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THE OHIO STATE UNIVERSITY, PH.D., 1978

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1978
THE EVALUATION OF CONSUMER PREFERENCES FOR
THE UTILIZATION OF FAMILY DOCTORS,
GENERAL INTERNISTS, OBSTETRICIAN-
GYNECOLOGISTS AND GENERAL
PEDIATRICIANS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the
Graduate School of The Ohio State University

By

Stephen Earl Peterson, B.S., M.A.

* * * * *

The Ohio State University
1978

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Approved By

Department of Educational Foundations and Research
ACKNOWLEDGEMENTS

Thanks,

Gregory Trzebiatowski - you gave unreservedly as a teacher and friend,
Ayres D'Costa - you gave inspiration and demanded perfection,
George Johnson - you gave sound advice and unmatched perspective,
Al Rodin - you gave unrelentless encouragement to finish,
Dave Broski - you gave yourself, as a colleague to emulate,
Suzanne (my wife) - you gave understanding during lonely hours, support always, and pleasure to everything we've done.
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PUBLICATIONS


FIELDS OF STUDY

Major Field: Educational Development

Field of Special Interest: Medical Education
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CHAPTER ONE
IDENTIFICATION OF THE PROBLEM

With the gradual disappearance of yesterday's general practitioner, accompanied by the simultaneous emergence of secondary and tertiary specialties, the percentage of physicians providing primary care is smaller today than any time previously (see table one). 1 The problem, unavailability of primary care physicians, as many have acknowledged previously, is one of the most pressing problems in health care delivery today. In response to this problem, the training of primary care physicians is expanding considerably, especially in the area of family medicine. 2 Yet, public preferences for the utilization of primary care physicians -- general internists, general pediatricians, obstetrician-gynecologists, and family practitioners -- remain, at best, uncertain. Some studies such as those by McKenna, et al. 3 and Cahl 4 indicate that consumers prefer general internists, general pediatricians, and obstetrician-gynecologists to family practitioners, while others by Blackwell 5 , et al. and Deisher 6 , et al. indicate the reverse. A study which avoids pitfalls of previous studies is needed to conclusively answer the question: To what extent do health care consumers prefer to utilize family

1
TABLE 1

PERCENT DISTRIBUTION OF PHYSICIANS*  
BY SPECIALIZATION STATUS**  
(U.S.A., SELECTED YEARS 1949-1972)***

*Includes only physicians (M.D.'s) in private practice.

**Data for part-time specialists are included with those for general practitioners.

practitioners who care for mother, father, and child; general internists who care for adults; obstetrician-gynecologists who care for women; and pediatricians who care for children? And, a second question of importance, what kinds of consumers prefer family practitioners, general internists, obstetrician-gynecologists, and general pediatricians, is important for three reasons so that: (1) physicians can be trained to treat those who are most likely to utilize their services; (2) health care planning can be shaped accordingly; and (3) health care resources can be distributed appropriately.

Based upon past and present utilization patterns, age may be related to preferences for the utilization of a primary care physician. That is, the older health care consumers are, the more accustomed they may be to yesterday's general practitioner, which is often equated with today's family practitioner. Therefore, older age may be associated with preferences for the utilization of family practitioners. Similarly, many young health care consumers are accustomed to having primary care needs met, in part, by general internists and obstetrician-gynecologists due to the dearth of family and general practitioners. If young health care consumers are accustomed to the provision of primary care through the aforementioned modes, they may prefer to utilize general internists and obstetrician-gynecologists for their
primary care needs -- not family doctors. For child care also, age may be associated with preferences for the utilization of primary care physicians. That is, parents may prefer to utilize those whom they are more accustomed to, for older parents, the family practitioner, and for younger parents, pediatricians.

Socioeconomic status may also be associated with preferences for the utilization of primary care physicians. A question which can be raised is, do low socioeconomic status consumers utilize physicians and, therefore, make choices regarding utilization? According to the National Center for Health Statistics, families with incomes of less than $3,000 per year average 6 physician visits per person per year whereas families with incomes of $15,000 and over average only 5.1. It may be concluded, therefore, that low socioeconomic status consumers utilize physicians and, presumably, make choices regarding utilization.

Because high income children are 4.5 times more likely to visit a pediatrician, and high income mothers, 4.5 times more likely to visit an obstetrician-gynecologist, health care consumers with high incomes may be accustomed to utilizing obstetrician-gynecologists and pediatricians when they have primary care needs -- not family doctors. The corollary, then, that low income consumers are more accustomed to utilizing family practitioners when they have primary care
needs, and, therefore, prefer to utilize family practitioners, is tenable also.

Although socioeconomic status is clearly a multiplex variable, determined by a variety of factors -- income, occupation, education, and race -- a common practice in research is to use income level as a measure of socioeconomic status. The present study, therefore, will use family income as a measure or indicator of socioeconomic status also.

Finally, racial background may also be associated with preferences of health care consumers for the utilization of primary care physicians. Generally, because whites have higher incomes than blacks, and because newly trained general internists, obstetrician-gynecologists, and pediatricians are concentrated in predominantly white suburbs, whites may be accustomed to obtaining primary care from general internists, obstetrician-gynecologists, and pediatricians -- not family doctors. Therefore, preferences for the utilization of general internists, obstetrician-gynecologists, and general pediatricians may be greater in whites than blacks.

Although race and socioeconomic status have been discussed separately in the preceding, they are clearly interrelated variables. In 1975, the median family income for whites was $14,268, for Blacks, $9,321. Accordingly, race and income level are often included with other variables in scales for the measurement of socioeconomic status such as the Warner
A multiplex scale was not employed for the present study, however, because each variable has a primary importance to the investigation. They are treated, then, as separate variables so that a greater understanding regarding consumer preferences for the utilization of primary care physicians can be attained.

