AN ANALYSIS OF FACTORS AFFECTING THE INCREASED USAGE OF EMERGENCY ROOMS FOR PRIMARY CARE

by

Evelyn Dabney Weaver

Thesis submitted to the Graduate Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

MASTER OF URBAN AFFAIRS

in

Urban Affairs

APPROVED:

James R. Bohland, Chairman

Patricia K. Edwards

Sara A. Rosenberry

March, 1982
Blacksburg, Virginia

AN ANALYSIS OF FACTORS AFFECTING THE INCREASED USAGE OF EMERGENCY ROOMS FOR PRIMARY CARE

BY

EVELYN DABNEY WEAVER

(ABSTRACT)

This paper explains the increased use of hospital-based emergency facilities for primary care. The analysis identifies socio- demographic characteristics, individual resources and selected access variables which influence use of physician services or emergency rooms. The selection of variables is based on a model of facility use which has been derived from the literature on medical care. The results from the analysis concluded that socio-demographic characteristics are both directly and indirectly related to facility use, but there is no apparent association between health insurance as an individual resource and access variables, and use of health care services. Suggestions of further research are proposed based upon a theoretical model of health care choice behavior.

Acknowledgments

I would expecially like to thank James Bohland for his time, interest and encouragement as Committee Chairman, and the committee members, Sara Rosenberry and Patricia Edwards for their overall contributions to my thesis. I would also like to express my appreciation to Gary Nunn of Users Services for his skills with SAS programming and data analysis and to Debbie Lindsay for her patience and technical assistance.

Contents

I. Introduction

The purpose of this research is to explain the increased use of hospital-based emergency facilities for primary care. In the analysis, characteristics of those persons utilizing emergency facilities for non-urgent conditions are identified, and the relationships between selected personal and service variables and the use of emergency facilities for primary care are examined. The selection of variables is based on a model of facility choice which has been derived from the literature on medical care.

Scope of Problem

Because of high and increasing medical care costs, the health care delivery system throughout the United States has acute problems. A goal of any medical system is to organize resources for the provision and distribution of health services to persons in need (Mechanic, 1978:315); however, rising health care costs have reduced the availability of medical care for many. Inequalities in the geographic distribution of and access to medical care have further aggravated the problem. Although access to available health care is thought to be a basic principle of a health care system, many services are unavailable to citizens at affor-

dable prices (Oakes, 1973:2). Subpopulations such as the poor, minorities, disabled and elderly are most affected by the limited access due to inadequate financial resources, and in some cases, lack of physical mobility which prevents easy entry into the health care system.

The problem of limited and declining access to medical facilities is complex, and no simple solutions are available, but several factors which contribute to the problem of access to health care in the United States can be identified. First, the high cost of health care prohibits use by some and limits use by many more. Health care costs have increased more than those in any other major industry in the nation. Between 1960 and 1970, medical care costs in the United States increased 42 percent while other components of the consumer price index such as housing and transportation increased at approximately 23 percent (White, 1973:32). While costs rose throughout the medical care industry, significant variability in cost increases exists in the different components of the industry. For example, physicians' services price index rose 8.1 percent in 1978 and 9.4 percent in 1979 and the cost of a hospital room increased 12.4 percent in 1978 and 11.2 percent in 1979 (Gladden and Shapiro, 1980:28).

Although insurance benefits have increased to help offset these cost increases, coverage is not comprehensive and many individuals who need insurance most often are unable to afford it (Oakes:3). Insurance coverage also influences the type of services individuals select for health care. That is, medical care received at hospitals, particularly in the emergency room, is covered in many policies, while visits to a private physician may not be included. Thus, an incentive exists to use hospitals, the highest cost sector of the health care system. In addition, hospital-based emergency rooms do not have the "welfare" stigma that less costly facilities, such as public health facilities and neighborhood clinics, may have. Consequently, many seek care from hospitals despite the fact that insurance benefits cover care in most clinical settings. The influence of insurance on health care use is evident in the increased demand for health services since the enactment of Medicare and Medicaid (Battistella and Bundal, 1978;120).

The spatial distribution of medical resources both regionally and within cities also affects access to health care. Since individuals tend to use health services located within close proximity of their daily activities (Shannon and Spurlock, 1976), the distribution of facilities becomes important. Persons residing in portions of the city where

medical resources are scarce must travel farther in order to obtain medical attention. Often this added cost and effort restricts the amount of contact with medical resources. In addition, health manpower and facilities are most scarce in economically disadvantaged areas such as rural counties and ghettos, making access to health care highly inequitable (Alexander and Bowden,1973). The health care system, thus, has come under stress from many different sources. As a consequence, the structure of the system has changed as new settings have emerged, and the use of others have changed their relative importance.

Emergency Rooms as a Source of Primary Care

Before considering those factors influencing the use of emergency rooms as settings for primary care, a workable definition of primary care is necessary. Primary health care, also known as ambulatory care, is defined as the basic service given to an individual who is not a bed patient in a health care institution (Jonas,1977;120). Persons receiving ambulatory care are often identified as "outpatients" as opposed to "inpatients" who remain overnight in a health care institution.

Two major categories of primary care providers exist. Physicians, either individual or in group practices, give

care on a fee-for-service basis. Primary care is also available in "organized settings." An organized setting is a medical practice facility which is characterized by an administrative staff which formulates policies but does not treat patients. Individual physicians are responsible only for adhering to administrative procedures for the treatment of patients and use of facilities. Primary health care in an organized setting typically occurs in either "hospital outpatient departments" or "clinics." Emergency departments are sometimes sections in a large hospital outpatient unit, but in many hospitals they are separately organized units. Clinical services are not limited to hospital setting services but range from general patient assessment, advice or dietary information to more specific diagnostic, therapeutic and treatment services. Local public health departments or clinics are traditionally responsible for preventive health services including communicable disease control, environmental health control and family planning services (Friedson, 1972). Public health services are generally targeted to local neighborhoods and care is often rendered for little or no charge. Other sources of primary care exist, such as in private corporate clinics or in military facilities; however, the use of these is minimal and limited to specific members.

Selection of a health care setting is an individual act which involves the selection of a facility or service from among numerous alternatives. We assume that the selection is based on a desire to maximize satisfaction with the medical care within individually prescribed cost limits, but other factors such as cultural and social biases, and constraints within the system also influence choice of services. The majority of individuals in need of "first contact" or routine care can select a variety of services from different medical settings including hospital clinics, neighborhood health clinics, emergency departments and private practice facilities. Currently, it is estimated that about 85 per cent of all medical care is provided in a variety of ambulatory settings (Piore, 1974). Of these settings, hospital outpatient clinics, including emergency rooms, are becoming increasingly important alternatives to the private physician. Although emergency rooms were originally established to treat individuals requiring immediate medical or surgical care, the traditional role of emergency facilities has expanded to include a range of primary health care services (Oakes:5). Concomitant with this change in facilities has been a significant increase in use of emergency rooms. Not only has visitation to emergency rooms expanded, but the use of hospital-based emergency rooms for primary care from 1962

to 1973 has increased faster than the use of other ambulatory facilities. Patient visits to emergency facilities were approximately 20 million in 1962 and rose to 60 million in 1972. This represents a faster rate of increase than other outptient department visits (National Center for Health Statistics, 1975:456-465). The increased importance of emergency room settings suggests that the very nature of primary care is undergoing important changes, away from the personal, private physician setting to the impersonal, institutional setting.

The unique characteristics of and services offered in emergency rooms may be one explanation for its increased use for primary care. Most hospital-based emergency rooms offer 24-hour services, convenient for those seeking health care after working hours, and due to informal "walk-in" policies, waiting time for a physician's appointment is reduced although the waiting time for an appointment upon arrival may be longer in emergency rooms. Services found in emergency departments such as radiology, minor surgery (suturing) and laboratory services are often not available in physicians offices and public health clinics. Further, many emergency rooms are recognized as major resource centers for information concerning poison control, burn prevention and treatment.

