of Planning, Evaluation & Legislation
Health Services Administration
5600 Fishers Lane
Rockville, Maryland 20852

under

Contract Number HSA 105-74-68

Project Staff:

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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION AND SUMMARY	1-1
1.1 Description of the Study	1-1
1.2 Summary of Major Findings	1-7
1.3 Organization of Report	1-12
2.0 BACKGROUND AND DEFINITIONS	2-1
2.1 Background	2-1
2.2 Descriptions of Providers	2-6
2.3 The Effects of Tradition, Organization, and Control	2-18
2.4 Patterns of Cost Consumption	2-21
2.5 Patterns of Utilization of Services	2-23
2.6 Physician Productivity	2-26
2.7 Definitions of Terms	2-28
3.0 DATA SOURCES, QUALITY, AND VALIDITY	3-1
3.1 Introduction	3-1
3.2 Neighborhood Health Centers	3-15
3.3 Family Health Centers	3-20
3.4 Migrant Health Centers	3-26
3.5 Family Planning Projects	3-32
3.6 Child and Youth Projects	3-39
3.7 Maternal and Infant Care Projects	3-44
3.8 National Health Service Corps	3-49
3.9 Indian Health Service Hospital Outpatient Services	3-54
3.10 Public Health Service Hospital Outpatients	3-60
3.11 Voluntary Hospital Outpatients	3-64
3.12 Prepaid Group Practice Plans	3-68
3.13 Physician Group Practice	3-74
3.14 Private Physician Solo Practice	3-81
3.15 General Comments on Validity of Estimates	3-83
4.0 COMPARISONS OF COST AMONG PROVIDER GROUPS	4-1
4.1 Comparisons of FCME by Basic Program Objectives	4-2
4.2 Comparisons of FCME by Geographic Location and Setting	4-6

(continued)

	<u>Page</u>
4.0 COMPARISONS OF COST AMONG PROVIDER GROUPS (concluded)	
4.3 Comparisons of FCME in HSA vs. Private Programs	4-7
4.4 Comparisons of FCME by Size of Practice	4-9
4.5 Comparisons of Major Ancillary Services Costs	4-11
4.6 Comparisons of Cost for Basic Medical Services	4-15
4.7 Summary and Conclusions	4-16
5.0 EMPIRICAL ANALYSIS OF COSTS IN COMPREHENSIVE HEALTH CENTERS	5-1
5.1 The Literature Search	5-4
5.2 The Basic Cost Model	5-19
5.3 Methodological Considerations	5-25
5.4 The Analytical Approach	5-44
5.5 Discussion of Results	5-46
5.6 Summary and Conclusions	5-51
6.0 COMPARISON OF ANNUAL HEALTH CARE COST PER PERSON UNDER DIFFERING ASSUMPTIONS OF PROGRAM UTILIZATION	6-1
6.1 The Incremental Annual Cost of Adding a New Person to a User Population	6-3
6.2 The Annual Cost of a Standard Package of Services	6-3
6.3 Discussion of Analysis	6-5
6.4 Summary of Findings	6-9

Bibliography

Appendix A - Unit Cost by Individual Provider

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Section 1.0
INTRODUCTION & SUMMARY

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Section 1.0
INTRODUCTION & SUMMARY

1.1 DESCRIPTION OF THE STUDY

The Comparative Cost and Financial Analysis of Ambulatory Care Providers was initially funded under DHEW Contract HSA 105-74-68 and began on June 21, 1974. It was designed as a three-phase effort that would use secondary data from a variety of sources in order to:

- Document and compare estimates of the relative cost of ambulatory care in several provider settings
- Determine estimates of the impact of National Health Insurance on the supply of and demand for ambulatory care in federally sponsored programs in direct health care delivery
- Explore reasons for variations in the cost of ambulatory care providers in different settings.

The study was undertaken as a part of OPEL's FY 1974 evaluation plan; the sequence with which information has been published was dictated by the need for analysis of specific issues by HSA/OPEL in meeting its commitment for forward planning and evaluative strategies for health care programs in the Forward Plan for Health FY 1976-80, 1977-81, and 1978-82, and for the HSA Evaluation Plan for FY 1976. The following publications form a part of the study:

- Heaton, Harley L. and Nancy M. Pindus, Comparative Cost and Financial Analysis of Ambulatory Care Providers: Phase I (Interim Report), GEOMET Inc. Report No. H-360, Contract No. HSA 105-74-68 dated October 23, 1974

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- Heaton, Harley L. et al, An Economic Analysis of HSA Program Potential, 1976-1981 (Final Report), GEOMET, Inc. Report No. HF-465, Contract Nos. HSA 105-74-7 and HSA 105-74-68 dated May 15, 1975.

The first publication, the interim report, was issued in draft form only, and has not been republished. It presented results of a preliminary analysis to determine a functional cost per medical encounter for the study's thirteen provider categories. The results of that analysis were offered for the purpose of review and comment by the cognizant HSA bureaus and program managers. Exposure of the analysis, the findings, and the methods by which they were derived, produced substantive criticism as well as new data that were used in the present report. The second publication explored the following issues:

- The Potential Impact of National Health Insurance (NHI) on HSA Programs
- Alternative Reimbursement Strategies under NHI
- A Comparison of HSA Program Costs and Productivity with Private Market Alternatives.

Major findings from the second analysis were:

- The costs and productivity of HSA centers are reasonably comparable to those of the private sector when appropriate comparisons are made.
- The demand analysis, however, suggests that NHI-induced cost sharing provisions could lead to striking decreases in demand for services in HSA programs.

- The majority of this demand reduction appeared to be price related. Therefore, it was not expected that those who discontinued utilization of HSA health facilities would have the wherewithal or accessibility to make substantive use of alternative sources of care.
- The analysis pointed to a need for a decision between continuing to fund operating programs through grants, loans, or other devices such that patient-paid fees remain constant at HSA centers, or reducing the emphasis on the HSA mission of increasing accessibility to and decreasing the maldistribution of services under an NHI program similar to the CHIP.
- Inflation and recession will threaten the adequacy of the provision of HSA services in the short-run, even if CHIP is not enacted, by increasing the demand for services while decreasing the purchasing power of existing budgets and threatening the limited but important fee-for-service income of HSA centers.

The present report will cover the following general areas:

- Description of the programs, the data and its sources, and the methodology used in determining unit costs for ambulatory care providers
- Comparisons of functional cost per medical encounter among all providers as well as among groups of providers.
- Comparisons of productivity patterns, where the reported data are sufficient to develop these patterns, and comparisons of client utilization patterns.
- Empirical analysis of costs in comprehensive health centers to determine major causes for variation.
- Estimation and comparison of annual cost for health care services, by provider category, for a typical client in the primary user population of that provider category.

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The study concentrates on the comparative cost of ambulatory medical services by HSA and non-HSA sponsored providers. The following provider categories are represented:

- Neighborhood Health Centers (Sect. 314e, PHS Act)
- Family Health Centers (Sect. 314e, PHS Act)
- Migrant Health Centers (Sect. 310, PHS Act)
- Family Planning Projects (Title X, SSA)
- Child and Youth Projects (Sect. 509, Title V, SSA)
- Maternal and Infant Care Projects (Sect. 516, Title V, SSA)
- National Health Service Corps Physician Practices
(Sect. 329, PHS Act)
- Indian Health Service Hospital Outpatient Facilities
- Public Health Service Hospital Outpatient Facilities
- Voluntary Hospital Outpatient Clinics and Emergency Rooms
- Prepaid Group Practice Plans
- Physician Group Practices
- Physician Solo Practices

The relative importance of each of the provider categories, stated in terms of the estimated proportion of the total ambulatory care furnished nationwide during calendar year 1974 is shown in Table 1-1.

Traditionally, comparative cost studies of health care services have fastened upon a single measure of output and have attempted to assign a cost to that measure, thus avoiding the pitfalls inherent in defining and measuring the cost of all outputs of a health care facility such as training, social services, non-physician services, and others.

This study employs a similar approach with its focus on functional cost per unit of service. The unit of service selected for measurement is the cost per medical visit or encounter, which is defined as follows:

Table 1-1. Relative Importance of Provider Categories in Terms of Approximate Proportion of Ambulatory Care Furnished Nationwide in Calendar Year 1974 ^{1/}

Provider Category	Estimated Number of Ambulatory Medical Visits (in Thousands)	Proportion of Total Estimated Visits (Percent)
Neighborhood Health Centers	3,299	.32
Family Health Centers	248	.02
Migrant Health Centers	630	.06
Family Planning Projects	3,445	.33
Child and Youth Projects	1,948	.18
Maternal and Infant Care Projects	2,133	.20
National Health Service Corps Physician Practice	204	.02
Indian Health Service Hospital Outpatient Facilities ^{4/}	1,812	.18
Public Health Service Hospital Outpatient Facilities	748	.07
Other Federal Programs in Direct Health Care Delivery ^{2/}	2,294	.25
Total Federal Programs ^{2/}	16,761	1.63
Voluntary Hospital Outpatient Clinics and Emergency Rooms	104,623	10.20
Prepaid Group Practice Plans	28,127	2.73
Physician Group Practices	259,763	25.33
Physician Solo Practice	429,811	41.90
Company or Industrial Health Programs	10,128	.98
Other Private Sector Providers ^{3/}	39,826	3.87
Total Private Sector Programs	872,278	85.07
Telephone Encounters—All Programs	136,301	13.30
Total All Programs ^{5/}	1,025,340	100.00

^{1/} The estimates are not intended to be statistically valid. They are included here to give the reader a reasonable perspective on the relative size and coverage of each of the provider categories included in the comparison studies which follow.

^{2/} Estimates exclude Military and Veterans Administration Programs and include only estimated visits by civilian, non-institutionalized population. Total visits and distribution of visits by major provider category are extrapolated from calendar year 1973 data contained in National Center for Health Statistics, Vital and Health Statistics, Series 10, Number 100, Current Estimates from the Health Interview Survey dated September 1975.

^{3/} Includes estimated State and Local Government Programs.

^{4/} Excludes Alaska and Hawaii.

^{5/} Data from which this table was derived were taken from a variety of sources. The primary sources were the National Center for Health Statistics reports Preliminary Data from the National Ambulatory Medical Care Survey (unpublished draft dated July 15, 1974), Vital and Health Statistics, Series 10, Number 97, Physician Visits: Volume and Interval Since Last Visit: United States, 1971, and Vital and Health Statistics, Series 10, Number 100, Current Estimates from the Health Interview Survey: United States, 1974.

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Medical Visit or Encounter: An exchange between an ambulatory patient and a physician or physician substitute for the purpose of seeking care and rendering health services. It involves a direct personal exchange between the patient and the physician or a member of the physician's staff acting in place of the physician; examples would be a nurse clinician, a nurse midwife, a psychologist, or other professionally trained physician assistant who might act in place of a physician in certain visits or encounters. The terms "encounter" and "visit" are used interchangeably in the study. Major ambulatory encounters not included in the study are those made by telephone.^{1/}

The unit cost statistic used here is a weighted arithmetic mean cost, weighted by number of encounters per provider observation. The cost includes the total direct costs of providing a medical encounter, as well as an appropriate share of overhead costs attributable to the medical function. Elements such as X-ray costs, laboratory costs, drugs, and other services, even though directly associated with the encounter, are not included.

It should be pointed out that this cost is a unit cost for ambulatory care only, and does not necessarily imply any particular level of total annual patient cost. For example, a vertically integrated group practice might have a high ambulatory medical encounter unit cost, yet

^{1/} The National Ambulatory Medical Care Survey uses a similar unit of service to define ambulatory care output. See DHEW, Preliminary Data from the National Ambulatory Medical Care Survey (Draft) dated July 15, 1975.

effect a significant reduction in hospital utilization. Hence, they might offer a lower total medical cost per patient per year due to overall reductions in more expensive hospitalization. Even so, the functional cost per medical encounter closely parallels the "price" the patient or a third-party payor perceives when entering the health care system or receiving bills for payment.

1.2 SUMMARY OF MAJOR FINDINGS

Since the study involves a comparative analysis of cost and utilization patterns among a variety of health care providers, its major findings are the comparisons themselves, which, for the most part, are contained in the tables that accompany each analysis. Highlights from these comparisons are described below with parenthetical references showing the specific section or table where the overall comparisons may be found by the reader who wishes to examine the findings in context.

The major findings from the study are as follows:

- The Functional Cost per Medical Encounter is highest in the Family Health Center program and lowest in the Maternal and Infant Care program. (Table 1-2 shows the remaining providers in the study along with their relative rank with respect to cost.)
- Physician productivity in terms of patient visits per physician hour varies considerably among the programs, and within each program, by physician specialty and by size of physician group. (Table 2-3 gives comparisons of physician productivity rates for those provider categories for which sufficient data were available.)

Table 1-2. Estimates of Cost Showing Relative Rank of Providers by Functional Cost Per Ambulatory Medical Encounter*

Rank	Provider Category	Weighted Mean Functional Cost Per Medical Encounter**	Standard Deviation
1	Family Health Centers	\$25.69	\$13.62
2	Voluntary Hospital Outpatient Clinics and Emergency Rooms	22.78	6.34
3	Prepaid Group Practice Plans	22.57	6.51
4	Family Planning Projects	22.24***	9.81
5	Public Health Service Hospitals	22.01 [†]	5.40
6	Neighborhood Health Centers	19.68	8.85
7	Private Physician Group Practices	17.95	3.58
8	National Health Service Corps Practices	17.01	12.64
9	Child and Youth Projects	16.01***	13.64
10	Migrant Health Care Projects	15.26***	11.55
11	Indian Health Service Hospitals	14.07	N.A.+++
12	Private Physician Solo Practices	13.81	1.71
13	Maternal and Infant Care Projects	12.89	11.70
	Overall Average	\$15.55 ^{††}	\$ 6.44 ^{††}

* The ranking is superficial in that the 1 σ limits of variation within each sample of providers would overlap means above as well as below in the rankings.