The question of to what extent do health care consumers prefer to utilize family practitioners, general internists, obstetrician-gynecologists, and general pediatricians can be investigated by asking health care consumers to indicate which kind of primary care physician they would prefer to utilize for given primary care problems. As an approach to determining consumer preferences for the utilization of primary care physicians, one weakness becomes apparent. That is, the subject. As a result, race, socioeconomic status, and age could be confounded with the complexity of a disease. This problem could be negated by selecting only those problems in which variance in perceived complexity between subjects would be minimal, such as pregnancy examination, and excluding those in which it presumably would be greater such as pelvic symptoms. The result, however, would be an inadequate sampling within the domain of primary care problems, and, therefore, for any given subject, preference for the utilization of a primary care physician could not be
accurately determined. To minimize the problem of variance in perceived complexity, questions were constructed with clues to the complexity of the problem. For example, an item on chest pain is worded:

Suppose one day suddenly a pain developed in your chest and although you thought it was nothing serious, you wanted to be examined by a doctor. What kind of doctor would you most prefer?

Similarly an item on high blood pressure is worded:

Suppose you had a serious disease like high blood pressure which can be controlled by a doctor. What kind of doctor would you most prefer to see?

Although numerous examples could be cited, as a final illustration, a question on arm pain is worded:

Suppose you had a pain in your arm and although you thought it was nothing serious, you wanted to see a doctor. What kind of doctor would you prefer to see?

As an approach to ascertaining consumer preferences for the utilization of primary care physicians, the present approach, although admittedly simplistic, appears to be the best method of approaching the problem.

Self-reporting was selected as a methodology for measuring preferences for the utilization of primary care physicians because previous investigators employing this technique report favorable results. Also, self-reporting which is a direct method, is free of confounding factors which may
interfere with indirect methods. For example, in previous studies, consumer preferences for the utilization of primary care physicians have been inferred from utilization patterns, an indirect method subject to serious pitfalls. In one such study by McKenna, et al. results appear questionable because of multiple confounding factors such as availability of physicians which varied from subject to subject.

**Purpose of the Study**

The general purpose of the study is twofold. First, as a descriptive purpose, the study is designed to determine to what extent health care consumers in a metropolitan setting prefer to utilize family practitioners, general internists, obstetrician-gynecologists, and general pediatricians. Second, the study is designed to determine what kinds of consumers prefer family practitioners, general internists, general pediatricians, and obstetrician-gynecologists by examining socioeconomic status, age, and race as a function of consumer preferences. Also, as a result of this study, it will be possible to validate or invalidate the assumption that, in general, health care consumers prefer the family practitioner to general internists, general pediatricians, and obstetrician-gynecologists. And secondly, to analyze whether public policy for the increased production of primary care physicians,
particularly family practitioners, is consistent with consumer preferences for the utilization of primary care physicians. Although the foregoing question cannot be answered categorically as a result of the investigation, the appropriateness or inappropriateness of federal and state policy can be discussed.

This study is important for the following reasons. First, because the specialty of family medicine has emerged and is expanding dramatically, presently there are 300 approved family medicine residency programs, the extent to which health care consumers prefer the family practitioner to general internists, general pediatricians and obstetrician-gynecologists is a primary concern.\textsuperscript{15,16} And, a recent report entitled "A Manpower Policy for Primary Health Care", which recommends increasing the proportion of residents in primary care training from the current 53 percent to 60 or 70 percent by 1980, provides additional impetus for future expansion.\textsuperscript{17} Second, this study is important because McKenna reports in a previous study, designed to determine if health care consumers prefer family doctors or other primary care specialists, that the public does not want family doctors.\textsuperscript{18} In a health maintenance organization (HMO) setting, McKenna examined actual utilization to obtain a measure of whether participants wanted family practitioners. She concluded, based upon
utilization rates in a free choice setting where health care costs are a constant for all patients, that because only 20 percent of enrolled families utilized the services of family practitioners, that the public really does not want family practitioners. Third, this investigation is important because the overall perceptions of health care consumers comprise the most neglected and least appreciated element in medical care planning and evaluation; yet, the public bears a substantial burden for the enormous cost of medical education. We, therefore, should make a deliberate effort to produce the kind of physicians health care consumers desire. As Berger cautions:

"It is now necessary for us to go even further and make sure that the product (family doctor) is something that the public desires. In the final analysis, the public pays for most of medical education in the form of free schools and hospitals and in their contributions as taxes to federal state, and municipal governments as well as to universities and medical schools. Yet, they are rarely consulted as to their desire and even more rarely do we make some effort to meet what we think the public should have."  

Fourth, the present study differs from previous studies which have two notable flaws. First, the methodology employed in the present study, a direct method, is superior to that employed in previous studies, indirect methods. Previous studies, concluding that consumers do not want family practitioners, have used utilization rates in an HMO setting to make inferences about consumer preferences for the utilization
of primary care physicians. Because actual utilization may vary depending upon availability, accessibility, competence, and the seriousness of patients' problems, utilization cannot be accepted as a valid indicator of preferences. Second, the sample in the present study, a randomly selected probability sample, is superior to that employed in previous studies, nonprobability samples comprised of HMO participants which are clearly biased samples.

Research Questions

The primary purpose of this investigation is to (1) determine what kinds of doctors (family practitioners, general internists, obstetrician-gynecologists, or general pediatricians, health care consumers prefer to utilize for their primary care needs; and (2) to examine preferences of health care consumers for the utilization of primary care physicians as a function of socioeconomic status, age, and race.

General research questions such as the following will be answered. First, to what extent do health care consumers prefer to utilize family practitioners, general internists, obstetrician-gynecologists, and general pediatricians for their primary care needs? Second, are the preferences of health care consumers for the utilization of primary care physicians related to socioeconomic status, age, or race?
Research Question One -- For the most frequently presented problems in primary care, what percentage of the population would prefer to utilize the services of (a) family practitioners, (b) general internists, (c) obstetrician-gynecologists, and (d) general pediatricians?