However, another interpretation for emergency room use is that alternative sources for health care are not readily available. As Roemer states, "emergency medical services have come to fill the gap created by inadequate resources for general ambulatory medical care" (Roemer, 1975; 145). For example, although private physicians constituted over 75 percent of primary care visits in 1969, accessibility to these services is declining due to diminishing numbers of private physicians and their tendency to organize practice away from the local neighborhood (Parker, 1974; 31). Thus, individuals seeking primary care must seek alternative sources and it appears that emergency rooms are a likely substitute.

Rationale

The increased use of emergency rooms for primary care has important policy implication depending upon what variables are recognized as influencing health care behavior. For example, if we can assume that the choice of services is influenced by constraints such as inadequate financial resources and the availbility or accessibility of services, appropriate policy changes would be required to mitigate constraints in the system so that individuals would be free to choose the most desirable health care setting.

Personal biases may also influence the process of selecting a health care facility-- biases stemming from health care beliefs about the necessity of routine health care, perceptions of illness, or simply attitudes regarding various providers of care. Although changing personal beliefs may not be a reasonable solution, an alternative approach would be to adjust for those factors which constrain the choice away from the more appropriate service. Finally, if emergency rooms are increasingly becoming sources of primary care, new policies may be necessary. These policies would not only provide for the needed care, but also mitigate future problems such as rising costs, overcrowding of facilities, and the decline in the number of physicians available to the patient population.

The purpose of this research is to identify some of the reasons why emergency departments have become alternative sources for primary care. Specifically, it is hypothesized that the two principal causes for the increased use of emergency facilities for primary care are: 1) a decline in accessibility of general practitioners and 2) an increase in availability of public and private health insurance. It is argued that the first factor introduces an important constraint in the medical facility selection process. In effect, an important alternative for care is removed from a person's

choice of settings. Health insurance, on the other hand, creates an incentive to use emergency rooms since most hospitals are willing to acknowledge third-party payments, and most insurance policies, including Medicare, provide liberal coverage for such emergency room utilization (Somers, 1973).

The thesis is organized in the following manner. In Section II, the literature on health service use is reviewed. Particular emphasis is given to studies which analyze the characteristics of emergency service users and the behavioral patterns associated with general health service use. The model of facility choice used in this analysis and the hypotheses to be tested are described in Section III. In Section IV, the research methods and data are described. The results of the analysis are discussed in Section V, while the discussion and conclusion are presented in Section VI.

II. Approaches to the Analysis of Health Service Utilization

Two approaches to the analysis of health care utilization are evident in the literature. One group of studies identifies characteristics of users and the factors related to health care use. The goal of such studies is to seek information on patients utilizing the emergency room and other outpatient facilities, and to identify the relationship between various socio-demographic characteristics and the frequency of use of health services. In the second approach, the emphasis is on understanding the process of consumer decision making associated with health care. The purpose of these studies has been to construct models which explain the frequency of use of specific health care settings.

Characteristics of Users

User characteristics identified in most studies of emergency room utilization include age, income, race and sex. In a few studies successful attempts have been made to classify users into groups according to the severity of illness (Weinerman,1966; White and Connor,1966).

Socio-demographic Characteristics

An inverse relationship between family income and the use of emergency room facilities for primary care is evident in most studies of emergency rooms. Weinerman and his associates examining the determinants of hospital emergency room use reported that over half of the sample had incomes less than $5,000 (1966). In Andersen's nationwide survey (1967), people with low family income use clinics or outpatient services as a source for regular care, while persons in the middle income range ($4,000-$6,999) and those with higher family incomes ($7,000 and over) reported general practitioners and specialists as a regular source for primary care (Andersen, 1967:14-15).

The low income associated with minority groups is, in part, a result of higher rates of utilization of emergency facilities by minority groups (White and O'Connor, 1970). A study published by the National Center for Health Statistics (1969) also found that nonwhites were three times more likely than whites to visit a physician in an emergency room.

Mechanic notes an association between older age, low income and use of all ambulatory services. Medicaid in particular has promoted use of ambulatory care facilities by the elderly, and since the elderly constitute a large per-

centage of the poor, an association with emergency service use and income is exhibited (Mechanic,1978:198). Despite the use of ambulatory services by the elderly, younger age groups comprise a large proportion of all persons utilizing emergency services for primary care. In Weinerman's study (1966:1041), for example, most patients using emergency services were younger than 35 years and over half the sample was younger than 25. White and O'Connor found that over 75% of their sample were 35 years and younger (1970:164).

In addition to socio-economic correlates of emergency rooms, severity of illness or injury has been related to use of health care services. In a classification developed by Weinerman (1966), three categories of patient illnesses are defined: nonurgent, urgent and emergent. Nonurgent refers to conditions which are minor in severity and do not require immediate attention. Urgent is defined as a condition which may endanger the patient if medical attention is not given within several hours. Emergent conditions require immediate medical attention. Typically, only 6 percent of those utilizing emergency services are classified by resident physicians as "emergent" (Weinerman :1046). Using a similar classification of conditions, White and O'Connor (1966:166) noted that urgency ratings varied for different time intervals. The highest percentage of emergency cases,

6.6 percent, occurred between midnight and 8a.m. However, for all time periods, the largest percentage (57.1%) of total cases were nonurgent.

In considering factors that influence the utilization of health services, most studies emphasize either the descriptive characteristics of users or the health care delivery system (Donabedian,1973; Shortell,1973). Two of the more important factors identified in these studies are the existence of health insurance and the lack of access to private physician services.

Health Insurance

Prior to the implementation of Medicare and Medicaid, a clear inverse relationship between socioeconomic status and utilization of medical services appeared to exist. Lower socio-economic groups had fewer physician visits than those with higher status. The growth of health insurance programs targeted to lower income groups has resulted in a narrowing of the gap in primary health care services between low and high income groups (Mechanic:198).

A study conducted in the city of Baltimore compared utilization of ambulatory care services among a sample divided into three groups by per capita income and the presence or absence of Medicaid coverage (Skinner, 1978). The

group categorized as "near poor" included individuals not covered by Medicaid and with per capita incomes less than $2,500. The "non-poor" were those without Medicaid with incomes of $2,500 or more. The final group included Medicaid recipients. Although visits were not limited to emergency services, the "near poor" and "non-poor" utilized fewer ambulatory care services than recipients of Medicaid. An analysis of emergency room utilization in Quebec after the enactment of Canadian Medicare in 1970 indicated that the visit rate to emergency rooms increased 41.6 percent from 1970 to 1974 (Steinmetz and Hoey, 1978).

Other studies have shown a relationship between health insurance and use of emergency facilities. Kronenfeld (1978) reported a positive relationship between use of services and government health insurance and a negative relationship between use and income. Medicare and Medicaid recipients make more visits to ambulatory services than people with other forms of insurance or no insurance (Kronenfeld, 1978;71-72). Also, as income increases, the number of visits decreases. White and O'Connor (1970;165-166) reported that two-thirds of a sample of emergency room patients had health insurance. Welfare recipients comprised 24 percent of the sample and only 9.3 percent of the patients had no insurance coverage.

Private Physician Access

In this study, accessibility refers to the ability of persons to obtain and secure medical care. Lack of physical access to private physicians is cited as an important factor influencing an individual's choice to seek alternative ambulatory services (Knox,1979; Ingram,1978). Accessibility is influenced by characteristics of the population-at-risk, including the location, the structure and distribution of medical settings in the health care delivery system and attributes of the community, particularly the transportation system, which affect entry into and passage through the health care system.

While social and economic conditions limit initial contact with a private physician, many individuals with personal physicians often are unable, for a variety of reasons, to obtain care when the need arises. Weinerman found that reasons for visits to emergency rooms included lack of a relationship with a private physician, unavailability of their physician, cost and inadequate insurance coverage (Weinerman:1046). Economic factors were cited as reasons for not using a private physician as a regular source of care. The relationship between income and having a private physician was evident by the fact that persons in higher social class categories were much more likely to have a regular private physician (Weinerman;1052).