** All data are adjusted to calendar year 1974 levels, where required, using the appropriate medical component of the CPI.

*** Estimated from fragmentary data. Given the present availability of data in these provider settings, a more complete analysis was not possible. See Section 3.0 for a description of the data used.

[†] PHS is currently studying a reallocation of costs that would tend to reduce this figure. The present figure is based upon published data for FY 1974.

^{††} The overall average figure is a weighted mean of all provider averages using relative number of encounters by provider setting as the weighting factor. All other figures are averages weighted by the relative number of encounters within each provider observation in the provider sample. The overall average figure is intended to serve as a comparison only and does not purport to represent any specific type of provider.

⁺⁺⁺ Data used in estimating costs for the Indian Health Service consisted of a single summary of all IHS hospital outpatient departments. Variability among individual hospital outpatient departments is not known.

- There are primary basic differences among providers in:
 - program objectives
 - populations served
 - degree of organization, specialization, and division of labor
 - degree of orientation to ambulatory care as a primary function
 - intensity and complexity of care provided
 - geographic patterns of dispersion and population densities of primary client populations.

Each of these factors occurs as the result of the history, legislation, and tradition that accompanied the initiation and growth of each program. The results of these differences can be seen in the manner in which primary client populations of each provider group utilize the available services, and in the manner in which each provider consumes his costs in the production of services. (Tables 2-1 and 2-2 give comparisons of these patterns for each provider category.)

- There is a complete lack of uniformity in the manner in which each provider category reports workload and cost data, thus requiring separate methodologies for analysis of each. Data to support these analyses is scanty or poorly defined in all categories except:
 - Neighborhood Health Centers
 - Family Health Centers
 - National Health Service Corps
 - Public Health Service Hospitals
 - Private Voluntary Hospitals
 - Prepaid Group Practices
 - Private Physician Group Practices
 - Solo Physician Practices.

(Table 3-4 shows the amount of variation encountered in each provider's costs while Section 3.15 discusses the general validity of the estimates.)

- Providers of ambulatory care whose primary function is inpatient care (PHS and IHS hospitals and private voluntary hospitals) tend to have higher medical encounter costs for ambulatory care. Providers whose primary function is single-specialty ambulatory care tend to have lower costs (See Table 4-1 for comparisons.)
- Providers located in the Western portion of the United States and providers located in urban areas tend to have higher medical encounter costs while those located in the South and Midwest, and those located in rural areas tend to have lower costs. (See Table 4-2 for comparisons.)
- Federally sponsored providers of health care services tend to have higher medical encounter costs than do private sector providers. (See Table 4-3 for comparisons.)
- Patterns of cost by size of practice hint at the existence of economies of scale in practices employing from one to five full-time physicians. (See Table 4-4 for comparisons. Also see Table 5-2 for a more complete analysis of possible economies of scale in Neighborhood Health Centers.)
- Unit costs of major ancillary services, as well as utilization of these services in support of each ambulatory medical visit, varies considerably among provider categories. (See Tables 4-5 and 4-6 for comparisons.)
- When the cost of major ancillary services (at their observed utilization rates in each provider category) are added to the Functional Cost per Medical Encounter in each provider category, the resultant Basic Medical Encounter Cost is highest in the Family Health Center program but lowest in the Private Physician Solo Practices. (Table 4-6 gives the overall comparisons.)
- Empirical analysis of costs in Neighborhood Health Centers using the techniques of multiple regression indicate that:
 - Economies of scale exist with an optimum point at approximately 27,000 encounters per quarter (approximately 27 full-time physicians at observed rates of productivity); however, problems with collinearity and lack of sufficient observations in the higher volume ranges makes this conclusion only tentative.

- Encounters with persons in the older age groups tend to be less costly. Further, analyses using data from office-based physician practices shows that treatment of persons in older age groups in this setting involves approximately the same intensity of treatment as with other age groups (as measured in physician minutes per encounter), but involves more visits per person.
- Encounters in an urban setting are more costly than those in a rural setting.
- Encounters in centers located in the Southern portion of the United States are less costly than those in other geographic regions.
- Encounters by persons whose primary payment for health services is taken from grant funds under Section 314(e) of the PHS Act are less costly.
- There is a need for a measure of case-mix that would incorporate the interactive effects of age and diagnosis into a single vector that could be used to better define case-mix in empirical analysis of cost.

(Each of these findings is discussed in detail in Section 5.0 and the results of the regression equations are given in Table 5-2.)

- When stated in terms of dollar cost, Family Health Centers furnish the smallest proportion of the total annual health care requirements of their primary user population, while Maternal and Infant Care projects furnish the largest proportion. (Table 6-3 gives comparisons.)
- The incremental cost of adding a new client to an existing population of primary user clients is lowest in the Family Health Centers and highest in the Maternal and Infant Care projects primarily as the result of the proportions of total health care furnished in each of these program. (See Table 6-1 for comparisons.)
- Annual average cost of health care services nationwide was \$282.50 per person in 1974 after excluding the cost of chronic, long-term care, non-prescription drugs and drug sundries, and nursing home care. (See Table 6-3 for comparisons.)

- Ranking of provider categories by estimated level of average annual cost for required health care services shows Maternal and Infant Care projects to be highest and Child and Youth projects to be lowest. These relative positions are thought to be due primarily to differences in the amount of health care services required by primary user clients from each of these provider categories. (See Table 6-4 for comparisons.)
- Among programs which provide services to a mixed population of sexes, ages, and income levels, the Prepaid Group Plans appear to be less costly than others primarily because of the low utilization of hospital inpatient services in this provider category and in spite of relatively higher utilization and costs for ambulatory care. (Tables 6-2 and 6-3 give comparisons of utilization and costs.)

1.3 ORGANIZATION OF REPORT

The remainder of this report is organized such that:

- Section 2.0 discusses ambulatory care in general, defines terms, and describes each provider category included in the study.
- Section 3.0 discusses the details of the data and the methodology applied to the data from each provider category. Comments upon the degree of validity imputed to the individual analyses are included.
- Section 4.0 presents the results of the analyses in a comparative sense, and illustrates various patterns and peculiarities discovered within programs and among provider categories.
- Section 5.0 describes an analysis of cost data from Neighborhood Health Centers (Section 314e, PHS Act) using the techniques of regression analysis with cost as the dependent variable.
- Section 6.0 discusses costs for total health care services for a year in each of the provider categories given certain assumptions as to typical utilization patterns. Comparisons of costs for an average user are made in order to show relative levels of annual cost under these assumptions.

- The bibliography includes both the literature and the data sources used in the analysis.
- Appendix A presents individual observations of functional costs per medical encounter from each sample of the provider categories included in the study.

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Section 2.0
BACKGROUND AND DEFINITIONS

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Section 2.0

BACKGROUND AND DEFINITIONS

2.1 BACKGROUND ^{1/}

The National Health Survey estimated that during 1974 there were 1,025,340,000 visits to physicians, including telephone encounters, for the purpose of seeking or receiving health care. ^{2/} By definition, these were visits that involved a direct, personal exchange between patients and the physician or a member of the physician's staff acting in his place. Females accounted for three of every five visits. If telephone encounters are included, the average person made 4.92 such visits that year.

Ambulatory care takes place in many settings, from patients' homes, neighborhood health centers, and public clinics to hospital out-patient departments and emergency rooms. However, the largest volume of ambulatory care in this country is provided at the doctor's office. It is there that people go when sick or in distress, and it is there physicians attend them. Approximately seven of every ten Americans consult a physician one time or more annually, and seven of every ten physicians engaged in patient-care activities do so principally in office-based practice. ^{3/}

^{1/} This section borrows heavily from Murnaghan, Jane H., ed. Ambulatory Care Data: Report of the Conference on Ambulatory Medical Care Records, NCHSR&D, April 1972.

^{2/} National Center for Health Statistics, Current Estimates from the Health Interview Survey: United States - 1974, Vital and Health Statistics, Series 10, Number 100.

^{3/} National Center for Health Statistics, National Ambulatory Medical Care Survey: Background and Methodology, Vital and Health Statistics, Series 2, No. 61, April 1974.

According to data from the 1971 National Health Interview Survey, excluding telephone calls, 80 percent of all physician visits took place in a doctor's office; 13 percent at hospital clinics and emergency rooms; and 7 percent at homes, on jobs, or elsewhere. ^{1/}

National statistics do not develop cost analyses in sufficient detail to permit a separate accounting for ambulatory vs. inpatient services. Consequently, it is difficult to illustrate the relative cost of ambulatory vs. inpatient care. Nevertheless, it is clear that ambulatory medical care accounts for the majority of individual health care services, as well as for the majority of the population's contacts with the health care system. Most patients enter the health care system by way of ambulatory medical care; it is in physicians' offices and outpatient clinics that the key decisions are made about hospitalization and other aspects of a patient's progress through the system.

Much of the negative side of health care delivery, including the public's occasional disaffection with health care, can probably be attributed to difficulty encountered while involved in receiving primary care. For the past fifty years the medical profession has centered its efforts around the hospital and the hospital inpatient. An indication that the time may have come to redress the balance is reflected in the movement for publicly supported health centers and HMO's, in efforts to reform and reorganize hospital outpatient clinics and emergency rooms,

^{1/} National Center for Health Statistics, Physician Visits: Volume and Interval Since Last Visit: United States, 1971, Vital and Health Statistics, Series 10, No. 97.

in growing interest in the education of family practitioners and physician substitutes who provide ambulatory care, and in widespread emphasis on preventive care, continuity of care, and comprehensive care. All of these appear to be attributes of a more systematic approach to the provision of ambulatory medical services.

To support this movement for change and reform, we have at present little usable information on the distribution of problems, symptoms, and complaints brought to physicians in offices and outpatient clinics, on the scope, complexity, intensity, or quality of services provided, on the disposition of patients, on the costs of care, or on the patterns of use or non-use of ambulatory medical care services.

The National Center for Health Statistics (NCHS), DHEW, is the principal federal agency engaged in compilation, analysis and dissemination of national health statistics. In 1974, NCHS expanded its program to include the first Ambulatory Medical Care Survey of office-practicing physicians (NAMCS). However, there has not yet been sufficient time for them to develop the necessary information with which to determine financing and costs for ambulatory services. The present study addresses this problem and, in particular, the need to determine costs per encounter in the ambulatory care programs supported by DHEW as compared with the costs of care provided by private physicians, physician groups, hospital outpatient departments, and other non-federal means.

The federal programs included in this study fall under three major programs within the Health Services Administration (HSA) of the Department of Health, Education and Welfare as follows:

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Bureau of Community Health Services

- Migrant Health Centers
- Maternal and Child Health
 - Maternal and Infant Care Projects
 - Child and Youth Projects
- Family Planning
- Community Health Services
 - Neighborhood Health Centers
 - Family Health Centers
- National Health Service Corps

Indian Health Services

Bureau of Medical Services

- Division of Hospitals and Clinics
 - Public Health Service Hospital OPD's and clinics.

The nine federal programs are compared with four groups of private ambulatory care providers:

Organized Medical Practice

- Voluntary hospital outpatient practices
- Prepaid group practices
- Private physician group practices

Solo Physician Practices.

Some basic differences between the federal and private providers, which ultimately affect the unit costs of ambulatory care, may be noted. Federal health programs, in general, are more closely regulated than

private providers. HSA administers health programs established by laws which define the kinds of services to be provided, eligible populations, delivery settings, and in some cases, financing policies governing the provisions of care. The programs depend upon federal appropriations, so their levels of funding may vary from year to year. They are subject to DHEW management and reporting requirements, which may impact on costs. Many of the federal programs are relatively new and are affected by increased start-up costs. Finally, the volume of care delivered through federal programs, though substantial, in no way approaches that of the private sector.

At the same time, private voluntary hospitals, physician group practices, and prepaid groups also provide ambulatory care within a more or less organized administrative framework. Therefore, these groups may also be expected to carry management and reporting functions whose scope goes beyond those of the solo practitioner. In addition, organized practices are likely to maintain a more specialized staff and facilities. Organized and solo practices alike are subject to the constraints of their economic environments but are not affected by as many policy constraints as are the federal programs.

In the sections that follow, each category of ambulatory care provider included in this study is described in terms of services provided, population served, and delivery settings. Any special circumstances that might affect the provider's operations are noted.

2.2 DESCRIPTIONS OF PROVIDERS

2.2.1 The HSA Programs

Neighborhood Health Centers - Neighborhood Health Centers are administered by the Program Office for Community Health Centers in the Bureau of Community Health Services (BCHS) of the Health Services Administration (HSA). Originally funded under the Office of Economic Opportunity, Neighborhood Health Centers are now authorized by Section 314(e) of the Public Health Services Act.

The two major goals of the Health Services Development Grant Program under Section 314(e) are:

- To eliminate inadequacies in the capacity of the health care delivery system for the population at large
- To eliminate inequities in access to and receipt of care for certain disadvantaged population groups.

A variety of approaches are supported to meet these goals and make comprehensive health services of high quality available, accessible, and affordable for all groups of the population. The Neighborhood Health Centers are one means of providing the range of preventive, diagnostic, therapeutic and rehabilitative services which are of high priority to HSA.

A Neighborhood Health Center directly or indirectly provides comprehensive health services to a defined target population. Within a single administrative structure, a center may provide services in one or more locations. If a full range of services cannot be provided directly by the center, arrangements are usually made to obtain them from other local health providers.

There are presently about 120 Neighborhood Health Centers across the United States, serving a population of about 1.2 million registered patients.