Research Question One examines the question of to what extent do health care consumers prefer to utilize the services of family practitioners, general internists, obstetrician-gynecologists and general pediatricians. The methodology employed to answer this question was one of asking health care consumers what kind of physicians they would prefer to utilize for the treatment of specific primary care problems presented to (1) family practitioners, (2) general internists, (3) obstetrician-gynecologists, and (4) general pediatricians. For female subjects, questions were based upon problems in family medicine, obstetrics-gynecology, and general internal medicine; for male subjects, questions were based upon problems in family medicine and general internal medicine; and for parents of children, in order to establish what kind of physician they would prefer to utilize for their child's care, questions were based upon problems in family medicine and pediatrics. For each specialty, the National Ambulatory Medical Care Survey (NAMCS)\textsuperscript{20} provided a listing upon which to construct questions for the most frequently presented problems accounting for over 50 percent of presented problems in each specialty.
Research Question Two -- Are health care consumers' preferences for the utilization of primary care physicians related to socioeconomic status, age, and race?

Research Question Two examines whether socioeconomic status, age, and race of health care consumers are related to preferences for the utilization of primary care physicians. Each subject sampled in the investigation was classified for each of the aforementioned variables, and each was asked to indicate what kind of physician they would prefer to utilize for several primary care problems. The specialty preferred most frequently by a subject was designated as his or her overall preference. In the case of socioeconomic status and age, both of which were obtained as interval measures, one-way analysis of variance (ANOVA) was computed to test for association with overall preferences for the utilization of primary care physicians; in the case of race, a nominal variable, a chi-square statistic was used to test for association with overall preferences for the utilization of primary care physicians. Two separate analyses are necessary because in the case of race, which is a nominal variable, a chi-square statistic was used to test for association with overall preferences for the utilization of primary care physicians. Two separate analyses are necessary because race, which is a nominal variable, cannot be handled by ANOVA.
Research Hypotheses

No hypotheses are advanced for research question one—the extent to which health care consumers prefer to utilize family practitioners, general internists, general pediatricians, and obstetrician-gynecologists. Because it is not asked to explain a phenomenon or make a conjectural statement about two or more variables, hypotheses are inappropriate. It is anticipated, however, that preferences of consumers sampled in the study will be distributed in each of the four primary care specialties.

The following hypotheses are drawn from research question two only (see table two which is a model of predicted hypotheses).

TABLE TWO

PREDICTED PREFERENCES OF MALES, FEMALES, AND PARENTS FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS* BY AGE SES AND RACE

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<th>Race</th>
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<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>White</td>
</tr>
<tr>
<td>Males</td>
<td>FP</td>
<td>GI</td>
<td>GI</td>
</tr>
<tr>
<td>Females</td>
<td>FP</td>
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<td>Parents</td>
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*FP refers to family practitioners, GI to general internists, GPED to general pediatricians, and OB-GYN to obstetrician-gynecologists.
Research Hypothesis One -- For females sampled in the study, young age, high socioeconomic status, and white racial background will be associated with preferences for the utilization of general internists and obstetrician-gynecologists; old age, low socioeconomic status, and nonwhite racial background will be associated with preferences for the utilization of family practitioners.

It is important to note that hypothesis one attempts to explain the relationships between variables for female subjects sampled in the investigation, only. This point is accentuated because answering subsequent research questions dictates a separate analyses for each subgroup in the sample -- males, females, and parents, as different relationships between the independent and dependent variables are hypothesized for each group; as in the following:

Research Hypothesis Two -- For males, young age, high socioeconomic status, and white racial background will be associated with preferences for the utilization of general internists; and old age, low socioeconomic status, and nonwhite racial background will be associated with preferences for the utilization of family practitioners.

Research Hypothesis Three -- For parents of children, young age, high socioeconomic status, and white racial background
will be associated with preferences for the utilization of pediatricians; old age, low socioeconomic status, and non-white racial background will be associated with preferences for the utilization of family practitioners.

Definitions of Important Terms

Definitions of key terms used in the preceding research questions and hypotheses are established to provide a common basis for understanding.

1. **Age** -- The age of subjects sampled in the investigation is recorded in years. Because age is a continuous variable which may take on multiple values, for the purpose of the analysis, it is not necessary to categorize subjects or define young or old age.

2. **Socioeconomic Status** -- Socioeconomic status is determined by a household's total income last year before taxes. Subjects are classified according to the following levels:

   1. less than $4,999 per year
   2. $5,000 to $9,999 per year
   3. $10,000 to $14,999 per year
   4. $15,000 to $19,999 per year
   5. $20,000 to $24,999 per year
   6. $25,000 to $29,999 per year
   7. $30,000 to $34,999 per year
8. $35,000 to $39,999 per year  
9. $40,000 or $ more per year  

As with age, because socioeconomic status is a continuous variable which may take on multiple levels, for the purpose of the analysis, it is not necessary to define low or high socioeconomic levels.

3. **Race** -- Subjects sampled in the investigation are classified according to race, white or nonwhite.

4. **Family Practitioner** -- A physician who treats all members of the family, children, parents and grandparents.

5. **Obstetrician-Gynecologist** -- A physician who treats diseases of the genital tract of women and deals with management of pregnancy, labor, and birth.

6. **General Internist** -- A physician who specializes in diagnosis and medical treatment of diseases and disorders of the internal structures of the human body.


8. **Policy** -- As defined by Webster, a governmental policy is a line of action in relation to some special issue. Therefore, state and federal policy may include programs, regulations, legislation, plans, and reports.


12 W. L. Warner and P. S. Lunt, The Social Life of a Modern Community, Yale University Press, 1941.


14 Margaret S. McKenna, op cit.


19 Herbert Berger, op cit.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

The review of related literature is organized under five major headings. These include: (1) "Organization of Medical Care" which describes the medical care areas in which the study is rooted; (2) "Need for Physicians" in which, among other things, the three independent variables -- race, socio-economic status, and age -- are discussed in relation to consumer preferences; (3) "Medical Education" which provides a review of the current status of pre and post M.D. training; (4) "Patient Satisfaction With Physician Care" which describes consumer attitudes toward physicians and medical care; and, finally, (5) "Federal and State Health Care Policy" which presents past and current health care policy.

Organization of Medical Care

The term "medical care" may be defined as the science, art, and provision of health services for the improvement of human welfare. To understand medical care, it is useful to conceptualize a system or network of interrelated components. Three components of the system, personal, social, and professional combine to form the medical care complex. In essence, patients, the personal component, obtain medical care from providers, the professional component, through organized arrangements for personal medical
care, the social component.