Kelman and Lane (1976) attempted to analyze circumstances surrounding utilization of emergency facilities by families with and without their own primary care physicians. A sample of patients was classified into two groups upon entry at a hospital emergency room. Group A included those patients who were unable to designate their "own physicians," while Group B were those individuals who could identify a regular physician. Although the results showed that Group B (those with a primary physician) had greater rates of utilization, the majority of individuals in this group stated that the reason for utilizing the emergency room was the unavailability of their private physician. Fifty-eight percent of Group A reported "no regular source of care" as the primary reason for emergency room use.

White and O'Connor (1970:167) found that of the entire emergency room study group utilizing emergency facilities, only forteen percent claimed they did not have a private physician as a regular source of care. It is interesting to note, however, that while half of the study group were self-referred, only a small percentage were referred by physicians, office staff or answering service. Their finding suggests that although the majority of patients designate a private physician as a regular source of care, situations frequently arise when patients are unable to obtain services

from their private physician and are inclined to seek alternative sources of care.

Physical access to health care is also reported as influential in determining what facilities are selected for health care (Kelman and Lane,1976; Phillips, 1979). Most noteworthy is the study presented by Ingram, Clark and Murdie (1978:58) which indicated that among the most important reasons for patients choosing an emergency department for health care was the spatial accessibility of the hospital. The analysis concluded that as distance away from the hosptal increased, utilization decreased.

Individual satisfaction with providers of care may well influence the type of health care services selected. Aday and Andersen (1975:64-79) identify dimensions of consumer satisfaction with care that are important in evaluating access to the health care delivery system. Items identified in their analysis include convenience of waiting time, care after hours, ease of getting to care, cost as determined by out-of-pocket payments, courtesy of doctors and nurses, and medical information.

Behavioral Models

In one of the first models developed to explain the frequency in the use of health services, three types of factors were identified as influencing individual choice: "predisposing," "enabling," and "need" factors (Andersen, 1968). Since Andersen's seminal work, these components have become accepted as a valid framework for identifying individual medical decisions (Figure 1).

The first stage of Andersen's model consists of the predisposing component which can be used to predict the tendency toward use. The predisposing conditions include such items as health beliefs, characteristics of family composition and social structure such as age, sex, social class and occupation.

The enabling component refers to the family and community resources which allow a family to act upon a health need. Without such resources services would not be used. Family resources include, but are not limited to, family savings, income and health insurance and are correlated with predisposing conditions such as age and social class. Community resources are concerned with the availability of medical services as measured by such variables as physician-population ratio, hospital-bed ratio and residential proximity. Community resources are particularly relevant to

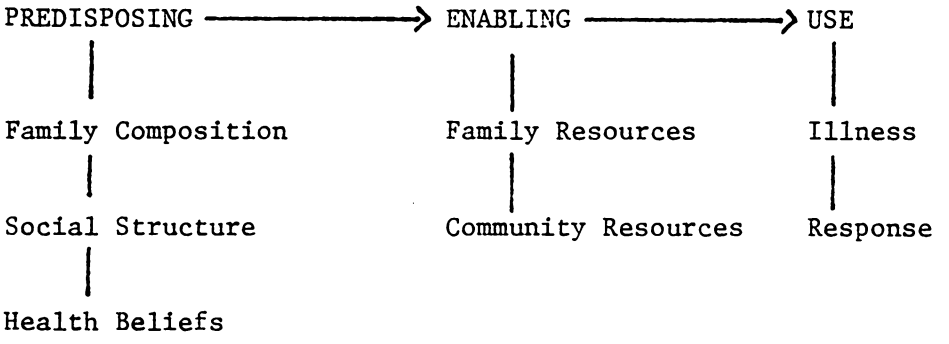


FIGURE 1

A Behavioral Model of a Families' Use
of Health Services

Source: Ronald Andersen, A Behavioral Model of a Families' Use of Health Services, Center for Health Administration, University of Chicago Press, 1967, p. 14.

the policy maker because this is where most of our current policy in health care is being directed. For example, the National Health Planning and Resources Development Act of 1974 created Health Systems Agencies (HSAs) to provide health care planning and service development in designated regional and state health planning areas (Jonas, 1977; 363-365).

The need component refers to the most immediate cause of health service use and is measured by a family's self reports of physical conditions and how a family reacts to symptoms of illness. A family's need for health care is indirectly influenced by the presence of both predisposing and enabling components. A family may recognize symptoms of illness and feel the need for services, but certain predisposing and enabling conditions (social structure and income) may inhibit actual use of services.

The degree to which each component contributes to the explanation of total use varies depending upon the type of health care services. Need is typically a more important determinant of hospital use than other medical services since these hospital services are considered necessary once symptoms of illnesses are recognized. The importance of predisposing and enabling conditions is genuinely greater for services such as dental care because these services are

generally perceived as less necessary, are low on the list of health care priorities, and involve greater discretion as when the service would be used.

Andersen developed his model to explain variations in the frequency of use of health care services, but the concepts of the model are also important for explaining the use of different medical settings. This model however, has not been used in such a context (Davidson, 1978). While most studies successfully show that demographic characteristics are associated with emergency service use, few models which have been proposed provide a framework for understanding why these associations exist. One purpose of this study is to provide such a framework in an analytical manner. While Andersen's model examines variation in the frequency of use of health services in general, the model proposed here intends to identify conditions which influence the use of a particular source for primary health care, in this case, emergency rooms.

III. Theoretical Model of Facility Choice

Figure 2 illustrates how Andersen's concepts can be integrated and modified into a facility choice model. The model is based on the assumption that two different but interrelated decisions are associated with securing medical care. The first, the decision to seek care, has been the focus of most medical research on health care choices, including Andersen's. As depicted in Figure 2, the set of variables associated with the decision is similar to those proposed by Andersen (Andersen, 1978; 19-20), but the relationships among them are reinterpreted. In the original model, the associations between the predisposing, enabling and need components are depicted as sequential. In the model presented here, the decision to seek care is a direct function of the predisposing, need and enabling factors, and an indirect function of the predisposing component. While diagrammatically this represents a change in the original linear model, in fact, Andersen himself recognizes that the need or enabling factors would be more important depending on the type of care to be sought (see page 17).

The second decision in the model involves the selection of a facility. Although it is recognized that the selection of a facility does not occur independently of the decision to seek aid, conceptually the two decisions involve diffe-

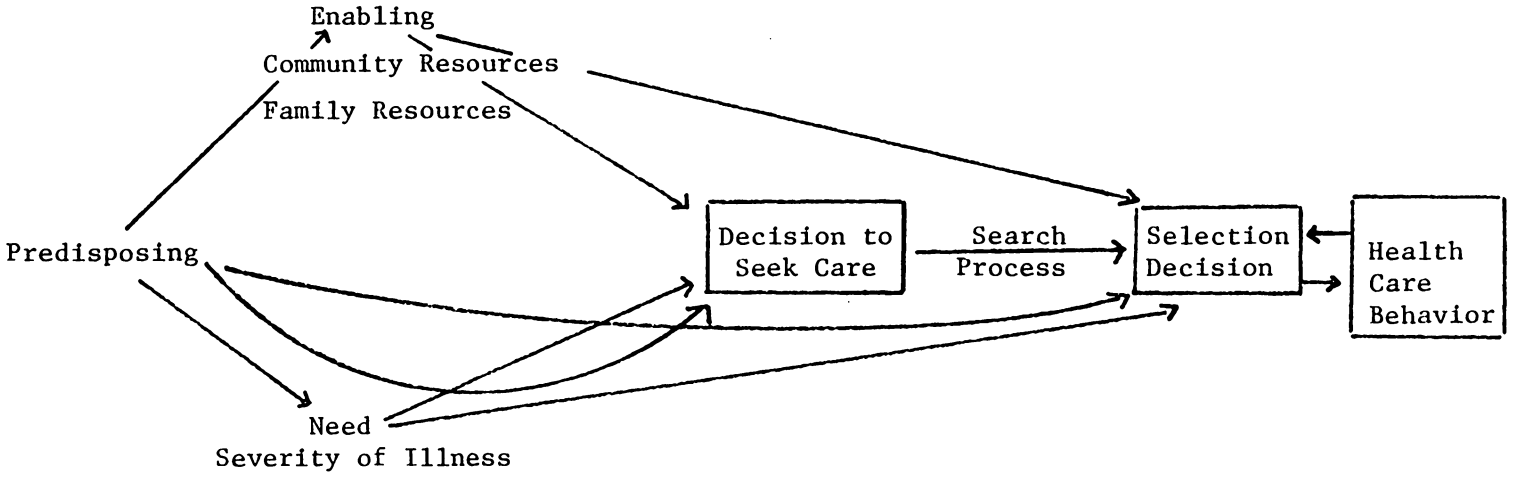


FIGURE 2

Theoretical Model of Facility Choice

rent actions and are influenced by both those influencing use and a new set of factors which can, however, be subsumed under the headings of predisposing characteristics.