It is the administrative responsibility of the center to assure that all health care services to these patients are integrated, balanced and cohesive. To attain this, the center must establish formal lines of responsibility and authority between itself and cooperating health service providers, insure continuity of patient management, and monitor the adequacy of services and the manner in which they are delivered.

Family Health Centers - The purpose of the Family Health Center Program is ". . . to develop and provide comprehensive health maintenance and treatment services to enrolled populations, in areas with scarce health services, on a prepaid capitation basis." ^{1/} Grant awards for these projects began in FY 1972. Each project awarded a grant is funded for three years, with support for an additional two years possible if authorized by the Secretary of DHEW. The program is administered by the Office for Community Health Services in BCHS.

In FY 1972, 41 Family Health Centers were funded to serve an estimated 10,000 persons each. Ten centers became operational during that year. There are now 39 projects, 28 of which are operational. Each center must demonstrate its potential to enroll at least 5,000 persons and to provide the required minimum benefits within a designated scarcity area. The minimum benefits include four service categories: emergency services, physician services, medical services and other ancillary health services, as well as provision for hospital and other non-ambulatory services.

^{1/} Department of Health, Education and Welfare, Regulations Governing Grants for Family Health Center Projects (Section 314(e) of the Public Health Service Act).

Provision of these required services is subject to considerable flexibility both in definition of services and in mode of delivery. However, the capitation payments for lower income groups are regulated to a maximum amount dependent upon the income of the enrollee.

Migrant Health Program - The Migrant Health Act, passed in 1962 and amended in 1965 and 1970, is administered by the Migrant Program Office in BCHS. There are now 96 migrant health projects operating in 33 states and Puerto Rico. In FY 1974, these projects provided care for an estimated 355,000 people; they were expected to serve over 390,000 in FY 1975. The target population of this program includes an estimated one million migrant farmworkers and their dependents who follow the crops, plus an additional two million seasonal farmworkers who live in the areas where migrants work.

Migrant Health Centers generally offer preventive, diagnostic and therapeutic health care services. Some of the centers operate year-round clinics with a full medical staff, while others operate seasonally. Centers may offer limited dental services, rehabilitation and nutrition counseling, home care, outreach and environmental sanitation services. In some cases, certain of the centers will provide few direct services but will act as referral points to coordinate services available through other providers and refer patients to the appropriate health resources.

Family Planning Services - Federal support for family planning services is provided under a variety of DHEW programs, including:

- The Maternal and Child Health Services Program
- The Community Health Services Program

- The Family Health Services Program
- The Indian Health Services Program.

The focus of this study is on programs administered by the Bureau of Community Health Services under Title X of the Social Security Act. The family planning clinics established under this program are independent, free-standing providers of family planning services, or, if unable to offer a full range of services, the clinics provide referrals. During FY 1973 the clinics served about 1.6 million individuals. The program receives the majority of its operating funds from appropriations made to support Title X.

Ambulatory services normally provided by the family planning clinics include:

- Medical services such as physical examinations and evaluations, PAP smear testing, breast and pelvic examinations, blood pressure testing, pregnancy testing and other services.
- Counselling services with respect to family planning, abortion, infertility, sterilization, and social services.
- Referral services when the patient's requirements are beyond the funding or service capabilities of the clinic, or when they are better served elsewhere.

Child and Youth Projects - The Child and Youth Projects were created under Title V, Section 509, of the Social Security Act to provide comprehensive health services to children under the age of 21 from low-income families. Their services include diagnosis, treatment and preventive care. The primary objective of these projects is to promote health

and reduce preventable illness and disability among children. In FY 1974, more than 71 million dollars in federal support was contributed to the operation of 59 Child and Youth Projects. These neighborhood-oriented projects maintain close relationships with other community programs. The Office for Maternal and Child Health, BCHS, administers the projects.

Maternal and Infant Care Projects - Federal commitment to extend and improve health and welfare services for mothers and children can be traced to the original Social Security Act of 1935. However, actual provision of comprehensive maternity care began in 1963 with the authorization of project grants through state health departments under Title V of the Social Security Act.

The projects were funded to help reduce the incidence of mental retardation and other handicapping conditions caused by complications associated with childbearing, and to help reduce infant and maternal mortality by providing necessary health care to high risk mothers and babies. The concept was expanded to emphasize provision of these services to the disadvantaged urban poor and to include individual project grants. Family planning services are now available through Maternal and Infant Care Projects as an integral part of post-partum care.

Recent amendments to the Social Security Act have transformed the federal role in this program by decentralizing funding decisions to the state level via formula grants. Services provided by the project grants are being continued for the same populations and at approximately the same funding level, but under state direction. The states also have the option of using federal funds provided in Title V, Section 516, for

expansion of their maternal and infant care services through the creation of other projects. The overall program monitoring function is performed by the Office for Maternal and Child Health, BCHS.

National Health Service Corps - The National Health Service Corps (NHSC) was established by the Emergency Health Personnel Act of 1970, which became Section 329 of the Public Health Service Act. Section 329 has been further amended since its original enactment. The Corps is one of the prime programs in the Administration's health manpower strategy; the NHSC Program Office in BCHS administers its operations.

The purpose of the NHSC is to demonstrate means of redistributing medical and dental manpower by assigning health professionals to communities where a medical manpower shortage exists. The Corps recruits and assigns appropriate personnel to designated shortage areas and assists communities in the development of independent primary care capabilities. The majority of NHSC assignments have been made to rural communities.

Since its inception, the Corps has approved 307 sites for assistance and has placed 340 doctors, dentists, nurses and other health professionals in 183 communities. It has also experimented with utilizing physician extenders. The FY 1975 DHEW budget supported recruitment of an additional 146 health personnel for field assignment who will provide health care to approximately 55 additional communities and continue the support of those currently in place.

Indian Health Service - The Indian Health Service is an administrative office within HSA at the same organizational level as BCHS. The goal of the IHS Program is to provide high quality medical and health-related services to the approximately 507,000 Indians and Alaska natives by ensuring the availability and accessibility of care, and by promoting knowledge of and access to other federal, state and local health programs.

Particular aims of the program include reducing the prevalence of the infectious and life-threatening diseases extant in many IHS service areas, and emphasizing nutrition, sanitation, housing, and preventive health programs. Specific problems and resources vary widely among communities served by the IHS. Federal strategy in all cases emphasizes high quality patient care, field health services, and tribal programs.

The Indian Health Service Program (IHS) is carried out in 51 hospitals, 87 health centers, and more than 300 health stations and satellite clinics. Contract care accounts for about 27 percent of the IHS budget, and it is anticipated that the need to purchase such services will continue.

This study focuses on only a portion of the IHS program, the hospital outpatients from 41 IHS hospitals in the coterminous United States.

Public Health Service Hospital Outpatient Departments - During FY 1974 the Public Health Service (PHS), Bureau of Medical Services (BMS)

provided outpatient medical and dental care through a network of eight general hospitals, thirty outpatient clinics, and 248 contract physician locations, to an estimated population of 470,500 beneficiaries. Of this total, an estimated 241,000 primary beneficiaries were eligible for complete care. In addition to the provision of direct care, BMS continued to conduct programs in research and training.

The population eligible for care consisted of the following groups:

- American seamen
- Active and retired members of the Coast Guard, National Oceanic and Atmospheric Administration, PHS Commissioned Officers, and dependents of these groups
- Office of Federal Employees' Compensation cases
- Persons afflicted with leprosy
- Beneficiaries of other government agencies (DOD, VA, Immigration and Naturalization), special study and emergency cases, and foreign seamen.

Utilization of ambulatory services at the eight general hospitals in FY 1974 totaled 750,669 outpatient visits; visits to the 30 outpatient clinics totaled 694,130. Combining these settings, the daily outpatient workload was 5,557 visits for each week day when such services were routinely scheduled. There were 87,884 visits to PHS contract physicians during the year.

This study, again, focuses on only a portion of the program, the hospital outpatient portion of the BMS workload.

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2.2.2 The Private Sector Providers

Voluntary Hospital Outpatients - The number of hospital outpatient visits per 1,000 population increased from 58 to 212 per year in the 12 year period between 1958 and 1970, an increase of more than 200 percent. By all indications, the trend is toward even greater utilization in the future, with a substantial portion of the increase attributable to persons who have no fixed relationship with a community physician and who are seeking routine primary care. While hospitals are working to provide better facilities and improved capabilities to deal with the increasing volume, the problem itself is growing by approximately 6 percent a year in increased visits.

Except for the larger urban teaching institutions, most hospitals do not have a separately organized outpatient department. Rather, ambulatory care tends to be provided through the hospital emergency room in a tradition that dates back to the time when hospitals provided primary ambulatory care only in emergencies. Those hospitals that do have separate outpatient departments tend to fall into one of two categories:

- Hospitals that have traditionally cared for a significant number of low-income patients as part of a charitable orientation
- Hospitals that have maintained a large teaching function in which ambulatory care plays a significant part.

There are exceptions to these general rules and the present trend is for hospitals to deliberately plan for and construct outpatient departments as part of any new addition.

Prepaid Group Practice Plans - Subchapter J, Title 42 of the Code of Federal Regulations defines a Health Maintenance Organization (HMO) as a "... legal entity which provides basic and supplemental health services to its members [on a prepaid basis], is organized and operated [as a formal association of individual and institutional providers or as a single corporate entity] and otherwise meets the requirements of [the provision of a minimum set of comprehensive and preventive services to an enrolled membership.]" Under this definition a physician association, a physician foundation, a physician corporation, an institutional provider, or any combination of these could constitute an HMO so long as it provides care for a prepaid, enrolled membership, and so long as it provides or formally arranges for the provision of the required minimum benefit package.

Health services for low-income groups have been purchased from existing prepaid group plans for nearly ten years under the sponsorship of OEO and other federal agencies. More recently, the Family Health Center Program has provided services on a prepaid basis under Section 314(e) of the Public Health Service Act. The Health Maintenance Organization Act of 1973 has promoted the start-up and development of a number of prepaid group practices meeting the federal definition of an HMO and operating under private management and control. However, these HMO's have not been operational long enough to generate sufficient data for analysis.

The prepaid group plans analyzed in this study do not meet the federal definition of an HMO, either because they do not provide the complete range of services required under the HMO Act, or because their enrollment, capitation, or service philosophies differ. However, data

from those practices do provide an insight into the costs and utilization patterns that might be expected in future HMOs.

Physician Group Practices - As early as the end of the 19th century, there existed physician groups, most of which were not the result of deliberate planning but rather were a response to the increasing complexity of medical practice. Since then, the number of physician groups has grown dramatically: in 1926 there were 125 groups; in 1932, over 220; and by 1965 the number had increased to 4,289. In 1969, there were some 6,300 groups staffed by approximately 40,000 physicians. It is estimated that 18 percent of all non-federal physicians (other than interns, residents, and inactive physicians) are currently engaged in group practice on a full- or part-time basis.

Definitions vary as to what constitutes a group practice. The Medical Group Management Association definition is: "An organized medical group of three or more doctors of medicine with common facilities, actively engaged in the practice of medicine, and which shall employ a person or persons in the active supervision of its business affairs." Other definitions differ in their specifications of the size and types of practice, or in its legal basis (whether chartered under the corporate laws of a state, or established as a partnership, physician association, or foundation).

Within such designations, some groups share profits equally or on the basis of a formula developed to distribute the excess of revenue over cost. In other groups there are physicians who serve on a salaried basis, as well as those who share expenses only, but not income.

Group practices which share expenses but not income are the least popular form of organization. Survey data from Medical Economics Magazine indicate that in April 1965, about 11,000 private M.D.s under age 65 shared expenses with colleagues. Five years later, that number had grown to an estimated 14,150.

One probable reason for the increasing trend toward group practice is the hope of minimizing cost increases in an era when they have been increasing rapidly. An Xray machine or an office assistant obviously costs less per doctor when shared than when used in solo practice, and both produce more income when more fully utilized. Such efficiencies are as readily available to partnership and group physicians as they are to expense sharers, but only at some sacrifice of individual physician autonomy.

Private Physician Practice - The practice of medicine by a solo, private physician on a fee-for-service basis is the primary unit of ambulatory health care delivery in this country and constitutes the standard of comparison for all other ambulatory provider costs in this study. An estimated 70 percent of all ambulatory care visits each year are made to office-based physicians, some 82 percent of whom are in solo practice. Based upon statistics published by the American Medical Association, office-based physicians in solo practice provided health care incident to about 42 percent of all ambulatory patient encounters during 1973. ^{1/}

^{1/} Our estimate, based upon data published in AMA Profile of Medical Practice: 1974.

2.3 THE EFFECTS OF TRADITION, ORGANIZATION, AND CONTROL

Descriptions of the thirteen ambulatory care providers in the study tend to illustrate the wide variety of delivery programs represented. However, despite this heterogeneity, some general patterns may be noted. The speculations that follow should be considered only as possible effects of the varied program histories, organizational structures, and range of services, upon the costs of providing ambulatory care, since the majority are not well researched.

2.3.1 Program History

Among the federally supported providers, there are differences between the older programs, such as the IHS and PHS, and the health programs initiated during the 1960s and 1970s such as the Comprehensive Health Center Program (314e Programs) and the Migrants Program. The older programs were originally developed to care for populations that were relatively small and easily defined—Indians on reservations and American seamen. The recent federal programs provide care to low-income or medically underserved populations. These populations are found chiefly in urban areas throughout the country. These programs are limited by law to special populations and service delivery settings, and they often have been chartered to demonstrate alternative means of health care delivery.

Among the private providers, solo practice is the oldest form of health care delivery and remains the predominant single mode. Solo practice is based on the tradition of the independent professional, answerable to a professional society, and operating with a limited staff. Some physician groups offer nearly as much independence as solo practice, with the advantage of shared resources and support staff.