Organized arrangements for personal physician care usually take one of two forms -- individual or group practice. Conversely, organized arrangements for health care delivery may take a variety of forms. To describe these organizations in which several health personnel collaborate and make decisions through a team process, and where the services are usually financed in a collective or shared manner, Roemer has proposed the term "organized ambulatory services". Diversity in health care delivery is noted by Loebs who enumerates eleven types of organized ambulatory services: (1) fee-for-service; (2) pre-paid group practice; (3) hospital-based ambulatory care centers; (4) mental health centers; (5) community health centers; (6) school health centers; (7) health department clinics; (8) home care programs; (9) family planning clinics; (10) industrial clinics; and (11) ambulatory surgical centers. Together, these services comprise the social component. Next, mechanisms of physician care will be examined.

Three areas of potential intervention by physicians for the provision of patient care are proposed by Kasl and Cobb. First, physicians may intervene or impact on the health behavior of patients. Health behavior refers to efforts or activities of the patient to remain healthy. For example, through patient education, physicians may encourage patients to exercise, eat properly and avoid smoking. Second, when
patients are stricken by illnesses, physicians may have an
effect on their efforts to seek care, activities which are
termed "illness behavior". Again, as with health behavior,
through patient education, physicians may teach patients
about the seriousness of symptoms, when a disease should be
treated, and the value of preventive care. Finally, physicians
may have an impact on those activities pursued by patients
to get well, sick role behavior. For example, physicians
may have a major influence on the lifestyles and activities
of patients with coronary artery disease, stroke victims, or
victims of automobile accidents.

In addition to patient behavior, prevention provides a
second framework upon which to analyze physician intervention
in health care. Anderson has identified three levels of pre-
vention by the physician. These include: primary
prevention, which involves stopping the start of disease
through preventive medicine and health maintenance; secondary
prevention, which entails identifying, arresting, and curing
disease that has started; and finally, tertiary prevention,
which involves managing disease that is incurable and
unpreventable.

A third framework upon which medical care may be
examined or evaluated are four criteria which characterize
high quality medical care, proposed by the American Public
Health Association. Although not all-inclusive, the criteria,
accessibility, quality, continuity, and efficiency, can serve
as a basis upon which patients and physicians may evaluate
medical care. To these criteria, many would add a fifth, comprehensiveness, as exemplified in the wholistic approach to patient care.⁹ Wholistic medicine or wholistic patient care is unique because of a special emphasis placed on the interrelationships of emotional, social and physical factors as they relate to the health of patients.

Both the American Medical Association and the Association of American Medical Colleges categorize general internal medicine, obstetrics-gynecology, general pediatrics, and family medicine as primary care specialties; the federal government, however, excludes obstetrics-gynecology as a primary care specialty. Although there is a lack of agreement on what specialties are included within the realm of primary care, there is general agreement as to what a primary care physician does. The role of a personal physician, functioning as a primary care practitioner, is noted by Petersdorf:

A primary care physician has been defined as a physician of first contact who provides continuing comprehensive care, employing referrals to other physicians when appropriate, and one who orchestrates the health care team and often acts as the patient's personal advisor.¹⁰

Paralleling Petersdorf's definition are four functions of the primary care physician stated by the Willard Commission in a report entitled "Meeting the Challenge of Family Practice".¹¹ First, the primary care physician is the first medical contact for the patient, available twenty-four hours per day, seven
days per week. Second, the primary care physician functions as the referral coordinator, acting on the behalf of the patient to orchestrate the utilization of medical care. Third, the primary care physician integrates health services, interprets services for the patient, explains the nature of illnesses, and discusses implications of treatments. Fourth, the primary care physician is a patient advocate, assuring comprehensiveness and continuity of care. The importance of this role is underscored by the American Public Health Association:

Continuity can be achieved when the patient has some central source of care which assumes continuing responsibility for their total health. This source can then coordinate, if not directly provide, all the care he needs. With continuity in health delivery services, the patient is not fragmented, responsibility for their care is shared but not portioned, and the delivery of needed services is not disrupted or overlooked.12

Need for Physicians

Presently, the most apparent need for physicians is in the area of primary care. The trend toward specialization, which reached an apex in the 1960's, caused a dramatic decline in the supply of primary care physicians. In particular, the ratio of general practitioners to population, for the nation as a whole, declined dramatically. As reported by Fahs and Peterson, the ratio of general practitioners to population was 40.8 per 100,000 in 1961, and 31.0 per 100,000
in 1967.\textsuperscript{13} As a possible explanation for this phenomenon, within the medical profession, and to some extent in the public's view, general practice had lower esteem and prestige than specialization. Two reasons for the decline of general practice are advanced by Geyman.\textsuperscript{14} First, as a discipline, general practice failed to develop an academic base through systematic investigation. Second, as a discipline, general practice failed to define itself in anything more than derivative terms.\textsuperscript{15} To summarize, both reasons for the decline of general practice relate to the development of a body of knowledge, unique to general practice. The successful development of a discipline, then, may be dependent upon the identification and refinement of a unique knowledge base.

As a possible solution to the problem described previously, the decline of general practice, the specialty of family medicine was established. As conceived and institutionalized, family medicine is intended to do more than merely replace general practice. Although at times the two terms, general and family practice, are used interchangeably, a distinction is made between the two. As Burket explains, "the general practitioner has not been trained as a family physician, but becomes one through a definite process of self-education during practice."\textsuperscript{16} The distinction between
the two disciplines is addressed more specifically by Dennis who makes the following observation.

... many persons currently in general practice, by choice, exclude from their practices such areas as pediatrics, obstetrics, or geriatrics. Since by definition families include babies, children, mothers, and grandparents, such a general practitioner cannot really be the family practitioner."17

Although there was general agreement on the conceptualization of a new practitioner who would replace yesterday's general practitioner, assigning a name to the new specialty proved to be a formidable task. Lewy remarks on the proposed names for the new specialty which eventually was named family medicine:

The report of the WHO (World Health Organization) expert committee and the Ad Hoc committee on Education for Family Practice consistently referred to 'family physicians and family practice'. The National Commission on Family Health used the term 'personal physicians' while the Millis Report favored 'primary physicians'.18

Eventually, the term "family medicine" was adopted to describe the discipline, "family practice" to describe the specialty, and "family physicians" to describe the practitioners.