According to Figure 2, the choice of a facility is indirectly influenced by predisposing factors and directly influenced by need and enabling components. The selection decision is influenced by some of the same elements of the need, predisposing and enabling components which influence the decision to seek care. In the case of enabling factors, for example, some family resources would influence both the decision to seek care and the selection of a facility. For example, the ability to pay and personal mobility would influence both decisions. While the existence of health insurance would free an individual to seek care when the need arises, if the insurance is Medicare, for example, one would typically consider only those alternatives which honor that third-party vendor.

The major distinction in the role of the enabling factor in the two decisions is the presence of community resources in the selection decision. The availability of different health care facilities and their accessibility within a community are of paramount importance in determining which facilities are eventually used by a prospective patient. Community resources limit the alternative source

of care available to an individual and the constraint (such as accessibility) on the use of these facilities. The obvious example is the case where a facility is not present and consequently cannot be included in the choice set. Equally important, however, is the situation where a facility is available, but access is hindered by either time, distance, cost or social constraints. The quality of care available in a particular setting as perceived by the patient is also important to the eventual selection of a facility. As Phillips (1979) notes, patient satisfaction with the entry process and care received has a major influence on subsequent decisions as to which facilities are selected.

The predisposing factors age, income and race also directly influence the type of facility selected for health care. For example, chronic illnesses associated with the elderly suggests the use of one type of health care facility--a facility where care is repeatedly provided by one specialty physician. In addition, a low income would tend to limit the selection of health care settings to only those which are most financially and geographically accessible.

The severity of the illness or injury and a person's perception of the urgency of obtaining care are need factors that influence the selection decision. The establishment of hospital emergency rooms was, in fact, a response to the im-

portance of having alternative facilities available for particularly severe cases. The trend toward increased use of emergency rooms for primary, nonurgent care indicates, however, that need alone does not determine the eventual outcome of the selection process.

The model in Figure 2 has as its final component the actual use of a facility. The model is nonrecursive in that the use of a facility is influenced by prior behavior. In this sense our health care decisions involve a learning process which is experientially based. Much of what we know about access to a particular practitioner and the level of care comes from prior contact with medical practitioners in different settings.

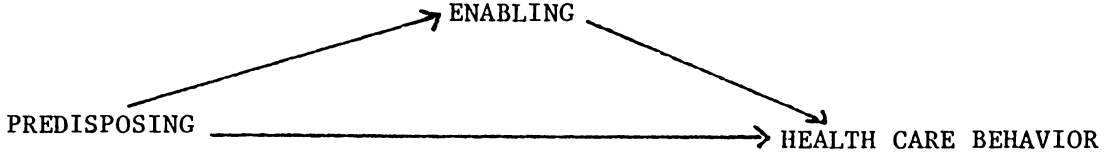
The health care facility which is eventually used need not be the same facility initially chosen, for constraints on use may not be known until an attempt is made to use a facility. We may originally try to contact a private physician, but if unsuccessful, seek an alternative. The selection decision and the ultimate behavior identified in the model are sequentially related in terms of continuous feedback. However, modeling these feedbacks is not the purpose of the study and is not dealt with at this time.

IV. Methodology

Although the model in Figure 2 provides the conceptual framework for the analysis, it has been modified for this study for methodological reasons (Figure 3). First, the cognitive aspects of the decision process, the first behavioral component in Figure 2, cannot be measured with the data used for this study. Thus, the actual behavior is used as a measure of the selection decision.

Second, it is not possible to measure community resources available to an individual because geocodes are not available from the data source. Therefore, variables measuring community resources as enabling factors influencing health care behavior are not included in this study (Figure 3). Further research is needed which includes both individual and community resources in the model. Finally, the lack of data on the need component in the analysis requires its deletion for the operational version of the model. Instead, two enabling factors, the increase in availability of health insurance as a method of medical payment and the accessibility to private physicians are considered to be family resources influencing use of health care.

The modifications of the theoretical model (Figure 2) are expected to alter the results of the analysis. First, the elimination of both the need component and the decision



Operational Variables:	Age	Health Insurance	Emergency Room
	Income	Access to Health Care	Private Physician
	Race		

FIGURE 3

Operational Model of Facility Use

process is expected to result in a strong relationship between the predisposing component and use. Since the cognitive process of selecting a health care facility is not being evaluated, the direct relationship between the predisposing characteristics and use is likely to be reduced. Finally, the association between the predisposing component and the enabling component may also be less significant, because of the unavailability of data regarding community resources. Thus, the linkages between accessibility and community resources cannot be assessed and included.

Hypotheses

Despite these limitations, it is possible to test for the existence of some of the relationships depicted in the theoretical model. The availability and type of health insurance as a method of payment and the accessibility of consumers of care to private physicians were hypothesized to be two enabling variables influencing the use of emergency rooms for primary care. The type of health insurance coverage an individual has will influence the use of health care services because it increases the options available and makes some options less costly. More specifically, we expect to find persons utilizing private physician services will tend to have private third-party coverage such as Blue

Cross and Blue Shield, while emergency room users will tend to be covered by public health insurance plans such as Medicare and Medicaid. Although a causal relationship between health insurance and use cannot be established, the facility selected for health care is seen as a function of the type of health care coverage.

Lack of access to private physicians is thought to influence the selection of emergency rooms as sources of primary care. Persons with poor access to private physicians will see emergency rooms as a viable option given that constraints on securing care from physicians exist. This relationship assumes that most persons would prefer private physician services if they were available and could obtain such care. Such an assumption appears valid given the attitudes experienced by persons about what constitutes good ambulatory care (Phillips, 1979). Further, acceptance of the process of obtaining care and the overall quality of the care received, is an indicator of access influencing future decisions regarding the continuing use of a particualar health care setting (Penchansky, 1981). Again a causal relationship cannot be determined, but a statistical association is expected. Use of emergency rooms is expected to be, in part, a function of poor access to private physicians.

In addition to measuring the direct influence of enabling factors on the selection of private physicians or emergency rooms, the associations between selected predisposing characteristics, enabling factors, and the dependent variable are considered (Figure 3). It is hypothesized that these personal characteristics are both directly and indirectly related to the use of medical facilities. We expect that whites who are older than 30 years and who have relatively high annual incomes will be more likely to carry private third-party coverage and will have greater access to all types of health care services, consequently, they are more likely to utilize private physician services than emergency rooms. If this indirect relationship exists, we would expect that the association between the predisposing variables and use of health care facilities would be reduced when enabling variables are externally controlled. However, as the model shows, we would still expect a direct association between the predisposing characteristics and use with enabling variables as controls.

In summary, the hypotheses representing the relationships between the components of the operational model (Figure 3) are: 1) two enabling variables, health insurance as a method of payment and the accessibility to private physicians were expected to be the most important variables in-

fluencing use; 2) the predisposing characteristics were proposed to be both directly and indirectly associated with use; 3) if the indirect relationship between the predisposing characteristics and use exists, this association should be reduced when controlling for the enabling variables; and 4) a direct relationship between the predisposing characteristics and use would still be evident even when the enabling factors are treated as controls.