Some of the prepaid group plans originated in the 1930's and 1940's from labor health programs and expanded gradually from hospital-based practice. These older, larger and more established plans differ from plans started under the HMO Act of 1973 and the FHC Program. The new HMO's must meet specific eligibility criteria in order to receive federal support. A more extensive benefit package is required, and the plan's policies with respect to community rating of premiums and open enrollments are constrained by the legislation.

In private voluntary hospitals, the ambulatory care function has evolved, in many cases, from the emergency room function. In most hospitals, the emergency room still serves both emergent and primary care patients.

2.3.2 Organization Structure

Many of the federal programs were intended as demonstrations to provide primary care in an ambulatory setting, with arrangements for referral to more specialized treatment facilities if necessary. At the same time, many of them have attempted to demonstrate the usefulness of a more comprehensive range of services that include not only medical and dental services, but other social services as well. Such clinics maintain capabilities that would not ordinarily be available in a private physician group or solo practice.

Federal and private providers are affected by different kinds of operating constraints. Some federal programs must provide required services regardless of utilization; they are subject to the federal budget processes, which may cause funding levels to vary from year to year; and they may be involved with social policy objectives which are only indirectly related to

health care provision. On the other hand, subsidy by the federal government shelters these programs from the economic risks and constraints which strongly affect many private providers. Federal programs are assured a minimum operating budget and payment for patients treated, either on a fee-for-service, or on a capitation basis, while private providers may have to adjust their scope of services in order to maintain financial stability. Debt collection is no doubt a more important function in private sector programs than in the federal programs.

2.3.3 Scope of Services

The scope of services maintained and delivered by each provider is somewhat unique and any cost comparison is complicated considerably by these differences. Among federal programs, the scope of available services is generally more comprehensive than in private providers, and may include social services such as counselling, transportation, sanitation, nutrition, and referral. These services may require maintenance of a multi-specialty staff, regardless of utilization. Federal programs may be deliberately sited in isolated areas or shortage areas where manpower recruitment is difficult and utilization volume is low. In the private sector, prepaid groups and hospital outpatient practices often provide supportive health and social services, but private physician groups and solo practitioners are unlikely to do so.

Referral services, including provision for hospitalization, tend to be more strongly emphasized in federal programs. While private providers can and do arrange for hospitalization, referral to other health and social

services is not a legal responsibility and may be performed informally if at all.

2.4 PATTERNS OF COST CONSUMPTION

To further emphasize the diversity of productive output from each of the provider categories included in the study, a classification of costs into nine major functional areas of output was made. The nine functional areas used in the analysis are:

- Ambulatory Medical Care. Including physician services, physician substitute services, and other services in support of the physician or his surrogate. Includes an appropriate share of overhead and allocable costs. Home health care program costs are also included where present.
- Laboratory Testing. The portion of the cost of the clinical laboratory function, where present, that was used in direct support of the Ambulatory Medical Care function, including appropriate overhead and allocable costs.
- X-Ray Exams. The portion of the cost of the Radiographic function, where present, used in direct support of the Ambulatory Medical care function. Includes allocable and overhead costs.
- Prescription Dispensing. The portion of the Pharmacy function, where present, used in direct support of the Ambulatory Medical Care function. Includes the cost of drugs dispensed as well as appropriate shares of allocable and overhead costs.
- Dental Care. The cost of the ambulatory dental function, where present, including all appropriate shares of allocable and overhead costs.

- Hospital Inpatient Care. The cost of the inpatient function, where present, including all associated lab, xray, pharmacy, and other ancillary services, and including appropriate shares of allocable and overhead costs.
- Outreach and Social Services. The costs of
 - Community Organization—these are directly related to creating and maintaining formal community participation in the planning and operation of the center.
 - Marketing Services—the marketing function in Family Health Centers and Prepaid Group Practices is included here on the basis that it is a form of outreach services.
 - Social and Community Services—individual counselling or meetings which help patients cope with family or community problems, often carried on outside the center. They include services concerned with housing, nutrition, education, sanitation, and environment. It should be noted that they differ from home health care services in that they deal with community-oriented needs rather than with the direct provision of health care services. Costs of these services are often related to community-wide health care projects.
- Transport of Patients. These are the costs of bringing patients to the center, and for sending health care providers to a patient's home.
- Training, Research, and Other Costs. This functional class would include, where present:
 - Training Costs—these are related to the training of personnel for employment at the provider center, and for development for present employees.
 - Supporting Health Activity Costs—costs not directly related to personal health services, but incurred in aiding and supporting the delivery of health services. Examples in a PHS Hospital might be the maintenance and operation of personnel quarters for staff members of the hospital. Examples in the private, voluntary hospital might be costs associated with the operation of gift shops and auxillaries.

Our estimate of the manner in which each provider in the study consumes cost in the production of health and related services is depicted in Table 2-1. The reader is informed that the proportions depicted on the table are estimates only, derived from a variety of sources whose validity varies with the validity of the data furnished by each provider category. The estimates lend further perspective to the variations in range and scope of services in each provider category.

2.5 PATTERNS OF UTILIZATION OF SERVICES

Utilization of services by the clients of the providers included in the study tends to vary with the scope of services available in each setting. Therefore, additional perspective can be gained by examining these utilization patterns, in a speculative way, to isolate departure from the usual or expected patterns. The patterns themselves are depicted on Table 2-2; our analysis of these patterns compared with the patterns of utilization nationwide, leads us to conclude that:

- The Federal programs tend to provide a more comprehensive range of services than do the private sector providers.
- The Federal programs serve less than 3 percent of the population as primary providers of health care services.
- The patterns of utilization vary widely among the provider categories, with the Federal programs tending more toward provision of only a portion of the total health care services required by a given client population, while at the same time making a wider range of services available.

Table 2-1. Estimated Cost Consumption Patterns by Provider Category^{1/}

PROVIDER CATEGORY	PERCENT OF COST CONSUMED (By Major Function)								
	Ambulatory Medical Care	Laboratory Testing	XRay Exams	Prescription Dispensing	Dental Care	Hospital Inpatient Care	Outreach & Social Services	Transport of Patients	Training, Research & Other
<u>HSA PROGRAMS</u>									
BCHS Programs:									
Neighborhood Health Centers	41	7	5	11	12	7	8	4	5
Family Health Centers	61	6	4	4	1	5	14	1	4
Maternal and Infant Care Projects	36	12	1	8	6	35	1	1	-
Child and Youth Projects	40	7	2	10	4	8	9	10	10
Family Planning Projects	56	16	-	9	-	-	18	1	-
Migrant Health Projects	45	9	6	13	4	6	4	13	-
National Health Service Corps Practices	99	1	-	-	-	-	-	-	-
Indian Health Service Hospitals	23	5	3	4	9	53	1	1	1
Public Health Service Hospitals	16	4	3	3	2	50	1	1	20
<u>PRIVATE SECTOR PROGRAMS</u>									
Organized Medical Practices:									
Private Voluntary Hospitals	9	1	2	-	-	82	1	-	5
Prepaid Group Practices	49	2	1	4	1	36	5	-	2
Private Physician Group Practices	85	7	5	3	-	-	-	-	-
Solo Physician Practices	99	1	-	-	-	-	-	-	-

^{1/} The data for this table were obtained from the following:

Neighborhood Health Centers—CHS quarterly reports from a sample of 16 centers, calendar year 1973.

Family Health Centers—Statistical Report of Program Operations for quarter ended March 31, 1975.

All centers reporting were included.

Maternal and Infant Care Projects—Grant funding requests from nine centers, calendar year 1973.

Child and Youth Projects—Quarterly Performance Profiles, calendar year 1973, 16 centers.

Family Planning Projects—Site Visit Reports from nine projects, calendar year 1972.

Visits conducted by GEOMET, Incorporated for OEO.

Migrant Health Projects—Program Briefing Paper, 1974, developed by Migrant Program staff.

National Health Service Corps—Site Operations Management Report, calendar year 1974, from 16 projects.

Private Voluntary Hospitals—MEDICARE Cost Reports, calendar year 1973, 29 hospitals.

Prepaid Group Practices—MEDICARE Cost Reports, calendar year 1974, 15 prepaid plans.

Physician Group Practices—Medical Group Management Association, Accounting Committee Report,

calendar year 1973. All groups reporting were included.

Solo Physicians—AMA Profile of Medical Practice, 1973.

Table 2-2. Estimated Patterns of Utilization of Services by Provider Category

PROVIDER CATEGORY	PATTERNS OF UTILIZATION					
	MAJOR ANCILLARY SERVICES PER MEDICAL VISIT			Estimated Number of Persons Served in 1974 (thousands)	Estimated Ambulatory Care Visits per Person in 1974	Estimated Days of Hospitalization per Person in 1974
	Lab Tests per Medical Visit	XRay Exams per Medical Visit	Prescriptions per Medical Visit			
<u>HSA PROGRAMS</u>						
BCHS Programs						
Neighborhood Health Centers	.80	.10	1.30	1,121	2.94	0.001
Family Health Centers	.86	.12	1.21	193	1.28	0.005
Maternal and Infant Care Projects	.60	.03	.87	190	11.23	1.200
Child and Youth Projects	.90	.07	.96	550	3.54	0.135
Family Planning Projects	2.02	-	1.32	2,275	1.51	-
Migrant Health Projects	.80	.10	1.30	390	1.62	0.113
National Health Service Corps Practices	-	-	-	65	3.15	-
Indian Health Service Hospitals	.68	.12	.79	500	3.63	1.970
Public Health Service Hospitals	1.84	.16	.89	470	1.60	0.987
<u>PRIVATE SECTOR PROGRAMS</u>						
Organized Medical Practices						
Private Voluntary Hospitals	1.03	.20	.88	201,590	.52	1.216
Prepaid Group Practices	1.03	.14	1.03	5,700	4.93	0.438
Private Physician Group Practices	.57	.13	.21	72,490	3.58	-
Solo Physician Practices	-	-	-	123,400	3.48	-
<u>NATIONWIDE AVERAGES</u>						
Office-Based Physicians	.20	.07	.68	207,344	3.43	-
Home Visits	-	-	-	207,344	.08	-
Hospital Clinic or Emergency Room	.54	.10	.46	207,344	.50	-
Telephone Encounters	-	-	-	207,344	.66	-
Other or Unknown	-	-	-	207,344	.25	-
National Averages	.74	.17	1.14	207,344	4.92	1.216



- Within the Federal programs, the Maternal and Infant Care Projects, the Child and Youth Projects, and the programs of the Indian Health Service hospitals appear to furnish nearly all of the ambulatory and hospital services required by their clients. Within the private sector programs this is so only with respect to the prepaid group practice plans.
- Hospitalization is more likely to be obtained by referral to a private voluntary hospital than by provision from within the program in all cases except the private voluntary hospitals themselves, the Indian Health and Public Health hospital programs, the Maternal and Infant Care Programs (most of which are hospital-based) and the Prepaid Group Practice plans.
- Obviously utilization in the Maternal and Infant Care program is strongly affected by the age, sex, and diagnosis specific nature of its client population.
- Since the solo physician, group physician, and NHSC physician practices supply either none, or only fractional amounts of, the expected numbers of ancillary services to their client population, it is presumed that ancillary services in these programs are obtained by referral outside these programs.

2.6 PHYSICIAN PRODUCTIVITY

Physician productivity in terms of patient visits per physician hour varies considerably among the programs, and within each program, by physician specialty and by size of physician group. Table 2-3 gives estimates of physician productivity rates in those provider categories for which sufficient data could be obtained.

Table 2-3. Indices of Physician Productivity in Selected Practice Settings

Practice Setting	Practice Size	Practice Specialty	Patient Visits Per Hour
Private practice office-based physician ^{1/}	Solo physician	Gen. practice	3.99
Private practice office-based physician ^{1/}	Solo physician	Int. medicine	2.68
Private practice office-based physician ^{1/}	Solo physician	Surgery	2.71
Private practice office-based physician ^{1/}	Solo physician	OB/GYN	2.71
Private practice office-based physician ^{1/}	Solo physician	Pediatrics	3.55
Private practice office-based physician ^{1/}	Solo physician	Psychiatry	1.30
Private practice office-based physician ^{1/}	Solo physician	Radiology	3.99
Private practice office-based physician ^{1/}	Solo physician	Anesthesiology	.69
Private practice office-based physician ^{1/}	Solo physician	All specialties	2.99
National Health Service Corps physicians ^{2/}	Solo physicians	All specialties	2.82
Private physician group practices ^{1/}	2 to 4 physicians	All specialties	3.12
Private physician group practices ^{1/}	5 to 7 physicians	All specialties	2.96
Private physician group practices ^{1/}	8 to 25 physicians	All specialties	2.83
Private physician group practices ^{1/}	26 or more physicians	All specialties	2.65
Private physician group practices ^{1/}	All sizes	All specialties	3.00
Family Health Centers ^{3/}	2 to 4 physicians	All specialties	2.00
Family Health Centers ^{3/}	5 to 7 physicians	All specialties	1.24
Family Health Centers ^{3/}	8 to 25 physicians	All specialties	.57
Family Health Centers ^{3/}	All sizes	All specialties	1.13
Neighborhood Health Centers ^{4/}	2 to 4 physicians	All specialties	1.57
Neighborhood Health Centers ^{4/}	5 to 7 physicians	All specialties	1.43
Neighborhood Health Centers ^{4/}	8 to 25 physicians	All specialties	2.06
Neighborhood Health Centers ^{4/}	26 or more physicians	All specialties	2.14
Neighborhood Health Centers ^{4/}	All sizes	All specialties	1.96
All Settings	All sizes	All specialties	2.12

^{1/} From American Medical Association, Profile of Medical Practice, 1974 Edition. Data are for 1972 and 1973.