Family practice is unique from other specialties in medicine because family practitioners approach patient care along psychological, social, and physical dimensions. The Millis Commission Report entitled "The Graduate Education of Physicians" provides a suitable rationale for psychological
and social orientations in the provision of family care:

The smallest and most obvious social unit to which health care can be rendered is the family. True, the members of this group differ in important ways such as age and sex, but they do live in the same environment, partake of the same nutritional base, and are subject to identical factors -- tension or peace, crowding or living space, noise or quiet, poverty or comfort. 19

Dennis, also elaborating on the function of family physicians, provides a second rationale for the provision of patient care along social and psychological dimensions as well as the traditional physical dimension.

... a new breed of family physician who is a knowledgeable specialist in the really very complicated aspects of family structure, human behavior, health, and their relationships is essential if we are to meet societal needs, and perhaps equally important, public expectations. 20

Today, family medicine is an official specialty recognized by the American Medical Association, offering board certification to physicians undergoing a period of graduate medical training in programs accredited by the Liaison Committee on Graduate Medical Education (LCGME) of the American Medical Association and the Association of American Medical Colleges. Support for the establishment of family medicine as a specialty was provided by the Willard Commission report. 21 Appearing in the commission's report to the American Medical Association was the recommendation:
the opportunity for specialty board certification is essential for those properly prepared for family practice. Board certification is the only appropriate recognition for physicians who have invested the time and effort necessary to complete prescribed training programs and who have demonstrated their competence in this important field of medicine. Certification is necessary to provide status for the field and to reward those who have prepared themselves in a suitable manner.22

As alluded to previously, the discipline of family medicine was created because fewer physicians were entering general practice at a time when physician supply was increasing. Between 1960 and 1970, the ratio of physicians to population increased from 140 per 100,000 to 158.6 per 100,000.23 However, the number of physicians in general practice actually dropped in that period, decreasing the quality of personal physician care, and, also, alarming those in the profession. The question of how many physicians are needed for primary care was addressed by Schonfeld who concludes "... it appears that primary medical care of good quality requires the services of 133 physicians per 100,000 population."24 Based upon this ratio, for the population in 1972, 266,000 primary care physicians were needed. However, the number of primary care practitioners in the primary care specialties, recognized by the American Medical Association and the Association of American Medical Schools, general internal medicine, family medicine, general pediatrics, and
obstetrics-gynecology, accounted for only 123,000 physicians -- a shortfall of 143,000. The foregoing studies are cited to illustrate the need for primary care physicians. The significance of this unmet need and its detrimental effect upon health are addressed in the Millis Commission report:

> If the critically ill patient has a personal physician the chances are good that his illness will be correctly diagnosed and he will reach the right hospital in time to benefit from the right physician. If he does not have a personal physician or cannot reach one promptly, he is almost forced to self diagnosis. Then the chances that he will reach the right physician and the right hospital become substantially smaller. Thus, we must recognize the insufficiency in the number of physicians.

The designation of appropriate physician-to-population ratios remains, at best, a difficult task. For example, Renner, Treleuan, and Lienhard, based upon a study of family physician supply in Wisconsin, conducted in 1970, report a shortage of 342 physicians. Employing a different methodology which used workload as a measure of need, for 1969, investigators in upstate New York reported a shortage of family physicians. Conflicting findings are reported by Scitovsky, who, based upon a study of utilization rates for first-dollar, comprehensive, prepaid, inpatient and outpatient coverage, projected an excess of 51,000 family physicians for the U.S. in 1966. Increasing the confusion, is the fact that no one can agree upon an ideal ratio of family physicians-to-population. For example, although Canada has established an ideal ratio of one family physician per 1,800
patients, the United Kingdom has established a significantly smaller ratio of one family physician per 4,500 patients.

Additional studies may also be presented which refute or support the need for more family physicians. In a study entitled "Are Internists Functioning As Family Physicians", Engstrom reports that of 107 Milwaukee internists surveyed, 77 percent report functioning as a family physician 75 percent of the time. A general internist in the Journal of the American Medical Association writes:

"Over a three-month period, I saw 909 separate patients in a representative group practice of general internal medicine. Although one half of 123 new patients were seen in consultation, I was more often a primary physician: 86 percent of all patients were return patients and 78 percent were ambulatory office patients. Continuous, comprehensive, personal care was the rule..."

This phenomenon is widely acknowledged by the medical profession: by Kane in an article entitled "Primary Care: Contradictions and Questions," and by an anonymous author in the Archives of Internal Medicine who states:

"Most internists eventually practice in moderate size to large size communities. In those settings, more and more patients know that the general internist can handle a wide spectrum of problems, and accordingly, rather than first go to the general practitioner, they turn directly to the internist. Thus, the internist is seeing more and more patients as the initial contact with the profession."
He continues:

The second is that the internist practicing in the community very often irrespective of the extent of his subspecialty training, spends a large part of his time seeing patients in the capacity not necessarily as a consultant to another physician, but as the primary patient care physician himself.\textsuperscript{36}

The need for more family physicians is also supported by studies of emergency room utilization. As Kleinman, Tanner, and Soodalter report, only 15 percent of the emergency room visits they studied over a given period of time were true emergencies; 57 percent were classified as urgent; and 28 percent were classified as nonurgent.\textsuperscript{37} Describing this situation, Petersdorf uses the term "alternate pathway."\textsuperscript{38} He explains, due to the shortage of family physicians, health care consumers are forced to rely upon the hospital emergency room when treatment is needed for ordinary every-day complaints and illnesses. Conversely, a study by McKenna and Wacker refutes the need for more family practitioners.\textsuperscript{39} In a study of utilization rates for a prepaid, first-dollar coverage, group practice setting, when families were given the choice of utilizing general internists, obstetrician-gynecologists, general pediatricians, or family practitioners, only 20 percent utilized family practitioners. McKenna and Wacker concluded, therefore, that the majority of health care consumers did not desire to utilize family practitioners.\textsuperscript{40}
Utilization studies of physician care also reveal socio-economic differences in the utilization of family physicians. For example, Riley, Willies, and Haggerty report, 78 percent of white fee-for-service patients are seen as part of a family unit in comparison to 34 percent for nonwhites. Secondly, the investigators report, 79 percent of whites are considered continuity patients in comparison to 34 percent for nonwhites. Similar findings are reported from a study of health care utilization by Leopold who comments:

the present report of a service utilization study concluded at one such neighborhood health center suggests that neither cost barriers nor geographic distance explain why some families seek health related services while others remain aloof.