Data Sources

To test for the existence of these relationships, data from a health survey conducted for the Virginia Department of Health and the Virginia Health Systems Agencies in 1974 were used. The survey included responses from 5,183 families or 2.5 percent of the families in Virginia. In addition to family units, selected individuals within each family were questioned in detail about their health problems and medical care behavior for the past year. These individual interviews totaled 14,103. Because information required for this study was on both family and individual files, the two were combined to form a single sample for the analysis.

Measurement

The health care behavior, the dependent variable, was measured by actual use (Figure 3). While the use of a specific facility may occur only after several iterations through the decision process, the variation between the initial preference of patients (selection decision) and the service actually used could not be identified from the survey data. Thus, while diagrammatically, the theoretical model represents the process of health care choice behavior, the operational model identifies variables which influence the use of private physicians or emergency rooms for health care. The use of an emergency room or a private physician was determined by responses to questions concerning sources of medical advice or treatment during the previous twelve months. Individuals were asked which sources of care had been used during the year (Appendix A). In this way, "usual" sources of care are more likely to emerge than if only information on the last treatment setting is used.

In most cases, individuals indicated they obtained advice or treatment from more than one source during the year. To differentiate the "emergency room users" from the "private physician users," the following decision rules were applied. Persons who indicated that the emergency room was their only source of care during the year were classified as

"emergency room users." Persons who indicated use of private physicians and other sources of care identified in the survey were classified as "private physician users." Thus, persons who utilized both private physicians and an emergency room were also categorized as "private physician users." In such cases, it was assumed that the use of a emergency room was in response to an emergency illness or injury rather than a source for primary care. According to the survey, 103 individuals used only the emergency room during the year, while 3309 individuals reported use of a private physician as their source of care as it is defined here. To obtain a relatively equal number of observations for both groups, a random sample of 104 individuals was taken from the category of private physician users.

Data on the two enabling variables, method of payment and access to private physicians, were obtained from the family and individual parts of the survey. Information on method of payment for each individual was obtained from a sequence of questions concerning the types of insurance coverage (Appendix A). This information on health insurance was used to construct a measure of two medical payment categories, public insurance and private insurance, which could be measured against the dependent variable, facility use.

Lack of access occurs for a variety of reasons, including cost, distance, time and institutional factors and thus, it must be measured by several different variables. Individual measures of access including waiting time for a routine medical appointment, waiting time for an appointment when sick, travel time to the doctor's office and office waiting time. A final indicator of access was constructed by combining responses to a sequence of questions regarding satisfaction with the quality, availability, cost and convenience of care received during the year (Appendix A).

The statistical procedures used to test the hypotheses were bivariate tests of association. In most cases, the variables were collapsed to dichotomous categories to facilitate the interpretation of the tests of association and to eliminate the problem of too few cases in the analytical categories. Both lambda and chi square were used where appropriate. Conclusions regarding the importance of private physician access and health insurance coverage on emergency room use are drawn from the analysis.

V. Results

Description of the Study Population

Selected socio-economic characteristics for the sample and the population of Virginia are compared in Table 1. Persons who are 30 years or younger represent 30 percent of the sample and 55 percent of the population of Virginia. The distribution by sex and race indicates that males represent 60 percent of the sample and 49 percent of the population. White persons represent over 80 percent of both the survey sample and the population of Virginia. Most persons of both the sample and the State population have annual incomes between $10,000 and $25,000, while slightly more persons of the population than the sample have incomes of less than $10,000. The differences between the sample and the State Population suggest that some biases exist from the survey sample.

Table 1
Distribution of Sample and the Population of Virginia by Age, Sex, Race and Income

Characteristic		SAMPLE	POPULATION OF VIRGINIA
AGE			
	30 years or less	37%	55%
	31-40 years	22	12
	Greater than 40 years	41	33
SEX			
	Male	60	49
	Female	40	51
RACE			
	White	82	81
	Nonwhite	18	19
INCOME			
	$1,000-9,999	29	35
	10,000-24,999	46	42
	25,000 and over	25	23

Sources: U.S. Bureau of the Census, Census of Population: 1970, Detailed Characteristics, Final Report -D48, Virginia; The Virginia Department of Health and The Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institute, 1979.

Predisposing Characteristics

The relationships between the predisposing characteristics, age, race and income, and type of health care selected are presented in Table 2. Older respondents utilize private physician services (59%) more frequently than those who utilize emergency rooms (41%), while a larger percentage of younger people utilize emergency rooms more than private physicians (Table 2). Not only are noticeable age differences present, but the association is significant at the .05 level. This age pattern supports earlier studies (Weinerman,1966; White and O'Connor,1966), and is consistent with the hypothesis that predisposing characteristics will have a direct effect on use.

The relationship between race and type of care is not, however, significant (Table 2). Although white persons are slightly more likely to utilize private physician services (51%) than emergency rooms (49%), and nonwhite persons tend to utilize emergency rooms more frequently (57%) than private physicians (43%), the lambda and chi square values indicate a lack of association. This result must be interpreted cautiously, however, for the small proportion of nonwhites in the sample (18) does not provide an adequate test of the original hypothesis.

Table 2
The Relationship Between Age, Race, Income and by Type of Care

AGE

TYPE OF CARE	AGE		
	30 yrs or less	Over 30	TOTAL
Private Physician Users	35% (26)	59% (75)	50% (101)
Emergency Room Users	66 (50)	41 (53)	50% (103)
TOTAL	37% (76)	63% (128)	204

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

$X^2 = 11.3$
$p \leq .005$
$\lambda = .22$

Table 2
(Continued)

RACE

TYPE OF CARE	RACE		
	White	Nonwhite	TOTAL
Private Physician Users	51% (85)	43% (16)	50% (101)
Emergency Room Users	49 (82)	57 (21)	50% (103)
TOTAL	82% (167)	18% (37)	204

$X^2 = .71$
$p \leq .90$
$\lambda = .03$

Table 2
(Continued)

INCOME

TYPE OF CARE	INCOME		
	≤ $15,000	> $15,000	TOTAL
Private Physician Users	38% (37)	60% (64)	50% (101)
Emergency Room Users	62 (61)	40 (42)	50% (103)
TOTAL	48% (98)	52% (106)	204

X^2=.71
p≤=.90
λ=.03

Respondents with higher annual incomes (>$15,000) are more likely to utilize private physician services than emergency rooms (Table 2). The relationship is reversed for low income respondents. Respondents with incomes of $15,000 or less are much more likely to utilize the emergency room (62%) than private physician services (38%). The pattern between income and use is statistically significant at the .05 level. This result supports the work of Andersens' study (1966) and others that suggests persons using emergency rooms for primary care do so because of the financial constraints placed on the use of private physician services.

The direct relationship between the predisposing characteristics and use displayed in Figure 3 is generally supported by the data. With the exception of race, both age and income are significantly associated with the use of emergency rooms or private physicians. This result not only supports earlier studies which described characteristics of users, but statistically supports the hypothesis that socioeconomic variables influence the selection of different health care settings.

Enabling Characteristics

The enabling characteristics specified in the operational model (Figure 3) include the method of payment for health care and measures of access to health care services. For purposes of this analysis, health insurance was divided into two categories: 1) public third-party vendors representing Medicare and Medicaid and other private vendors (i.e. CHAMPUS, Veterans Administration and Workmans Compensation) and 2) private third-party vendors including Blue Cross, Blue Shield, Prepaid fixed plans and all other private vendors.

In the sample, 171 person (84%) had health insurance which paid all or part of their medical expenses. The type of insurance, however, did not bear any association with the selection of emergency rooms or private physicians (Table 3). Respondents with private health insurance tend to utilize private physicians (51%), while individuals who identified public third-party coverage tend to utilize emergency rooms (52%). However, the differences were not large enough to be significant. Thus, while the relationship is in the expected direction, the association is not of significant strength to warrant acceptance of the original hypothesis. The pattern of responses does indicate some support, albeit tenuous, for the linkage in the model.