^{2/} From HSA/NHSC Fiscal Year Summary. Data are for First Quarter, FY 1975 (July-August-September 1974). Earlier data were considered not as reliable.

^{3/} Data are from HSA/BCHS Statistical Report of Program Operations (Draft) for quarter ended March 31, 1975. Practice size may vary slightly from that stated here because of constraints in grouping. Data includes mid-level practitioners and encounters.

^{4/} Data are from HSA/BCHS CHSP Summaries of Project Data Nos. 5, 6, 7, and 8, covering the 12 month period ended September 30, 1974. Practice size may vary slightly from that stated here because of constraints in grouping. Data includes mid-level practitioners and encounters.

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2.7 DEFINITIONS OF TERMS

For purposes of consistency, terms used in the report are defined as follows:

- Allocable Costs. These are expenditures specifically applicable to more than one functional cost category such as the costs of medical records and supplies, which are not related to a single patient care department.
- Ambulatory Medical Care. Health services rendered individuals under their own cognizance, at a time when they are not in a hospital or other health care institution. The services for the most part consist of primary care furnished by direct contact between a patient and a physician or other health professional and include care furnished in the patient's home where applicable.
- Basic Medical Encounter Cost. The Functional Cost per Medical (FCME) plus the cost of major ancillary services provided, on average, with each encounter in that provider category.
- Community Organization Costs. These are costs that are directly related to creating and maintaining formal community participation in the planning and operation of the center.
- Cost. The monetary valuation applied to a service that has been obtained by an expenditure of cash or by a commitment to make a future expenditure. When costs are used or consumed in rendering services to patients, they are classified as expenses. Those costs that will be used in a future period of time remain in an asset classification. While there is this technical distinction between expenses and costs, generally it is not observed in the terminology used in the accounting field. Therefore the two terms will be employed interchangeably in this study. When the term cost is used here, however, the reference is to expired cost (i.e., expense).
- Cost Finding. The segregation of direct costs by cost centers, the allocation of overhead costs to revenue-producing and other centers between inpatients outpatients, and other classifications.

- Dental Care Costs. These costs include all identifiable costs incurred in providing dental services, including dental, laboratory, x-ray and prosthesis.
- Direct Costs. Direct costs are those expended and recorded direct to a specific department (e.g., laboratory) in the providers accounting records.
- Functional Classification. The full cost including the direct cost and the proportionate share of overhead and other allocable costs associated with performance of the specific function.
- Functional Cost per Medical Encounter (FCME). A weighted arithmetic mean cost per medical visit or encounter (weighted by number of encounters per provider observation). It includes the total direct costs of providing a medical encounter, as well as an appropriate share of overhead costs attributable to the medical function; however, elements such as X-ray costs, laboratory costs, drugs, and other services, even though directly associated with the encounter, are not included.
- Health Care Services. Services traditionally provided by or through physicians and dentists. The diagnosis and treatment by the physician and dentist, laboratory services, x-rays, pharmacy, mental health, home health services are encompassed in this function.
- Laboratory Costs. These encompass services (other than dental laboratory services) to out-patients provided by the center's pathological or other diagnostic facilities.
- Laboratory Test. Any chemical, pathological, or other laboratory procedure designed to provide diagnostic information.
- Major Ancillary Services. The Clinical Laboratory Tests, X-Ray Examinations, and Prescription Drugs that are provided by the health care facility in conjunction with ambulatory visits or encounters.
- Medical Visit or Encounter. An exchange between an ambulatory patient and a physician or physician substitute for the purpose of seeking care and rendering health services. By definition, it involves direct personal exchange between the

patient and the physician or a member of the physician's staff acting in place of the physician; examples would be a nurse clinician, a nurse midwife, a psychologist, or other professionally trained physician assistant who might act in place of a physician in certain visits or encounters. The terms "encounter" and "visit" are used interchangeably in the study. Major ambulatory encounters not included in the study are those made by telephone.

- Overhead Costs. For purposes of this study, the accumulation of the total expenses of individual functions is desirable; to permit this accumulation, some proportionate amount of another functional expense must be allocated to the function concerned. These expenses are referred to as indirect or overhead costs of that function. They are called indirect because they do not represent expenditures directly incurred by that function, and the dollar amounts are not controllable by the function. An example of such costs would be in the laboratory, which receives services from the laundry in the form of clean uniforms; it also receives services from the plant operation function in the form of heat, light, and power. The laundry in turn, may receive services from the maintenance department in the form of repairs. The total costs of each of these departments should show each function's share of the costs of the other functions. The method of allocation used is basically a managerial decision governed by the economy of gathering the data, and the purpose for which it is gathered.
- Pharmacy Costs. Costs identifiable in operation of the provider's pharmacy for prescriptions filled for the provider's patients. They include their appropriate share of indirect or overhead costs.
- Prescription. A pharmaceutical prescription that can only be obtained through a licensed physician's or dentist's order.
- Social and Community Services. Individual counseling or meetings which help patients cope with family or community problems, often carried on outside the provider center. They include services concerned with housing, nutrition, education and environment. It should be noted that they differ from home health

care services in that they deal with community-oriented needs rather than with the direct provision of health care services. Costs of these services are often related to community-wide health care projects.

- Supporting Health Activity Costs. Costs not directly related to personal health services, but those incurred in aiding and supporting the delivery of health services.
- Training Costs. These are related to the training of personnel for employment at the provider center and career development for present employees.
- Transportation Costs. These are the costs of bringing patients to the center, and for sending health care personnel to a patient's home.
- X-ray Costs. Costs incurred in the X-ray diagnosis and treatment of out-patients other than dental x-rays.
- X-ray Examination. A specific x-ray procedure (not the number of films) designed to provide diagnostic information.

Section 3.0
DATA SOURCES, QUALITY, AND VALIDITY

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Section 3.0
DATA SOURCES, QUALITY, AND VALIDITY

3.1 INTRODUCTION

This chapter will organize a great deal of detail regarding special data conditions, assumptions, and adjustments which modify the basic methodology, for each of the individual provider categories sampled. A separate discussion of methodology and procedures used in developing functional cost per medical encounter is presented for each provider category in the study.

The available data varied among the provider types in source, content, and quality. These variations sometimes necessitated adjustments in the data themselves and consequently in the methodologies applied. For example, in some cases adequate data were available only for a time period other than the desired calendar year 1974. This problem was approached by using the appropriate series of the Consumer Price Index to inflate or deflate costs to the study period. Such adjustments were required for Neighborhood Health Centers, Migrant Health Centers, Family Planning Projects, Child and Youth Projects, Maternal and Infant Care Projects, National Health Service Corps, Indian Health Service, Physician Group Practices, and Private Physician Solo Practices.

The providers in each category have been sampled in the context of an "analytical survey," that is, they have been selected for their ability to be representative of the provider type rather than selected in

a random fashion.^{1/} An attempt has been made to acquire one provider observation in each provider category for each cell of the following matrix:

Area	Small Urban	Medium Urban	Large Urban	Rural
East				
Midwest				
South				
West				

This yields a sample size of sixteen observations for each provider category with an attempt, based on judgment, to select the observations in such a way as to be representative of the universe for that provider.

Each separate provider requires a different methodology for analysis based upon the manner in which he accumulates and reports his costs. Indeed, some of the provider types require a separate methodology for each provider observation. An explanation of the methodology applied to each provider, along with a discussion of the data for that provider and an estimate of its validity is presented in each of the provider descriptions which follow.

In order to compare medical encounter costs of different programs, one must have a fairly sophisticated data base with which to work. The

^{1/} Sedransk, Joseph, "Design and Analysis of Analytical Sample Surveys," paper presented to the Washington Chapter, American Statistical Association, Washington, D.C., May 10, 1973. This type of sample is often referred to as a judgmental sample.

data must provide information about the type of services delivered, the number of units of each service delivered, and the overhead, allocatable, and total costs of the program. Further, in order to assure the validity of the comparisons, the programs must provide similar services, and they must have similar definitions for the services. We feel that the data represented here approximate these general constraints. However, the study does not attempt to deal with the variation caused by differing complexity or intensity of care, nor does it attempt to investigate differences in quality of care as it affects output (and hence costs) of medical services.

Most comparative studies in the literature have used the patient visit or encounter as the unit of output. We have done likewise, but the reader should be aware of the statistical problems associated with using patient visits as the sole index of output. A patient visit is merely an indication that a contact between a patient and a provider has taken place; the services actually delivered per visit can vary considerably. For example, the visit can be associated with a greater or lesser number of ancillary services such as laboratory tests or X-ray examinations, and the visit may or may not include the dispensing of drugs.

In addition, many of the federally supported ambulatory care programs include services that have not traditionally been considered health care treatment services at all, but rather public health, social or supportive services. Such services as transportation of patients to and from the ambulatory care center, or health education services and counselling of patients, are routinely furnished by many of the centers in our study, as are environmental sanitation services, and instruction

of health aides, family health workers, volunteers, and other adjunct personnel.

In many cases, substantial portions of a provider's costs are consumed in the provision of these support services, and to properly compare the costs for services in a center that provides a variety of outputs with one that provides only a single output, the analyst must be able to perform a series of rather precise allocations of overhead or indirect costs among the multiple products of the center to arrive at unit costs for the service being measured. All this must be done with the hope that the methods used in the allocations will result in a close approximation of true cost. ^{1/}

In most cases, allocation of overhead or indirect costs to the series of joint products in the providers under study here has been done by the provider centers themselves, usually in conformity with generally accepted accounting principles.

We feel that in most cases the centers have succeeded in depicting a sound estimate of true cost where the available cost and service utilization data were sufficiently detailed to permit them to do so; where the data were not in sufficient detail, we have made what we consider to be reasonable estimates based upon the best available data.

^{1/} One author, Melvin R. Reder, maintains that the separation of different outputs of the production process in a medical firm is an artificial device and should not be attempted at all. Fortunately, Dr. Reder seems to be in a minority, but his reasons for having taken this position are useful and interesting. For further discussion, see Reder, Melvin W., "Comment: Economies of Scale in Medical Practice," in Empirical Studies in Health Economics, Johns Hopkins Press, Baltimore, 1970 (Herbert E. Klarman, ed.).

In either case, whether the data were estimated or not, we have evaluated the data, the methods used by the provider centers in their allocations, and the final result of the calculations. We have given the reader an estimate of the range within which the costs within each provider category or group may vary, along with a measure of its central tendency in the form of a weighted mean cost.

The major statistic used here for comparison of costs among providers, the functional cost per medical encounter as defined earlier in Section 1.1, can be further described by use of an algorithm. One that we have found useful in describing this statistic is:

$$FCME = \frac{C_m}{U_m} + C_o \left(\frac{C_m}{C_T - C_o} \right)$$

where:

- FCME is the functional cost per medical encounter or visit
- C_m is the total direct cost for the medical function for a year, adjusted to eliminate any non-relevant elements (i.e., lab or X-ray cost) that may have been included in the data by reason of the program's accounting methods.
- U_m is the total number of medical encounters or visits for the year.
- C_o is the sum of the total of indirect overhead, or allocable costs for the year.
- C_T is the total cost of the provider for the year.

To this we have added our own requirement for differentiation of the costs associated with visits into:

- The average utilization and costs of lab, X-ray, and pharmacy services associated with the visit (the major

ancillary services) so that these costs can be examined separately and factored out of the medical functional costs where required.

- The average cost of the visit inclusive of major ancillary services (the aggregate of FCME plus major ancillary services) so that the reader can examine for himself the relative intensity of the use of ancillary services, and their associated costs, by each of the provider types in the study.
- An overall cost distribution profile of each provider type showing our best estimate of the manner in which he consumes costs in the total operation of his centers. This is done so that we may account for all costs within the center even though we have concentrated on only the FCME and the major ancillary services costs in our comparisons.

In selecting the Functional Cost per Medical Encounter as our unit of output, we use the justification that if visits are defined over sufficiently long periods (a year), much of the variation in case complexity, or intensity of service, is likely to wash out, and the reported medical visits may actually be a reasonably good index of the overall volume of medical services rendered. Also, as long as differences in case complexity, or intensity of service, per average patient visit are not systematically related to the population being served, such differences might be assumed to occur in fairly stable patterns within each provider setting. ^{1/} However, the more compelling reason for using the patient visits is that most of the available data used in this study do not differentiate among visits of different intensity or complexity. Consequently, the use of the medical visit (or encounter) as the index of output for this study was unavoidable without a major effort at primary data collection.

^{1/} See Reinhardt, Uwe, E., "Manpower Substitution and Productivity in Medical Practice: Review of Research," Health Services Research, Fall 1973, p. 200 for a more complete discussion of this aspect.

Where data are sufficiently detailed to make possible a differentiation of visit by its intensity or complexity, we have used these factors to classify costs by type of service; where data are not sufficiently detailed, we have made estimates based on analogies with other providers who, in our judgment, appear to resemble the providers under study. In most cases, the data used in making the estimates are internal to the program being studied, but some have been taken from the general literature. In all cases where estimates are made, the source of the data is explained and the validity of the final result is commented upon.

In performing these further classifications of cost, the most common deficiency encountered in the data for the study was the lack of specific data with which to determine the ancillary services costs and utilization patterns that accompany each medical encounter or visit. Specific data on ancillary services costs and utilization were available in these provider settings:

- Neighborhood Health Centers
- Family Health Centers
- Family Planning Projects
- Public Health Service Hospitals
- Voluntary Hospital Outpatient Departments
- Prepaid Group Practices
- National Health Service Corps Practices
- Private Physician Group Practices
- Solo Physician Practices

Costs and utilization patterns for ancillary services required estimation in these provider settings:

- Migrant Health Centers
- Maternal and Infant Care Projects
- Child and Youth Projects
- Indian Health Service Hospitals

The data, and its sources, used in making these estimates are summarized in Table 3-1. The individual data sources were compiled into a series of models as shown in Table 3-2, and the composite models were used, where necessary, to factor out the ancillary services costs from the total medical functional cost. Table 3-3 shows the specific model, if any, that was applied to each of the provider categories in the study.