Leopold concludes by summarizing:

... the utilization study revealed that families with the greatest apparent need for health services tend to cling to their accustomed patterns of episodic and acute medical care, while families with relatively few service needs appeared to adapt more readily to Rebound's model of continuous and preventive pediatric care.

A study by Jacobs, Gavett, and Wersinger also reveals that socioeconomic status is related to health care utilization. As reported by the investigators, 72 percent of emergency room visits were judged not to be emergencies, whereas in a high socioeconomic area, 60 percent were so judged. Differences are also reported in the utilization of medical care across income levels. In testimony before the subcommittee on
Interstate and Foreign Commerce of the U.S. House of Representatives, Miller and Arden report that: (1) high income children are 4.5 times more likely to visit a pediatrician than low income children; (2) high income women are 4.5 times more likely to visit an obstetrician-gynecologist than low income women; (3) high income people are 3 times more likely to visit a dentist than low income people; and (4) high income people are 2 times more likely to have a regular source of medical care than low income people.48

Preferences of health care consumers for the utilization of primary care physicians may be related to age. Berger, in an article entitled "Can Family Practice Really Be Resurrected" discusses the demise of general practice and current nostalgia for yesterday's general practitioner who was readily available and, frequently, knew the family intimately.49 Because older health care consumers equate the family practitioner of today with yesterday's general practitioner, they may have distinct preferences for the utilization of family practitioners. Also, it seems reasonable to expect that younger health care consumers may have preferences for the utilization of general internists, general pediatricians, and obstetrician-gynecologists. Because of the shortage of general and family practitioners, many consumers have had to rely solely upon general internists, obstetrician-gynecologists,
and general internists for primary care. It is reasonable, therefore, to expect that younger health care consumers are more accustomed to the aforementioned modes of care and prefer it to the family practitioner.

Preferences for the utilization of primary care physicians may also be related to race. First, a previous study of social class differences in the utilization of primary care physicians reported by Nolan et al. indicates that the utilization rate for pediatricians is higher in whites than nonwhites. If whites are more accustomed to general pediatricians than nonwhites, they may have greater preferences for the utilization of general pediatricians than nonwhites. Second, because the newly trained general internists, general pediatricians, and obstetrician-gynecologists are concentrated in the predominantly white suburbs where they treat white patients, it appears probable that whites are more accustomed to general pediatricians, general internists, and obstetrician-gynecologists than nonwhites. The hypothesis is suggested, then, that whites have greater preferences for the utilization of general internists, general pediatricians, and obstetrician-gynecologists than nonwhites. Conversely, because whites have had to rely upon the family practitioner to a lesser extent than nonwhites, the hypothesis is suggested that nonwhites may have greater
preferences than whites for the utilization of family practitioners.

Inequities in utilization, as illustrated in the foregoing discussion, may be associated with lifestyle goals of physicians. In an explanatory study of geographic maldistribution, DeVise discusses four goals affecting the distribution of physicians. First, *family orientation* goals, which result in concentrations of physicians in the attractive suburbs, have an unequalizing effect upon physician distribution. Second, *social prestige* goals, which result in concentrations of physicians in prestigious locations rather than areas of need, also have an unequalizing effect. Third, *professional interaction* goals, which result in concentrations of physicians in communities plentifully supplied with medical colleagues, also have an unequalizing effect. Finally, the fourth goal, *income maximizing*, as DeVise theorized, would have an equalizing effect because physicians would tend to locate among states and communities where their services were needed and an acceptable income could be achieved. However, this goal appears to be invalid. As McGinnis explains:

For more than a decade federal attempts to reverse the trend toward increased physician specialization and urbanization have relied on faith in the law of supply and demand. The prevailing opinion was that an increase in the number of physicians would lead to a shift of part of the professional pool to nonurban locations and to a broadened base of practice emphasizing the care of families.
Reliance upon supply and demand to equalize geographic maldistribution has failed because physician supply creates its own demand. For example, Bunker found that proportionally there are twice as many surgeons in the United States than England and Wales; however, the surgery rate in the United States, 7,400 per 100,000 population, is twice that of England and Wales, 3,770 per 100,000. This phenomenon cannot be explained by differences in health status for the two populations. In 1967, the infant mortality rate for the U.S. was 22.1 per 1,000 population, for England and Wales, 18.8 per 1,000 population. In addition, in 1967, life expectancy after age 65 in the United States was 13 years, for England and Wales, 12.2 years. Because these mortality measures demonstrate that for the two populations, health status is roughly equivalent, the hypothesis that physician supply is capable of creating its own demand, although not confirmed, remains tenable. McGinnis comments on the phenomenon as illustrated:

... the physician pool has proved remarkably resistant to conventional supply and demand laws, which presumably should by now be working to push physicians to underserved sites. Indeed, rather than being subject to demand forces it appears that physicians are themselves able to set the level of demand for their services; in effect, they can, with relative independence from competitive forces, approximate whatever income level they target.