Table 3
Percentage of the Population with Health Insurance
by Type of Care

TYPE OF CARE	HEALTH INSURANCE		
	PUBLIC	PRIVATE	TOTAL
Private Physician Users	48% (13)	51% (74)	49% (87)
Emergency Room Users	52 (14)	49 (70)	51% (84)
TOTAL	16% (27)	84% (144)	171

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

Persons without Health Insurance = 33
X^2=.096
p≤=.90
λ=.05

Because of the time an individual typically must wait for an appointment from a private physician, it is hypothesized that this inconvenience influences the choice of a treatment setting. We would expect that persons who had a long waiting time for an appointment would be less likely to use private physician services in the future. The data from the survey do not, however, support this proposition. There is little relationship between the time waiting for an appointment and use of a private physician or an emergency room (Table 4(a)). This result may have been influenced by the large proportion of persons who did not respond to the question regarding appointment waiting time.

Respondents who must wait more than one day for care when ill tend to utilize private physicians (64%) more than emergency rooms (36%). Moreover, there is little difference between private physician and emergency room percentages for persons who waited less than one day for an appointment (Table 4(b)). While the result is not statistically significant, it is in the hypothesized direction of the model. Again, a methodological problem may have contributed to the lack of a relationship. A large proportion of emergency room users did not appropriately respond to either question regarding appointment waiting time. Since the amount of time necessary to wait for a visit to an emergency room is

Table 4(a)
Distribution of the Population by Waiting Time for Routine Doctor's Appointment and by Type of Care

TYPE OF CARE	Waiting Time for Routine Appointment (days)		
	≤ 1 day	> 1 day	TOTAL
Private Physician Users	62% (49)	65% (13)	63% (62)
Emergency Room Users	38 (30)	35 (7)	37% (37)
TOTAL	80% (79)	20% (20)	99

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carclina: Research Triangle Institite, 1979.

No response = 105
X^2=.06
p≤=.90
λ=.40

Table 4(b)
Distribution of the Population by Waiting Time for An Appointment When Sick and by Type of Care

TYPE OF CARE	Appointment Waiting Time When Sick		
	≤ 1 day	> 1 day	TOTAL
Private Physician Users	51% (87)	64% (7)	52% (94)
Emergency Room Users	49 (84)	36 (4)	48% (88)
TOTAL	94% (171)	06% (11)	182

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

No response = 22
X^2=.67
p≤=.09
λ=.06

neglible even for nonemergency care, the question may have been inappropriate for emergency room users.

The percentage of respondents distributed in the travel time and type of care categories, shows little variation (Table 5(a)). Respondents who traveled more than 15 minutes did use private physician services more frequently than emergency rooms, but the relationship is not significant. The pattern of the association does not support the hypothesis that greater distance to private physician offices is likely to influence the alternative selection of emergency rooms.

Responses to the question regarding the usual amount of time necessary to wait for a physician upon arrival at a health care facility shows that persons who waited 30 minutes or less to see a doctor tend to be private physician users (55%). This pattern is also true for those waiting more than 30 minutes to see a physician (Table 5(b)). Although it appears that private physician users must wait longer to see a doctor, the pattern orignially postulated, the association is not significant.

In order to determine overall satisfaction with medical care received during the year, a combined index of satisfaction used as a general indicator of access was created from a sequence of questions (Appendix A). As Phillips (1979) suggested, how an individual perceives the process of ob-

Table 5(a)

Distribution of the Population by Travel Time to Health Care and by Type of Care

TYPE OF CARE	Travel Time to Health Care (in minutes)		
	≤ 15	> 15	TOTAL
Private Physician Users	51% (52)	55% (46)	53% (98)
Emergency Room Users	49 (50)	45 (38)	47% (88)
TOTAL	55% (102)	45% (84)	186

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

No response = 18
X^2=.26
p≤=.90
λ=.10

Table 5(b)
Distribution of the Population by Office Time and by Type of Care

TYPE OF CARE	Waiting Time to See Doctor (in minutes)		
	≤ 30	> 30	TOTAL
Private Physician Users	55% (64)	57% (25)	56% (89)
Emergency Room Users	45 (52)	43 (19)	44% (71)
TOTAL	73% (116)	27% (44)	160

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

No response = 44
$X^2 = .04$
$p \leq .90$
$\lambda = .20$

taining care from a medical facility and the satisfaction he derives from the medical treatment or advice will influence future health care decisions.

A cumulative index with the levels: high, medium and low satisfaction was developed from the responses.[1] As indicated in Table 6, there is little variation between level of satisfaction and type of health care selected. Persons using private physicians tend to have a higher level of satisfaction than those using emergency rooms, although persons using emergency rooms are also reasonably satisfied. The pattern suggest that poor access to private physicians does not influence the selection and use of emergency rooms for health care.

Table 6
Degree of Satisfaction with Health Care by Type of Care

TYPE OF CARE	SATISFACTION WITH HEALTH CARE			
	High	Medium	Low	TOTAL
Private Physician Users	54% (80)	44% (18)	40% (2)	51% (100)
Emergency Room Users	46 (69)	56 (23)	60% (3)	49 (95)
TOTAL	76% (149)	21% (41)	3% (5)	195

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

No responses = 9
$X^2 = 1.5$
$p \leq .90$
$\lambda = .06$

Intervening Variables

In the model proposed for this study (Figure 3), a significant relationship was expected between predisposing characteristics and enabling characteristics. This relationship represents the initial link in one of the indirect effects of predisposing characteristics on use. The crosstabulations between age, race and income and type of health insurance is shown in Table 7. Both age groups tend to have private insurance coverage; however, the small proportion of respondents with public insurance makes the interpretation tenuous. The associations between race and income with the type of insurance are statistically significant. As expected, nonwhite persons are more likely to be covered by public types of insurance than white persons, while white persons carry private third-party coverage more frequently than nonwhite persons. The relationship between income and health insurance is statistically significant. Respondents with higher incomes are more likely to be covered by private insurance as in the case of persons with incomes greater than $15,000.

Age, race and income, however, do not appear to be significantly associated with overall satisfaction with health care. These relationships between predisposing characteristics and access are represented in Table 8.

Table 7
The Relationship Between Age, Race, Income
and by Type of Health Insurance

AGE

Health Insurance	AGE		
	30 yrs or less	Over 30	TOTAL
Public	15% (9)	16% (18)	16% (27)
Private	85 (50)	84 (94)	84% (144)
TOTAL	35% (59)	66% (112)	171

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

Persons with no Health Insurance = 33
X^2=.02
p≤=.90
λ = 0

Table 7
(Continued)

RACE

Health Insurance	RACE		
	White	Nonwhite	TOTAL
Public	13% (18)	31% (9)	16% (27)
Private	87 (124)	69 (20)	84% (144)
TOTAL	83% (142)	17% (29)	171

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

$X^2=6.1$
$p\leq=.02$
$\lambda= 0$

Table 7
(Continued)

INCOME

Health Insurance	INCOME		
	≤ $15,000	> $15,000	TOTAL
Public	27% (11)	8% (3)	18% (14)
Private Users	73 (30)	92 (34)	82% (64)
TOTAL	56% (41)	47% (37)	78

No responses = 126
$X^2=4.6$
$p\leq=.05$
$\lambda=0$

Table 8
The Relationship Between Age, Race, Income and Overall Satisfaction with Health Care

AGE

Level of Satisfaction	AGE		
	30 yrs or less	Over 30	TOTAL
High	37% (26)	35% (44)	36% (70)
Medium	44 (31)	51 (64)	49% (95)
Low	19 (13)	14 (17)	15% (30)
TOTAL	36% (70)	64% (125)	195

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

No responses = 9
$X^2 = 1.2$
$p \leq .90$
$\lambda = 0$

Table 8
(Continued)

RACE

Level of Satisfaction	RACE		
	White	Nonwhite	TOTAL
High	35% (55)	42% (15)	36% (70)
Medium	50 (80)	42 (15)	49% (95)
Low	15 (24)	17 (6)	15% (30)
TOTAL	82% (159)	18% (36)	195

$X^2 = .61$
$p \leq .09$
$\lambda = 0$

Table 8
(Continued)

INCOME

Level of Satisfaction	INCOME		
	≤ $15,000	> $15,000	TOTAL
High	33% (30)	38% (40)	36% (70)
Medium	52 (47)	46 (48)	49% (95)
Low	15 (14)	15 (16)	15% (30)
TOTAL	47% (91)	53% (104)	195

$X^2=7.0$
$p\leq=.09$
$\lambda=0$

As previously reported, both age and income are significantly associated with the selection of a health care setting. To test for the expected intervening effects, the association between the predisposing characteristics and use was considered while controlling for the enabling factors. When controlling for health insurance, a significant relationship between age and type of care remains (Table 9). The relationship between income and use is no longer statistically significant when the health insurance variable is introduced; however, there is some indication that private health insurance affects the relationship between income and use. As indicated previously, the predisposing characteristics are not associated with the overall satisfaction with care, thus, the affect of access variables on use was not measured.