Data limitations made it impossible to obtain a complete set of observations for some of the provider categories, and these limitations made certain adjustments necessary in the basic formula used to compute the functional cost per medical encounter. Each provider type required individualized treatment.

All of these considerations are discussed, in the sections which follow, as they relate to the validity of the resultant functional costs per medical encounter for each provider type. This allows the reader to judge for himself the validity drawn from them.

Table 3-1. Data and Sources Used in Estimates of Ancillary Services Utilization Patterns*

Source	Unweighted Lab Tests Per Med. Visit	X-Ray Exams per Med. Visit	Pharmacy Prescriptions Per Med. Visit	Remarks
GHAA 1963 <u>1/</u>	1.12	.12		Contained a Distribution by Specialty and Age Group
GHI, Inc. 1963 <u>2/</u>	1.45	.15		
Gintzig, 1969 <u>3/</u>	1.09	.19		
Naval Hospitals 1969-71 <u>4/</u>	1.04	.23	1.21	
Kaiser, Ore. 1971 <u>5/</u>	.87	.25	.75	Contained a Distribution by Specialty and Age Group
Sparer, Low Income, 1971-72 <u>6/</u>	.56	.13	1.29	
Sparer, Regular Plan, 1971-72 <u>6/</u>	1.01	.20	.94	
Columbia 1972 <u>7/</u>	.78	.09	1.03	
H.I.P. 1970 <u>8/</u>	.96	.08		Contained a Distribution by Specialty and Age Group
Comp. Health Ctrs. 1973 <u>9/</u>	.80	.10	1.30	Contained a Distribution by Specialty and Age Group
University Health Ctrs. 1973 <u>10/</u>	.67	.08	.66	Considered Typical Primarily of Age Group 20-30 Years
GHAA 1966 <u>11/</u>	.83	.15		Contained a Distribution by Specialty and Age Group
MGMA 1972 <u>12/</u>	.57	.13	.0	Considered Typical only of Private Group Physicians
PHS Hosp's 1973 <u>13/</u>	1.84	.16	.89	
Vol. Hosp's 1973 <u>10/</u>	.77	.17		
HMO Intern'l 1972 <u>14/</u>	.99	.08	1.37	
San Joaquin Found. 1972 <u>15/</u>	.09	.07	.0	Considered Typical only of Private Physicians
Commun. Health Ass'n. 1971 <u>16/</u>	1.54	.18	1.45	
Medi-Cal 1973 <u>17/</u>			.92	
Four NYC Hosp's 1965 <u>18/</u>			.57	
Four Military Hosp's 1974 <u>19/</u>	.48	.23	.84	
NAMCS Survey 1974 <u>20/</u>	.26	.09		Considered Typical only of Private Physicians

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Complete citations of data sources are attached on the following pages.



Table 3-1. Data and Sources Used in Estimates of Ancillary Services
Utilization Patterns (Continued)

- 1/ Perrott, George S., "Basic Statistics for HMO Monitoring", Basic Statistics Project of Group Health Association of America, GHAA, Washington, D.C., 1963. Data are derived from prepaid group practice plans who are members of GHAA, and were presented in a paper by Perrott and Krantz at the GHAA Annual Institute in Detroit in 1972.
- 2/ Gauliani, B. W., "Utilization and Costs of Ambulatory Care Under One Federal Employees Health Benefits Program", Inquiry, Volume II, Number 3, November, 1965. Data are derived from FEP claims experience at Group Hospitalization, Inc., a Blue Cross affiliate, in Washington, D. C. Data cover a 12-month period from November, 1962 through October 1963.
- 3/ Gintzig, Leon and Robert G. Sholdice, Prepaid Group Practice: An Analysis as a Delivery System, Dept. of Health Care Administration, the George Washington University, Washington, D.C., under contract HSM 110-69-247, published 1972. Data are derived from five prepaid group practice plans and utilization patterns are compared between 1968 and 1969 in these plans.
- 4/ Pointer, Dennis D., James D. Bentley, and Robert L. White, Ambulatory Care Cost Functions in Naval Outpatient Departments: An Empirical Model, Research Division, Naval School of Health Care Administration, Bethesda, Md. Data are derived from 28 Naval Hospital outpatient departments for the years 1969 through 1971.
- 5/ Kaiser Foundation Health Plan, Inc., Outpatient 5% C.P.R. Survey dated December 31, 1971. Unpublished. From the files of Kaiser Foundation Health Plan, Portland, Ore., 1971. Data are derived from Kaiser ambulatory care facilities in the Portland, Ore. plan during calendar year 1971.
- 6/ Sparer, Gerald and Arne Anderson, "Utilization and Cost Experience of Low Income Families in Four Prepaid Group Practice Plans", New England Journal of Medicine, July 12, 1973. Data are derived from four prepaid group practice plans for the 12 months ended March 1972 and compare the utilization patterns of a group of 3,020 low income families with those of the regular plan members in each of the four plans.
- 7/ Columbia Medical Plan, Summary Membership and Utilization Statistics, Unpublished. From the files of Columbia Medical Plan, Inc., Columbia, Md., 1973. Data are derived from calendar year 1972.
- 8/ Health Insurance Plan of Greater New York, H.I.P. Statistical Report: 1970 Enrollment and Utilization Statistics, H.I.P., New York, N.Y., 1972. Data are from 32 medical groups affiliated with H.I.P. and cover the period 1971-1972.

Table 3-1. Data and Sources Used in Estimates of Ancillary Services
Utilization Patterns (Continued)

- 9/ U. S. Department of Health, Education and Welfare, Comprehensive Health Services Projects: Summary of Project Data, PHS, HSA, Bureau of Community Health Services, CHSP Reports Nos. 5, 6, 7, and 8, DHEW Publication No. (HSA) 75-5805. Data are summarized from the four quarterly reports covering the 12 months ended September, 1974.
- 10/ American Hospital Association, HAS Six Month National Comparison for Period Ending June 30, 1973, Chicago, 1973. Data are national medians.
- 11/ Chamberlain, Jocelyn, "Special Supplement: Selected Data on Group Practice Prepayment Plan Services", Group Health and Welfare News, Group Health Association of America, Washington, D.C., June, 1967. Data were derived from ten prepaid group health plans who were members of GHAA in 1966.
- 12/ Medical Group Management Association, Accounting Committee's Report on Cost Survey Based on 1972 Data, Denver, Colo., MGMA, 1973. Data are for member groups of MGMA.
- 13/ U. S. Department of Health, Education and Welfare, Bureau of Medical Services Annual Statistical Summary: Fiscal Years 1973 and 1974, DHEW, PHS, HSA, BMS, Data Systems Branch. Data used from this publication relate to the 8 general service hospital outpatient departments only.
- 14/ Huntley, Robert R., et. al., HMO International: Study and Prospectus, Unpublished. From the files of HMO International, Inc., Los Angeles, 1972. HMO International, Inc. is an HMO servicing organization that services California Medical Group, Inc., and Consolidated Medical Systems Ltd. of Los Angeles.
- 15/ San Joaquin Foundation for Medical Care, Summary of Claims History Files, 1972, Unpublished. From the files of San Joaquin Foundation for Medical Care, Sacramento, Calif., 1973. Data are for 1972.
- 16/ Community Health Association, Annual Report: Community Health Association 1961-1971, Highland Park, Mich. Data used here are for 1971.
- 17/ Brian, Earl W. and Stephen F. Gibbens, "California's Medi-Cal Copayment Experiment", Medical Care, December, 1974. Data are weighted averages for both copay and non-copay groups for a four-week period (annualized) during 1972-1973.

Table 3-1. Data and Sources Used in Estimates of Ancillary Services
Utilization Patterns (Concluded)

- 18/ Muller, Charlotte, "Outpatient Drug Prescribing Related to Clinic Utilization in Four New York City Hospitals", Health Services Research, Summer, 1968. Data used here are for calendar year 1965.
- 19/ Pocinki, Leon S., Health Manpower Productivity Standards, GEOMET, Inc., Gaithersburg, Md., Report No. HF-451, Contract No. DAHC-15-73-C-0271. Data are from four military outpatient clinics in 1974.
- 20/ U. S. Department of Health, Education and Welfare, Preliminary Data From the National Ambulatory Medical Care Survey (Unpublished Draft) National Center for Health Statistics, July 15, 1975. Data are for the 12 month period ended April, 1974 and cover only office based physician practices.

Table 3-2. Models Used for Estimating Utilization Patterns for Ancillary Services*

Source	Unweighted Lab Tests Per Med. Visit	X-Ray Exams per Med. Visit	Pharmacy Prescriptions Per Med. Visit
<u>Prepaid Group Practice Model</u>			
GHAA '63 1/	1.12	.12	
GHAA '66 1/	.83	.15	
GHI, Inc. '63 2/	1.45	.15	
Gintzig '69 3/	1.09	.19	
H.I.P. '70 8/	.96	.08	
Kaiser, Ore. '71 5/	.87	.25	.75
Sparer, Reg. Plan '72 5/	1.01	.20	.94
Columbia '72 7/	.78	.09	1.03
HMO Int'l. '72 14/	.99	.08	1.37
C.H.A. '71 16/	1.54	.18	1.45
Total - All Observations	10.64	1.49	5.54
Mean Value	1.06	.15	1.11
<u>Hospital Outpatient Model</u>			
Naval Hospitals '71 4/	1.04	.23	1.21
PMS Hospitals '73 3/	1.84	.16	.89
Voluntary Hospitals '73 10/	.77	.17	
4 NYC Hosp. '65 18/			.57
4 Military Hosp. '74 19/	.48	.23	.84
Total - All Observations	4.13	.79	3.51
Mean Value	1.03	.20	.88
<u>Low Income Population Model</u>			
CHC's '73 9/	.80	.10	1.30
Sparer, Low Inc. '72 6/	.56	.13	1.29
Medi-Cal '73 17/			.92
Total - All Observations	1.36	.23	3.51
Mean Value	.68	.12	1.17
<u>Office Based Physician Practice Model</u>			
NAMCS Survey '74 20/	.26	.09	
MGMA '72 12/	.57	.13	.00
San Joaquin '72 15/	.09	.07	.00
Total - All Observations	.92	.29	.00
Mean Value	.31	.10	.00
<u>Obstetrics/Gynecology Practice Model</u>			
Mean Value - OB/GYN Practice Observations from 1/, 5/, 8/, 9/, and 11/	.60	.03	.87
<u>Pediatrics Practice Model</u>			
Mean Value - Pediatrics Practice Observations from 1/, 5/, 8/, 9/, and 11/	.90	.07	.96
<u>Family Planning Project Model</u>			
Mean Values Derived from NCFPS National Summary for 1973	2.02	.00	1.32
<u>Summary - All Models (Mean Values - All Observations)</u>			
Prepaid Group Practice Model	1.06	.15	1.11
Hospital Outpatient Clinic Model	1.03	.20	.88
Low Income Population Model	.68	.12	1.17
Office Based Physician Practice Model	.31	.10	.00
OB/GYN Practice Model	.60	.03	.87
Pediatrics Practice Model	.90	.07	.96
Family Planning Practice Model	2.02	.00	1.32

* Numbers following each observation in the source column refer to complete citation of data sources shown previously in Table 1-2

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Table 3-3. Ancillary Services Utilization Data Sources by Provider Type Used to Factor Out Major Ancillary Services Costs

Provider Type	Description of Data Source	Derivation of Data - Remarks
Neighborhood Health Centers	CHSP Reports	Reported by each center in sample
Family Health Centers	Statistical Report of Operations	Reported by each center in sample
Migrant Health Centers	CHSP Reports	See below ^{1/}
Maternal and Infant Care Projects	OB/GYN Practice Model	See Table 1-3
Child and Youth Projects	Pediatrics Practice Model	See Table 1-3
Family Planning Projects	NCFPS Reports	See Table 1-3
Indian Health Service Hospital Outpatients	Low Income Population Model	See Table 1-3
Public Health Service Hospital Outpatients	BMS Furnished Data	Reported by each hospital in sample
National Health Service Corps Practices	NHSC Furnished Data	Reported in Summary by NHSC Div., HSA
Voluntary Hospital Outpatients	Medicare Cost Reports	Reported by each hospital in sample
Prepaid Group Practices	Medicare Cost Reports	Reported by each prepaid plan in sample
Private Physician Group Practices	MGMA Accounting Report	Reported in Summary by MGMA
Solo Physician Practices	'74 Profile of Medical Practice	Reported in Summary by AMA

^{1/} Migrant Health Center Data did not contain specific utilization and costs of ancillary services; however, supplementary reports furnished by four of the Migrant Centers did contain ancillary services utilization data. Analysis of the data from the four centers showed the utilization patterns to be closely similar to those of small Neighborhood Health Centers. Therefore, utilization indices derived from the CHSP reports for Small Neighborhood Health Centers were used in factoring out ancillary services costs in the Migrant Centers. Alternatively, the Low Income Population Model from Table 1-3 could have been used. However, the indication was that the data from the small NHC's were more closely analogous to that of the Migrant Centers. Use of the Low Income Population Model would have resulted in a 3 percent higher (\$0.49 higher) overall Functional Cost Per Medical Encounter in the statistics used later in Section 4.0.