For this reason, generally, established physicians have high incomes and financial security, while aspiring physicians
cherish the "good life". Harmer comments:

Young men in college, despite popular mythology, cherish great expectations of the rich full life that will be theirs after graduation. Medical students, however, are among the few who possess absolute certainty that their dreams of wealth, if not fame, will be realized. So positive is the belief that an M.D. degree is the open sesame to the treasure house that in 1965 when a Stanford University student flunked out of medical school, he promptly filed suit for 1,500,000 or the amount he would lose if he were not allowed to become a doctor. Today a similar compensatory demand would have to be for twice that amount.®

A variety of methodologies are commonly employed to assess need for physicians including: (1) physician-to-population ratios; (2) the professional standards approach; and (3) the economic methods approach. 61 The physician-to-population approach involves manpower ratios, the professional standards approach involves the estimation of physicians needed based upon illness indicies, and the economic methods approach involves the measurement of variables in the population known to have an effect upon utilization. 64 A deficiency, common to these approaches, is noted by Harvey who observes:

Many manpower studies are simply inventories that present a static picture of existing resources and little insight as to how the ultimate distribution of such resources may effect health delivery. However, in order to formulate policies for assuring that health manpower requirements are met there is a need to develop and maintain research programs through which investigators will refine the identification of variables useful
in the prediction of manpower flows and continue monitoring of manpower stocks to predict likely areas of short-fall or over-supply.\textsuperscript{65}

A second deficiency of manpower studies is a failure to include the variable of consumer behavior. Although health care consumers pay most of the costs for educating physicians, the overall perceptions of the public comprise the least appreciated element in medical care planning and evaluation. In an analysis of whether family practice can be resurrected, Berger draws attention to the problem:

... it is now necessary for us to go even further and make sure that the product (family physicians) is something that the public desires. In the final analysis, the public pays for most of medical education in the form of free schools and hospitals and in their contributions as taxes to federal, state, and municipal governments as well as to universities and medical schools. Yet they are rarely consulted as to their desire and even more rarely do we make some effort to meet what we think the public should have.\textsuperscript{66}

A methodology available to health care planners for evaluating attitudes of health care consumers toward family practitioners, attitude scales, remains to be utilized. Weinerman, in a study of patients' perceptions of group medical care, comments on the dearth of studies in this area:

It is then, the ultimate consumption of the product that requires more detailed consideration at this stage. Reactions of the general public, of plan members, and of individual patients are both cause and effect changes in the pattern of medical care. Objective reflection of members' attitudes can be found in available reports of choice, change, and utilization of group health services, and some analysis of selected data has been attempted in this presentation. In addition,
there is a growing library involving the subjective attitude and behavior of patients in various medical settings. These contributions have not been adequately studied and applied by medical care specialists, and thereby, important clues to the sources of continuing problems have been missed.67

Failure to employ attitude scaling techniques to measure attitudes of health care consumers cannot be attributed to low reliability. Indeed, attitude scaling techniques such as Guttman's, Thurstone's and Likert's, can be used to produce reliable attitude scales.68 Ware, in a discussion of scales for measuring general health perceptions, comments upon the reliability of attitude scales in comparison to questionnaires or single item measures.69

It is clearly shown that scale scores are sufficiently reliable for purposes of group comparisons and that single item scores often are not. Given that most studies of general health ratings published in the last twenty five-years have been based on single item measures, particularly in studies involving disadvantaged respondents, it is likely that the strength of most associations between general health perceptions and other variables, as reported in published literature, has been underestimated.70

Success in the development of a Thurston scale, designed to measure health care consumers' satisfaction with physicians and physician care is reported by Hulka, Zyzanski, Cassel, and Thompson.71 However, although the investigators were able to demonstrate good reliability for the instrument, it was not employed to actually measure attitudes of health care consumers. Success in the measurement of health care
consumers' attitudes toward physicians and medical care services is also reported by Ware who employed a somewhat different approach -- factor analysis. This method enables the investigator to discover predominant patterns in the responses of patients to several questionnaire items.

Medical Education

Medical education is comprised of three primary components -- undergraduate, graduate, and continuing medical education. Undergraduate medical education is designed to prepare the undifferentiated physician, graduate, the differentiated physician, and continuing medical education, to update medical skills and knowledge of practitioners. At the undergraduate level, training commences with the awarding of the M.D. or D.O. degree, and at the graduate level, with the awarding of board certification. For relicensure in continuing medical education, physicians are required to obtain 180 hours of training, 60 of which are category one.

As alluded to previously, graduate medical education commences with the awarding of board certification, and all physicians are expected to undergo some graduate training. In the past, most physicians served an internship which may or may not have been followed by residency training. Now, however, free standing internships have been abolished and included in the first year of residency training.
The greatest expansion in graduate medical education has occurred in the area of family medicine. As recommended in the Citizens Commission Report, family medicine residency programs emphasize first-contact, comprehensive, continuous, preventive, and patient-oriented care. Presently, 300 approved residency programs have been established in family medicine, providing 1300 residencies. Future expansion of family practice programs seems assured by recently enacted legislation. By 1980, 50 percent of all first-year residency positions offered in university hospitals must be in family medicine, general internal medicine, and general pediatrics or medical schools will lose capitation support (Public Law 94-484). In addition, the establishment of Area Health Education Centers, as recommended by the Carnegie Commission on Higher Education, will provide further impetus for the expansion of family medicine training at both the undergraduate and graduate levels.

Medical student interest in family medicine as a career is growing rapidly. Herman reports that from 1971 to 1974, the percentage of students indicating preferences for family medicine rose from 6 to 17.3 percent. Among entering medical students, interest in family medicine careers appears higher as Meyers, Adams, and Holcomb report that 40 percent of new medical students would like to become family practitioners. And, although many believe that the professionalization of medical students causes a shift in interest of medical students from primary to secondary and tertiary
specialties, Herman reports that 61 percent of students preferring family medicine eventually take such positions. 80

**Patient Satisfaction With Medical Care**

The most important factor in patient satisfaction with medical care is doctor-patient communication. Korsch, Gozzi, and Francis describe the nature of contemporary doctor-patient relationships which result in poor doctor-patient communication, and, ultimately, health care consumer dissatisfaction:

Until recently, long-standing, one-to-one relationships between patient and physician were the rule rather than the exception. In that setting warmth and mutual understanding could develop and flourish. As patterns of medical care have changed, the individual doctor-patient relation is being replaced by short term encounters with numerous disparate specialists and other health workers.