In summary, the predisposing characteristics, age and income appear to be strongly associated with the selection of health care, and race and income are significantly related to the enabling condition, health insurance. However, the predisposing conditions are not associated with access as an enabling condition and both health insurance and accessibility to health care do not affect the type of care selected. When controlling for health insurance, age and race tend to remain significantly associated with type of

Table 9
The Relationship Between Age, Race, Income and by Type of Care, Controlling for Health Insurance

AGE

Public Health Insurance

TYPE OF USER	AGE		
	30 yrs or less	Over 30	TOTAL
Private Physician Users	11% (1)	67% (12)	49% (13)
Emergency Room Users	89 (8)	33 (6)	52% (14)
TOTAL	33% (9)	67% (18)	27

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

$X^2=11.3$ $p\leq=.005$ $\emptyset= -\emptyset.52$ $\lambda=.22$

Private Health Insurance

TYPE OF USER	AGE		
	30 yrs or less	Over 30	TOTAL
Private Physician Users	40% (20)	57% (54)	51% (74)
Emergency Room Users	60 (30)	43 (40)	49% (70)
TOTAL	35% (50)	65% (94)	144

$X^2=3.9$ $p\leq=.05$ $\emptyset=10.17$ $\lambda=.18$

Table 9
(Continued)

RACE

Public Health Insurance

TYPE OF USER	RACE		
	30 yrs or less	Over 30	TOTAL
Private Physician Users	44% (8)	56% (5)	48% (13)
Emergency Room Users	56 (10)	44 (4)	52% (14)
TOTAL	67% (18)	33% (9)	27

X^2=.29 p≤=.90 ϕ=-.11 λ=.07

Private Health Insurance

TYPE OF USER	RACE		
	30 yrs or less	Over 30	TOTAL
Private Physician Users	52% (65)	45% (9)	51% (74)
Emergency Room Users	48 (59)	55 (11)	49% (70)
TOTAL	86% (124)	44% (20)	144

X^2=.38 p≤=.09 ϕ=-.051 λ=.08

Table 9
(Continued)

INCOME

Public Health Insurance

TYPE OF USER	INCOME		
	≤ $15,000	> $15,000	TOTAL
Private Physician Users	45% (5)	67% (2)	50% (7)
Emergency Room Users	55 (6)	33 (1)	50% (7)
TOTAL	76% (11)	21% (3)	14

X^2=.42 p≤=.09 ∅= -0.17 λ=.14

Private Health Insurance

TYPE OF USER	INCOME		
	≤ $15,000	> $15,000	TOTAL
Private Physician Users	30% (9)	44% (15)	38% (24)
Emergency Room Users	70 (21)	56 (19)	62% (40)
TOTAL	47% (30)	53% (34)	64

X^2=4.6 p≤=.05 ∅=0.24 λ=0

care. This final result suggests that health insurance as an intervening variable explains very little of the relationship between the predisposing characteristics and type of care.

VI. Discussion and Conclusion

The relationships hypothesized in this study were intended to explain the increased use of emergency rooms for primary care. The enabling charactersitics, health insurance and access to health care, were thought to be the most important variables for explaining this increase because of their relationship to medical care choice behavior. While previous studies have found that age, income and race are directly associated with the type of facility selected, these relationships identified in this study were thought to be, in part, due to the intervening effect of the enabling factors. In this model of medical use, a relationship between selected predisposing characteristics and the enabling variables was expected because socio-demographic status influences mobility, economic and physical access, and the ability to secure methods of payment for health care. Moreover, a direct association between the predisposing characteristics and use should also be evident because earlier studies have demonstrated the presence of such a relationship.

While the data do not support all of the hypothesized associations, the results do suggest that the model of facility use tested here does provide a framework for further investigation. It is believed that if some measurement errors could be reduced by a different survey approach, the original model would prove to be an appropriate theoretical framework for analyzing choice behavior. In the empirical analysis, significant associations were the direct relationship between predisposing characteristics and the use variable. The indirect association between these personal characteristics and use are not, however, entirely supported by the analysis. There is some indication of a pattern of association between the predisposing characteristics and the enabling factors as expected; however, the enabling factors were not associated with use at a statistically significant level. Controlling for the enabling factors, the association between the predisposing characteristics and use remained, but this is to be expected given the lack of any association between the enabling variables and use.

From the relationship between the predisposing characteristics and use, we can conclude that older persons with higher incomes tend to utilize private physicians more than younger persons. This may be because of the presence of greater financial resources, and perhaps, as chronic illness

tends to increase relative to age, the establishment of a regular physician becomes more necessary. Conversely, younger persons with lower incomes utilize the emergency room because financial constraints prohibit the selection of a more costly or personal source of care, and they have not seen fit to obtain a regular physician as a source of care.

The indirect relationship between the personal characteristics and use of private physicians or emergency rooms suggests that higher socio-economic status gives individuals the option of carrying private third-party coverage, thereby providing greater access to private physician services. Although public health insurance reduces some of the financial burden to lower socio-economic groups, the selection of health care settings remains limited only to those alternatives which honor public third-party vendors. Even if the presence of health insurance is not considered, additional social and economic constraints such as knowledge of available health care facilities, and physical mobility makes the emergency room the most viable option for primary health care.

In general, the method and data used for the analysis served their purpose well; however, some methodological problems influenced the outcome of the analysis. The data on use were retrospective in that evaluations of health care

were in response to the previous year's experience. Thus, the elapsed time between receipt of health care and the interview may have influenced the validity of the results. Moreover, evaluation could not be linked directly to specific visitation, so the evaluation in many cases summarized many different experiences within a year. The sample size made analysis of specific relationships difficult because of the restriction on cell frequencies for cross-classification analysis. Grouping categories together may have aggregated the data in such a way that associations were masked.

The indicators of access used in this study measured institutional factors characterizing particular medical settings rather than individual factors characterizing a persons' ability to obtain care. This, in effect, limits the measurement of access only to respondents' self-expressions of the spatial distribution and internal attributes of health care facilities. Without knowledge of the availability of different health care facilties and their geographic location, the interpretation of variations in travel time and appointment waiting time, for example, is somewhat tenuous. Rather, as Andersen (1968) asserts, individual characteristics including social and economic conditions, and physical mobility are likely to be the most important variables influencing health care behavior. Further, if health insu-

rance is treated as an individual (or family) resource influencing access to health care, the interpretation of the link between the predisposing characteristics, health insurance and use appears more reasonable.

Given these data limitations, the statistical results of the model are less discouraging. A more comprehensive representation of the behavior involved in the selection of health care, the variables representing community resources and need for health care, would improve the statistical analysis. In addition, a different set of access variables including detailed socio-economic conditions and physical mobility, would likely have greater explanatory power. Finally, a larger survey sample would reduce the problems experienced with survey biases and limitations in the data analysis.