3.2 NEIGHBORHOOD HEALTH CENTERS

Data - Data for the analysis of costs at Neighborhood Health Centers were obtained from four quarterly Comprehensive Health Services Project (CHSP) reports prepared by the Bureau of Community Health Services (BCHS). These reports cover the period from October 1973 through September 1974, and represented the most recent published data at the time of analysis. The reports provide sufficient detail to determine functional costs, allocations and other distributed costs and, within the limitations of recording errors at the source, these reports are considered the most complete and useful data source used in the study. The reports include data describing:

- Registrants
- Patients who received services within a quarter or a twelve-month period
- Utilization patterns
- Complexity and Intensity relationships between health care providers, clients, and services rendered
- Costs of medical and dental services delivered
- Overhead, training, and other support costs.

Methodology - There are 88 Neighborhood Health Center Projects which regularly report to BCHS, Division of Monitoring and Analysis. These centers are classified by BCHS into the following categories, based upon the number of physician plus mid-level practitioner encounters for the first quarter, calendar year 1974:

- Very large urban 30,000 or more encounters
- Large urban 9,000 to 29,999
- Medium urban 4,500 to 8,999
- Small urban Below 4,500
- Rural Regardless of encounters.

For purposes of this study, the Very Large Urban and Large Urban categories were merged; and for certain analyses, the rural centers were classified according to the size categories shown above. At least one reliable observation was generated for 15 of the 16 cells of the matrix shown below:

<u>Region</u>	<u>Size/Setting</u>			
	LU	MU	SU	Rural
East	X	X	X	X
South	X	X	X	X
Midwest	X	X	X	X
West		X	X	X

The missing cell (West-Large Urban) could not be filled because of insufficient data for the single Western NHC which met the Large Urban category definition.

The centers acutally included in the sample were:

<u>Grantee and Location</u>	<u>Region</u>	<u>Size</u>	<u>Setting</u>
Penobscot, Rockland, Me.	East	Small	Rural
Drew, Brooklyn, N. Y.	East	Medium	Urban
Hunts Point, N. Y.	East	Medium	Urban
Sunset Park, N. Y.	East	Large	Urban
W. M. Young, Albany, N. Y.	East	Small	Urban
Cardozo, Washington, D. C.	East	Medium	Urban
East Baltimore, Md.	East	Small	Urban
RHC of Luzerne, Wilkes Barre, Pa.	East	Large	Rural
S. E. Philadelphia, Pa.	East	Small	Urban
Temple Comprehensive, Phila., Pa.	East	Medium	Urban
Temple, Nicetown, Phila., Pa.	East	Medium	Urban
Randolph County, Elkins, W. Va.	East	Small	Rural
Montgomery, Ala.	South	Small	Urban
Economic Opportunity, Miami, Fla.	South	Large	Urban
Atlanta, Ga.	South	Large	Urban
Park-Duvalle, Louisville, Ky.	South	Large	Urban
Delta, Mound Bayou, La.	South	Large	Rural
Jackson-Hinds, Jackson, Miss.	South	Medium	Urban
Lincoln, Durham, N. C.	South	Large	Urban
Orange-Chatham, Chapel Hill, N. C.	South	Small	Urban
Beaufort-Jasper, Ridgeland, S. C.	South	Large	Rural
F. C. Fetter, Charleston, S. C.	South	Medium	Urban
Alton Park, Chattanooga, Tenn.	South	Medium	Urban
M. Walker, Nashville, Tenn.	South	Large	Urban
Meharry, Nashville, Tenn.	South	Medium	Urban
M. Luther King, Chicago, Ill.	Midwest	Medium	Urban
Metro East, E. St. Louis, Ill.	Midwest	Small	Urban
CHC Program, Bellaire, Ohio	Midwest	Medium	Rural
CHS Project, Cincinnati, Ohio	Midwest	Medium	Urban
Jefferson, Pine Bluff, Ark.	South	Small	Urban
Lee County, Marianna, Ark.	South	Small	Rural
Moton, Tulsa, Okla.	South	Large	Urban
Settegast, Houston, Tex.	South	Small	Urban
Sunnyside, Houston, Tex.	South	Small	Urban
FHC, San Antonio, Tex.	South	Small	Urban
Galveston Clinics, La Marque, Tex.	South	Medium	Rural
Comprehensive NHC, St. Louis, Mo.	Midwest	Medium	Urban
Model Cities, Kansas City, Mo.	Midwest	Medium	Urban
Yiatman, St. Louis, Mo.	Midwest	Large	Urban
Alviso, Calif.	West	Medium	Rural
San Ysidro, Calif.	West	Small	Urban
Mission, San Francisco, Calif.	West	Medium	Urban
N. E. Medical Services, San Francisco, Calif.	West	Medium	Urban
King City, Calif.	West	Small	Rural

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The manner in which data for this category is presented allows for a circulation of FCME which can be derived using a simple algorithm. The formula isolates costs incurred in the medical function (including overhead), "nets out" the costs of ancillary services (including associated overhead), and divides the remainder by the total number of medical encounters. The formula used was:

$$FCME = \left[\frac{(TC) (\% Med) - [(MDE) (LT/MDE) (PLT) (ILT)] - [(MDE) (XR/MDE) (PXR) (IXR)] - [MDE (RX/MDE) (PRX) (IRX)]}{MEDE} \right]$$

Where:

FCME is the Functional Cost per Medical Encounter as defined earlier in Section 2.6.

TC is total costs incurred by each center. These data appear in the Program Summary Table of each CHSP report.

% Med is the percent of total cost which can be attributed to the medical function inclusive of lab, X-ray, and pharmaceutical costs. These data appear in Table C-III of each CHSP report.

MDE is the total number of physician (MD) encounters for that center during that quarter. These data appear in Table U-II of each CHSP report.

LT/MDE, XR/MDE—These variables refer to the ratio of ancillary services per physician encounter (MDE). These data were available for one quarter only. However, examination shows that service intensity remained fairly constant through time. Hence, this figure is carried as a constant for each center for each of the four quarters.

PLT, PXR, PRX—These variables refer to the unit cost of each of the ancillary services. They are deducted from total medical costs in order to isolate medical encounter costs. The data were available for one quarter only. Therefore, a BLS inflator was used to correct for price increases in these services for the later three quarters.

ILT, IXR, IRX—These are the inflation indexes for lab tests, X-rays, and prescriptions, respectively. (Base quarter is 4Q, 1973, since price data for each of these services refer to this time period.) These index numbers were obtained from BLS Medical Care Index data.

MEDE—This variable is the total number of medical encounters (MD plus mid-level practitioner) for each center for each quarter. The data are available from several tables in each CHSP report, including the initial "Program Summary" Table.

The formula was applied to each center for each of the available four quarters of data to yield a series of quarterly unit costs, representing functional cost per medical encounter. The weighted mean (weighted by quarterly number of medical encounters) of this series represents the mean FCME for the center for the 12-month period of data.

The summations of data from the sample centers are considered to be representative of the Neighborhood Health Center category of providers and their costs.

Results - Weighted average functional costs per medical encounter, derived from the previously discussed methodology, were as follows:

Overall Average	\$19.68
Eastern Region	26.58
Southern Region	16.38
Midwest Region	19.53
Western Region	19.54
Urban Setting	20.00
Rural Setting	17.31
Small Size	18.10
Medium Size	23.48
Large Size	16.56

3.3 FAMILY HEALTH CENTERS

Data - The Bureau of Community Health Services, drawing upon a comprehensive reporting system initiated July 1, 1974, provided early results from an initial reporting of 30 active FHCs. These reports cover a nine-month period from July 1, 1974, through March 31, 1975. By annualizing the data to a twelve-month base period and applying an adjustment to deflate the cost data to calendar year 1974, it was possible to generate relatively consistent comparative statistics on workload, productivity, cost, and funding for 21 of the centers whose reporting was complete for the nine months.

The reports included data on enrolled and non-enrolled populations served, encounters by type of encounter and type of provider, costs by functional category including costs of major ancillary services, and allocation methods used for apportioning indirect costs. The data were complete and sufficiently detailed to permit calculation of functional cost per medical encounter with a relatively high degree of validity, given the recent initiation of the reporting system.

Methodology - The final sample selection was based upon the availability of data, and was distributed as follows over the standard sampling matrix used in the study:

<u>Region</u>	<u>Size/Setting</u>			
	LU	MU	SU	Rural
East	2	1		3
South	1	3		4
Midwest		1	1	2
West	1		1	1

The following Family Health Centers were included in the final sample:

<u>Grantee and Location</u>	<u>Region</u>	<u>Size</u>	<u>Setting</u>
Athol, Massachusetts	East	Medium	Rural
Vineland, New Jersey	East	Small	Rural
Syracuse, New York	East	Large	Urban
West River, Maryland	East	Medium	Urban
Baltimore, Maryland	East	Large	Urban
Fairmont, West Virginia	East	Small	Rural
Bessemer, Alabama	South	Medium	Urban
Canton, Mississippi	South	Medium	Rural
Raleigh, North Carolina	South	Medium	Urban
Kalamazoo, Michigan	Midwest	Medium	Urban
Saginaw, Michigan	Midwest	Large	Rural
West Memphis, Arkansas	South	Small	Rural
New Orleans, Louisiana	South	Medium	Urban
Espanola, New Mexico	South	Large	Rural
Lawton, Oklahoma	South	Small	Rural
El Paso, Texas	South	Large	Urban
Des Moines, Iowa	Midwest	Small	Urban
New Madrid, Missouri	Midwest	Small	Urban
Page, Arizona	West	Medium	Rural
Daly City, California	West	Small	Urban
Portland, Oregon	West	Large	Urban

The sample reveals a bias towards centers serving rural populations and towards centers located in the South. However, because these biases tend to follow the distribution of centers in the total population of FHCs, the sample is felt to be reasonably representative. It comprises about 70 percent of the active FHCs and an estimated 76 percent of the program's total encounters.

Classification of FHCs by size was based upon the estimated annual number of medical encounters. Projects were ranked in order of size from the smallest to the largest and the ranking divided into thirds. The smallest third was designated the small projects, the middle third the medium projects, and the largest third the large projects. The scale used was:

<u>Size Classification</u>	<u>Number of Medical Encounters</u>
Small	< 8,000/year
Medium	8,000 - 15,000/year
Large	≥ 15,001/year

The following transformation was used to group the centers by geographic location, excluding extracontinental centers:

<u>Geographic Location</u>	<u>HEW Region</u>
East	I, II, III
South	IV, VI
Midwest	V, VII
West	VIII, IX, X

The urban or rural nature of the populations served was judged by considering the center's geographic location and its surrounding service area in relation to the area's population density as reported by the 1970 census. The designations were made by the study team since the data from BCHS did not include this classification.

The functional cost per medical encounter was derived for each Family Health Center through the following series of algorithms:

$$C_m = C_T - [C_L + C_X + C_P + C_D + C_H + C_S + C_M + C_G]$$

C_m = Direct cost (annualized) of the ambulatory medical function excluding hospital, ancillary services, support services, and overhead costs

C_T = Total cost of the center as reported by BCHS

C_L = Laboratory cost as reported by BCHS

C_X = X-ray cost as reported by BCHS

C_P = Pharmacy cost as reported by BCHS

C_D = Dental cost as reported by BCHS

C_H = Hospitalization cost as reported by BCHS

C_S = Supporting services cost as reported by BCHS

C_M = Medical records cost as reported by BCHS

C_G = General services cost as reported by BCHS

$$FCME_{FY75} = \frac{C_m}{U_m} + [C_G + C_M] \left(\frac{\frac{C_m}{U_m}}{C_T - [C_G + C_M]} \right)$$

$FCME_{FY75}$ = An estimate of functional cost per medical encounter for FY 1975

U_m = Annualized number of medical encounters for the center as reported by BCHS

DRAFT



$$FCME_{74} = (FCME_{FY75}) (CPI)$$

$FCME_{74}$ = An estimate of functional cost per medical encounter for the center for calendar year 1974

CPI = Physician office visit index of consumer prices for the nearest geographic area to the center. This was used to deflate the FY75 costs to a calendar year 1974 basis for comparability with other providers in the study.

Results - Functional costs per medical encounter were derived as described above, and the following figures represent weighted averages using number of medical encounters as the weighting factor:

Overall Average:	\$25.69
Eastern Region:	\$30.02
Southern Region:	\$22.54
Midwestern Region:	\$19.28
Western Region:	\$29.17
Small Size:	\$36.88
Medium Size:	\$21.45
Large Size:	\$25.34
Urban:	\$26.93
Rural:	\$23.57

These functional costs are among the highest experienced by any of the provider types in this study. However, a number of factors should be considered in relation to these costs. None of the centers in the sample has been in full operation longer than approximately three years, and several began operations more recently. Their overhead costs, and particularly the level of marketing costs, suggest that the centers may still be in startup phases. Physician productivity as measured by numbers of patients seen per

hour is also lower than in other provider settings, ^{1/} which tends to confirm the possibility that the centers have unused capacity and have not yet realized optimum levels of operation.

The results presented here were derived from a new reporting system that is still assumed to be subject to reporting errors at the source of the data. Further, since the available data covered only nine months of a required twelve-month period, annualized costs were estimated. This was done by increasing the costs at an assumed level equal to the average of the three calendar quarters of available data. In a provider setting that is known to be increasing its patient volume rather rapidly during startup, as is true of FHCs, this approach tends to understate utilization volumes and thus overstate unit costs.

3.4 MIGRANT HEALTH CENTERS

Data - Three major sources were considered in the search for suitable cost and utilization data for Migrant Health Centers. Each source had its own set of limitations.

The Record of Hearings Before a Subcommittee of the House of Representatives, Committee on Appropriations, March 20, 1974 (commonly termed the Budget Hearings), contained cost and utilization data by project for all of the FY 1974 Migrant Projects which received appropriated funds. These data had two shortcomings. First, utilization data consisted only

^{1/} See Table 1-6 for a comparison of estimated FHC visit rates with other provider settings.

of the number of physician encounters; medical encounters with other providers, such as nurses and physician assistants, were not included. Second, cost data consisted of estimated federal obligations for FY 1974. It was unclear whether the total estimated amounts would actually be used and, further, it was known that the appropriated funds do not defray all costs. Thus, had this source been used, it would have been necessary to increase the estimated obligation figures by an amount representing direct patient and third-party payments received by Migrant Health Centers. Given these limitations, the Budget Hearings data were felt to be of only marginal value in estimating costs for the Migrant Health Program.