In conclusion, this study has attempted to identify variables which influence the use of different health care facilities. From the results, we can conclude that socio-economic factors are strong determinants of the variation in use of private physician services or emergency rooms. Data limitations prevented analysis of the selection process, community resources or the need for health care, but the theoretical model provides a framework for future analysis of health care choice behavior. If data could be obtained

on personal, social, economic and system constraints which bias the process of selecting health care services, then an operational model could be employed for examining how need and the availabiltiy of community resources intervene to influence the ultimate behavior; and why use of some health care settings has increased relative to others. Results from this additional research would likely direct the selection and implementation of appropriate policies designed to mitigate constraints on facility choice.

BIBLIOGRAPHY

Aday, Lu Ann and Andersen, Ronald. Development of Indices of Access to Medical Care. Ann Arbor: Health Administration Press (1975).

Alexander, C.A. and Bowden, G.R. Physician Manpower in Maryland. Baltimore: University of Maryland School of Medicine (1973).

Andersen, Ronald. A Decade of Health Services. Chicago: The University of Chicago Press (1967).

Andersen, Ronald. A Behavioral Model of Families' Use of Health Services. Center for Health Administration: University of Chicago (1968).

Andersen, Ronald and Newman, John F. Societal and Individual Determinants of Medical Care Utilization in the United States. Milbank Quarterly 51 (1973).

Battistella, Roger M. and Rundall, Thomas G., ed. Health Care Policy. California: McCutchen Publishing Co. (1978). From the Executive Office of the President, Council on Wage and Price Stability, 1976.

Davidson, Stephen M. "Understanding the Growth of Emergency Department Utilization." Medical Care 16:2 (1978), 122-132.

Friedson, Eliot. "The Organization of Medical Practice." Handbook of Medical Sociology. New Jersey: Prentice Hall (1972).

Glandon, Gerald L. and Shapiro, Robert J., ed. Profile of Medical Practice. American Medical Association (1980).

Ingram, D.R., Clark, D.R., Murdie, R.A. "Distance and the Decision to Visit an Emergency Department." Social Science and Medicine 12 (1978), 55-62.

Kelman, Howard R. and Lane, Dorothy S. Use of Hospital Emergency Rooms in Relation to Use of Private Physicians. American Journal of Public Health 66, No. 12 (December 1976).

Jonas, Steven, et.al. Health Care Delivery in the United States. New York: Spring Publishing Co. (1977).

Knox, P.L. "The Accessibility of Primary Care to Urban Patients: A Geographic Analysis." Journal of the Royal College of General Practitioners 29 (1978).

Kronenfeld, Jennie J. "Provider Variables and the Utilization of Ambulatory Care Services." Journal of Health and Social Behavior 19 (March 1978).

McDonald, A.D. and Steinmetz, N. "Physician Service in Montreal before Universal Health Insurance." Medical Care XI, No. 4 (August 1973), 269-282.

Mechanic, David. Medical Sociology. New York: The Free Press (1978).

National Center for Health Statistics. "Differentials in Health Characteristics by Color, U.S., July 1965 - June 1967." Washington D.C.: U.S. Department of Health Education and Welfare (1969).

Oakes, Charles G. The Walking Patient. South Carolina: University of South Carolina Press (1973).

Parker, Alberta W. "The Dimensions of Primary Care: Blueprints of Change." Primary Care: Where Medicine Fails. ed. Syros Andreopoulus. New York: John Wiley and Sons (1974).

Penchansky, Roy, Thomas, William, J. "The Concepts of Access: Definition and Relationship to Consumer Satisfaction" Medical Care 19:2 (1981), 127-140.

Phillips, D.R. "Public Attitudes to General Practitioner Services:
A Reflection of an Inverse Law in Intraurban Primary Medical Care?" Environment and Planning A, Vol 11 (1979), 815-824

Piore, Nora. "The Evaluation of Primary Care Systems." Andreopoulus, Spyros, ed. Primary Care: Where Medicine Fails. New York: John Wiley and Sons, Inc. (1974).

Roemer, R., Kramer, C. and Frink, J.E. Planning Urban Health Services from Jungle to System. New York: Springer Publishing Company (1975).

Satin, George D. "Help: The Hospital Emergency Unit Patient and His Presenting Future." Medical Care 11. No. 4 (1973).

Shannon, G.W. and Spurlock, C.W. "Urban Ecological Containers, Environmental Risk Cells and the Use of Medical Serivces." Economic Geography 52 (1975), 171-180.

Skinner, Elizabeth. "Use of Ambulatory Health Services by the Near Poor." American Journal of Public Health 66, No. 12 (December, 1976).

Somers, H.M. "Economic Issues in Health Services." Richard D. Irwin, ed. Contemporary Economic Issues. (1975).

Steinmetz, N. and Hoey, J. "Hospital Emergency Room Utilization in Montreal before and after Medicare." Medical Care XVI, No. 2 (1978).

U.S. Bureau of the Census, Census of Population: 1970, Detailed Characteristics, Final Report -D48, Virginia.

Virginia Department of Health and The Virginia Health Systems Agencies. Virginia Health Survey. North Carolina: Research Triangle Institute (1979).

Weinerman, E. Richard, et al. "Yale Studies in Ambulatory Medical care." American Journal of Public Health 56, No. 7 (1966).

White, H.A. and O'Connor, P.A. "Use of Emergency Room in a Community Hospital." Public Health Reports 85, No. 2 (February 1970).

White, K.L. "Life and Death and Medicine." Scientific American 229, No. 3 (September 1973).

NOTES

[1]A response of "satisfied" was coded "1", no opinion was treated as medium satisfaction and coded "2", and a "dissatisfied" response was coded "3". Thus, the possible range of the index runs from 5 - 15, with scores of 5 - 8 indicating high satisfaction, 9 - 11 indicating medium satisfaction, and 12 - 15 indicating low satisfaction.

Appendix A

Sources of Medical Advice or Treatment

Question: During the past 12 months was medical advice or treatment obtained from any one of the sources listed below?

1. Military Health Care Facility
2. Public Health Department or Clinic
3. Health Maintenance Organization (HMO) or other pre-paid organization
4. Company or Industry Clinic
5. Hospital Outpatient Department
6. Hospital Emergency Room
7. Doctor or Doctor's Nurse at a Doctor's Office
8. Doctor or Doctors' Nurse over the Telephone
9. Doctor or Doctor's Nurse on a Housecall
10. Public Health Nurse or Nurse Practitioner
11. Home Health Service or Agency
12. Other Source

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

Sources of Health Care

a) Who in the family is covered by Medicare from Social Security?

b) Who in the family is covered by Medicaid (Medical Assistance)?

c) Not counting Medicare and Medicaid, who in the family is covered by any of the hospital insurance plans listed on this card?

1. Blue Cross/Blue Shield
2. Other private insurance
3. Military Direct Health Care System
4. CHAMPUS (Armed Forces Dependent Care)
5. CHAMPVA (health care for survivors of disabled or deceased military personnel)
6. VA (Veterans Administration)
7. Labor Union Health and Welfare Fund
8. HMO (Prepaid Fixed Fee Plan)
9. Other (Specify)

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

Questions Relating to Accessibility of Health Care

a) How long do you usually have to wait to get an appointment for routine medical care from a doctor?

b) How long do you usually have to wait for an appointment when you are sick?

c) About how long does it usually take you to get to the doctor's office?

d) About how long do you usually have to wait to see a doctor after you get there?

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

Questions Relating to

Overall Satisfaction with Health Care

Thinking about the medical care you and your family have received, are you generally satisfied or dissatisfied with:

a) quality of care received?

b) availability of care at night or on weekends?

c) amounts charged?

d) amount of time spent with you during visits?

e) length of time waiting for medical care?

Source: The Virginia Department of Health and the Virginia Health Systems Agencies, Virginia Health Survey, North Carolina: Research Triangle Institite, 1979.

The two page vita has been removed from the scanned document. Page 1 of 2

The two page vita has been removed from the scanned document. Page 2 of 2