Beginning in FY 1975, a new national reporting system was pilot tested in 12 Migrant Health Projects. Data from these projects were available for only one quarter, October 1 through December 31, 1974, and for only 11 projects. Data for succeeding quarters were not then available. A summary report based on these data was useful for comparative purposes and for evaluating the credibility of independent calculations. However, this source too was judged marginal in terms of data needs for an analysis of unit costs, particularly since the October-December period represents a time of decreased services and utilization for Migrant Health Centers, who experience wide seasonal variations in their levels of operation.

The third source was the FY 1975 grant funding report files maintained by BCHS. A search of these files located suitable FY 1974 cost utilization data for 20 Migrant Health Centers. Most of these centers reported only basic financial data (sufficient to document a total annual cost figure), plus the total number of medical encounters

for the year. Encounters were not differentiated by complexity of service, nor were ancillary services data included. Nevertheless, these data were judged more suitable than others.

In order to proceed with the analysis, certain assumptions were necessary regarding the content of services provided, as well as the utilization and cost of ancillary services associated with the encounters. These assumptions are discussed in the methodology section below.

Methodology - The final sample, dictated by availability of data, consisted of nine Migrant Health Centers. Assuming that all Migrant Projects serve an essentially rural population of migrant and seasonal agricultural workers, the sample should have consisted of 12 projects: three sizes - small, medium, and large; within four geographic locations - East, South, Midwest, and West. Data limitations made it impossible to obtain this ideal sample, and the projects finally included are distributed on the following matrix:

<u>REGION</u>	<u>SIZE</u>		
	Small	Medium	Large
East	3	1	
South		1	
Midwest	1	1	1
West			1

The sample consisted of the following centers:

GRANTEE & LOCATION	REGION	SIZE	SETTING
Ulster County Health Department Kingston, New York	East	Small	Rural
Project REACH, Inc. Cohocton, New York	East	Small	Rural
St. Anthony Community Hospital Warwick, New York	East	Medium	Rural
District #6 Health Department Martinsburg, West Virginia	East	Small	Rural
State Board of Health Raleigh, North Carolina	South	Medium	Rural
Illinois Migrant Council Chicago, Illinois	Midwest	Medium	Rural
SOL Regional Health Services, Inc. Toledo, Ohio	Midwest	Large	Rural
Migrant Action Program, Inc. Mason City, Iowa	Midwest	Small	Rural
Plan de Salud del Valle Ft. Lupton, Colorado	West	Large	Rural

Project size was determined by total number of medical encounters for the year, as follows:

Small: 0 - 2,300 medical encounters

Medium: 2,301 - 6,400 medical encounters

Large: 6,400 or more medical encounters

This classification was developed by considering the relative size of all centers as reported in the Budget Hearings. It is intended to represent the variations in size within the total universe of Migrant Health Centers. As such, it is an internal classification; and when compared with the size classification used for Neighborhood Health Centers, all of the Migrant Centers in the sample would be considered small because, as a group, Migrant Health Centers tend to be smaller.

Because the data located the projects by HEW region, the HEW regions were assigned to the four geographic locations designated for the sample in the following manner:

<u>Location</u>	<u>HEW Regions</u>
East	I, II, III
South	IV, VI
Midwest	V, VII
West	VIII, IX, X

The functional cost per medical encounter was derived by:

- Using inflation factors taken from the appropriate CPI series to adjust all total cost figures to FY 1974.
- Determining the proportion of total cost allocated to the medical function areas. This allocation was based on the ratio of medical encounters to total encounters for each center in the sample.
- Adjusting the resulting medical cost to eliminate laboratory, drug, and X-ray costs. Since information concerning ancillary services costs was not available, allocation was based upon data obtained for Neighborhood Health Centers by geographic region (East, South, Midwest, West), setting (urban, rural), and size (small, medium, and large). The greatest variation in this ratio appeared among NHCs of different sizes. Geographic region and setting did not appear to affect this ratio as much as did the size variable. Therefore, the ratio

obtained for small-sized NHCs was applied to the Migrant Health Centers. ^{1/}

- Dividing the medical function cost, exclusive of ancillary services, by the number of medical encounters to arrive at a functional cost per medical encounter for each center.

Results - Functional costs per medical encounter were derived as described above, and the following average costs represent weighted averages using number of medical encounters as the weighting factor:

Overall Average:	\$15.26
Eastern Region:	\$ 8.91
Southern Region:	\$32.55*
Midwestern Region:	\$14.13
Western Region:	\$17.27*
Small Size:	\$11.89
Medium Size:	\$16.75
Large Size:	\$15.22

* Only one center included in this category.

The results presented here must be viewed as estimates. The data obtained from project reports to BCHS appear to be more reliable than those derived either from the Budget Hearings or from the one quarter of data from the pilot reporting system. On the other hand, the sample of

^{1/} It should be noted here that this allocation model was used only after an analysis of ancillary services utilization for several other provider types, including prepaid groups, hospital outpatient departments, low income groups, and private physician groups. It was felt that, on the average, ancillary services utilization was more similar to that recorded by the Neighborhood Health Centers than it was to other available indices. Please see Section 1.3 for a description of the manner in which these indices were derived.

centers with usable data was still quite small and it was necessary to utilize assumptions and judgment to estimate ancillary services costs.

The present analysis was compared with the analysis of services utilization and direct cost data for the eleven projects in the new Migrant Health Project reporting system described earlier. The pilot test data produced a unit cost of \$20.00 per medical encounter. This statistic was based on a reporting period from October 1 to December 31, 1974 (one center submitted a report for six months, April 1 - September 30, 1974). Since this period covered a season of decreased utilization for Migrant Health Centers, the unit cost appears to be within the range of possible variation in the data derived from the Migrant Health Centers in our sample.

3.5 FAMILY PLANNING PROJECTS

Data - A number of federal health programs provide family planning services as part of a comprehensive care package. This analysis, however, focuses on the free-standing family planning clinics funded under Title X of the Public Health Service Act and administered by BCHS.

Data on the costs of individual clinics were obtained from the FY 1975 grant funding report files maintained by BCHS. A search of these files located suitable cost and user data for 15 family planning centers. These data consisted of basic financial entries showing a total cost figure, the total number of encounters, and the total number of clinic users for the year.

The cost and user data were considered reliable, but since encounters were not differentiated by type (they included referral and counseling encounters) utilization data were not. Consequently, utilization data were developed

from national statistics published by the National Center for Family Planning Services for calendar year 1973. These data provided overall program statistics on utilization, differentiated both by type of encounter and by complexity of service. Data describing utilization of ancillary services (primarily lab and pharmaceutical services) were also available from the national statistics.

Studies of family planning project costs and utilization, taken from the published literature, were researched for additional background information. A study performed by GEOMET, Incorporated in 1973 also provided information from site visits during that year. ^{1/}

Methodology - The final sample of family planning clinics was dictated by the availability of suitable cost and user data from the BCHS grant funding reports, and consisted of fifteen projects. An ideal sample would have been sixteen projects (three sizes: small, medium, and large; within four geographic locations: East, South, Midwest, and West; and within two settings: urban and rural), but such a sample was impossible to obtain. The distribution of projects included in the sample is shown on the following matrix:

<u>REGION</u>	<u>SIZE/SETTING</u>			
	Large Urban	Medium Urban	Small Urban	Rural
East	1	1	1	2
South	2	1	1	2
Midwest				
West	1	2		1

^{1/} Specific citations of literature researched in family planning are available in the bibliography.

The specific projects included in the sample were:

Grantee and Location	Region	Size	Setting
Family Planning Association of Maine Cumberland, Maine	East	Large	Rural
Northern Kennebec Valley Community Action Council, Waterville, Maine	East	Small	Rural
Planned Parenthood of Union County Area, Inc., Elizabeth, New Jersey	East	Medium	Urban
Planned Parenthood Association of Mercer Area, Inc., Trenton, N. J.	East	Large	Urban
Genesee Region Family Planning Pro- gram, Inc., Rochester, New York	East	Small	Urban
Family Health Services, Inc. Jacksonville, Florida	South	Large	Urban
Hall County Dept. of Public Health Gainesville, Florida	South	Small	Urban
Palo Pinto Community Service Corp. Mineral Wells, Texas	South	Small	Rural
South Plains Community Action Assoc., Inc., Loveland, Texas	South	Medium	Rural
Texas State Dept. of Health Tyler, Texas	South	Large	Urban
Austin-Travis County Health Dept. Austin, Texas	South	Medium	Urban
Rocky Mountain Planned Parenthood Denver, Colorado	West	Large	Urban
Arizona Job Colleges, Inc. Casa Grande, Arizona	West	Medium	Urban
San Francisco Dept. of Public Health San Francisco, California	West	Medium	Urban
Butte County Health Department Oroville, California	West	Small	Rural

The projects were grouped by size based on number of medical encounters for the year. The projects were ranked from smallest to largest, and those in the smallest third were designated the small projects, the middle third the midium-sized projects, and the largest third the large projects.

<u>Size Classification</u>	<u>Number of Medical Encounters</u>
Small	1,500
Medium	1,500 - 10,000
Large	10,000

Because the data located projects by HEW region, these regions were assigned to the four geographic locations designated for the sample in the following manner:

<u>Location</u>	<u>HEW Regions</u>
East	I, II, III
South	IV, VI
Midwest	V, VII
West	VIII, IX, X

The urban or rural nature of the populations served was determined judgmentally by considering the geographic location of a project and its surrounding service area in relation to population densities reported by the 1970 census. The study team made the designations since reported data did not include this classification.

As noted in the data section, utilization of medical services by type of service was available for calendar year 1973 from the National Reporting System for Family Planning Services (Family Planning Statistics Branch, National Center for Health Statistics). A 1972 evaluation of

family planning projects contained in a DHEW study was used to validate the analysis, ^{1/} as was a report by RMC Research Corporation, "OEO Family Planning Program Management Survey."

The functional cost per medical encounter was derived as follows:

- The total cost and number of users for each center was obtained from BCHS grant funding reports.
- Using data from the 1973 national statistics cited above, it was determined that the average user of family planning services has 1.51 medical visits per year. This figure included new and continuing patients, and was obtained by dividing the total number of visits at which at least one medical service was provided by the total number of users.
- The number of medical visits provided by each center was estimated by multiplying the reported number of users by 1.51.
- The total cost reported by each center was divided by the estimated number of visits to arrive at an estimated cost per visit, inclusive of ancillary service costs.
- Ancillary services costs were factored out of the cost per visit through the following procedure:
 - The ratio of each specific type of laboratory test (PAP smear, urinalysis, pregnancy test, etc.) to each visit was calculated from the national statistics cited earlier. Each specific test was "priced out" using a sample fee schedule from a survey of physician group practices by Medical Group Management Association in 1973, ^{2/} multiplied by its appropriate ratio, and added to the cost per visit for the other tests to determine an average cost per visit for all laboratory tests.

^{1/} Anderson, Arne, Gerald Sparer, and Denton Vaughan, Evaluation of Family Planning Projects, 1972.

^{2/} Medical Group Management Association, Production Survey: 1973, MGMA, Denver, Colorado, 1974.

- The ratio of contraceptive drug and device prescriptions to each visit (pills, IUDs, topical preparations, condoms, etc.) was obtained by:
 - . determining the number of users of each contraceptive method from the national statistics supplemented by further detail from the Anderson/Sparer study cited earlier
 - . determining the usual prescribing patterns and frequencies for each user of each method from the RMC Corporation study cited earlier
 - . applying the prescribing patterns and frequencies to the total users of each method to determine total prescriptions per user per year by type of prescription
 - . "pricing out" the prescriptions using prices derived from the RMC Corporation study cited earlier (these prices were validated or supplemented by other studies by GEOMET, Incorporated (1973), Westinghouse Corporation (1973), and others cited in the literature; prices were adjusted to a current basis, where necessary, using the CPI index of prescription drugs)
 - . adding the total prescription costs together and dividing by number of visits to derive an average prescription cost per visit
- The prescription cost per visit and the laboratory cost per visit were added together and applied to the total cost per visit described earlier to determine the ratio of ancillary services cost to average total cost per visit on a national basis
- The national average of ancillary services cost per visit was applied to each center's cost per visit to factor out the ancillary services cost.

Results - Functional cost per medical encounter was derived according to the above methodology, and the costs presented below represent weighted averages using number of medical encounters as the weighting factor:

Overall Average:	\$22.24
Eastern Region:	\$25.04
Southern Region:	\$24.10
Midwestern Region:	--
Western Region:	\$18.28
Small Size:	\$37.91
Medium Size:	\$28.79
Large Size:	\$20.27
Urban Setting:	\$20.03
Rural Setting:	\$32.96

These unit costs were estimated from fragmentary data requiring numerous assumptions. The results, therefore, are tentative. However, given the present availability of data for family planning centers, a more accurate estimate was not possible. Most existing information systems in family planning programs are directed toward obtaining annual cost and user data by type of contraceptive method used or by the users' demographic characteristics. A cost per medical encounter statistic is not routinely cited nor is it used either in program management or in published special studies of the programs. Based upon the quality of the data, the representativeness of the sample, and the assumptions necessary to calculate functional cost per medical encounter, it is difficult to ascribe a great deal of validity to the FCME statistic reported here. Consequently, it should be accepted only as a "best estimate," and not as a point accurate representation of the true cost.