Summary also discusses the value of doctor-patient relationships in contemporary medical care:

Patients, no less than doctors, are influenced by the dramatic changes that have occurred in the technology of medicine in recent years. They want expert treatment. As Freidson showed in his study of the Montefiore Hospital Group, patients value competence as highly as the medical profession does. However, they equally value the personal interest which they expect a doctor to have for his patients. 83

For the physician to show a personal interest in the patient and to facilitate doctor-patient communication, long-standing, one-to-one relationships are essential. Apostle and Order, from a study of the public's view of medical care, report that 51 percent of respondents were found to agree with the statement, "the family doctor of yesterday, compared to today's
modern specialist, gave better care because he knew you better.\textsuperscript{84} The physicians ability to have an impact upon patient behavior is also dependent on the doctor-patient relationship. Korsch, Gozzi, and Francis, from a study of patient compliance with the doctor's instructions for drug taking and therapy, conclude; the patient who is satisfied with the doctor is more likely to follow instructions than the patient who is dissatisfied with the doctor.\textsuperscript{85}

Health care consumer preferences for the utilization of family practitioners may be related to geographic location. For example, from a nationwide survey of 535 families, Cahl reports that 74 percent have family doctors.\textsuperscript{86} Among rural households, however, the percentage of families having a family doctor is greater. From a study conducted in 1968 of 157 households in rural Kentucky, Kane reports 92 percent of families have a family doctor.\textsuperscript{87}

Utilization of primary care physicians has been shown to vary with families' incomes. Cahl reports that families with lower incomes tend to utilize family practitioners while families with higher incomes tend to utilize obstetrician-gynecologists, general internists, and general pediatricians.\textsuperscript{88} Of families utilizing family physicians, 21 percent have incomes less than $3,000 per year, whereas for families utilizing general internists, general pediatricians, and obstetrician-gynecologists, 8 percent have incomes less than $3,000 per year.\textsuperscript{89} In addition, Cahl reports that 26 percent of families utilizing family physicians were found to have
incomes greater than $7,000 per year, while 37 percent of families utilizing general internists, obstetrician-gynecologists, and general pediatricians were found to have incomes greater than $7,000 per year.\(^{90}\)

Education level may be associated with the utilization of primary care physicians. For example, health care consumers with higher education levels may have a tendency to utilize general internists, general pediatricians and obstetrician-gynecologists, while those with low education levels, family practitioners. From a study of patients' education levels, Deisher, Engel, Spielholz, and Standfast report the following observation:

It is interesting to note the high education level of mothers who take their children to pediatricians. The percentage who continue beyond a high school education was almost 70 percent, whereas for the population as a whole only 20 percent of mothers continue beyond high school.\(^{91}\)

Aside from education level, a prime reason why mothers utilize pediatricians instead of a family practitioner is a difference in their perception of pediatricians' and family practitioners' competencies. Deisher, Engel, Spielholz, and Standfast report from a study of mothers' satisfaction with pediatric care, that among mothers who have utilized both pediatricians, and family practitioners, 80 percent indicated they received more expert care from the pediatrician, only 20 percent thought there was no difference.\(^{92}\) Increased satisfaction levels in patients provided with comprehensive pediatric care are reported by Albert, Kosa, and Haggerty:
While there were no changes noted in such general attitudes as alienation, acceptance of the maternal role, and preventive health practices, increased satisfaction with the delivered care and increased preference for a pediatrician were observed.  

With the proliferation of organized ambulatory services, patient satisfaction with group medical care can be examined. As noted previously, Roemer defines organized ambulatory services as those organizations in which several health personnel collaborate and make decisions through some team process and where the services are usually financed in a collective or shared manner. Caplan reports the most important factors in patient evaluation of group medical care are: (1) satisfaction with physician care; and (2) satisfaction with the amount of time spent with the physician. Favorable evaluations of group medical care are reported by Quinn who studied family clinic patients. He writes:

Patients seemed confident and pleased with their medical care and often times recruited friends and neighbors for the program. Obviously the family clinic team made up of the internist, pediatrician, obstetrician-gynecologist, public health nurse, and social worker, played the role of the family physician but with the added advantage of specialized training and shared knowledge from several disciplines.

Increased satisfaction with medical care in a group practice setting may be due to four advantages of group practice over solo practice proposed by Grahm which include: (1) greater accessibility; (2) greater efficiency; (3) higher quality, and (4) comparable cost.
Cost is also a factor in patient satisfaction with medical care. From a study of patients' perceptions of medical services, Koos reports 19 percent of respondents believed medical care costs too much. In actuality, specialist care is more expensive than generalist care. McConnell, investigating the cost of initial office visits, reports for internal medicine, pediatrics, and general practice, costs of $16.58, $9.48, and $7.83, respectively. Similar findings are also reported for the costs of follow-up visits. He reports average costs of $8.57 for internal medicine, $6.70 for pediatrics, and $5.84 for general practice. It seems safe to conclude from the foregoing that patients pay higher costs for specialists care and lower costs for generalist care.

As alluded to previously, the average fees of pediatricians and internists are higher than the average fees of family practitioners, and, as perceived by consumers, family practitioners are less competent than the former. This raises an issue of costs versus quality. In light of current concern for health care cost containment, is it advisable to provide more general internists, pediatricians, and obstetrician-gynecologists who will provide more expensive and expert care than the family practitioner? And, a related question, should consumers be provided with the most competent
physicians or, for those who prefer a family practitioner, the physician of their preference?

In summary, the literature indicates that consumers are both satisfied and dissatisfied with medical care. For example, two studies may be cited to support consumer satisfaction. The first, by Schwab and Denman, as a basic finding, reports that patients hold positive and favorable attitudes toward both physicians and hospitalization. The second, a study by Hulka, Kupper, Cassel, and Babinean, concludes: that on three dimensions of consumer satisfaction -- professional competence, personal qualities, and cost-convenience -- patients view physicians and medical care quite favorably.

Conversely, two studies may be cited to support consumer dissatisfaction with medical care. The first, a study by Adelson discusses five criticisms of medical care -- physicians are arrogant, physicians will not make house calls, physicians take too much time off, and physicians charge high fees.

The second, a study by Wax, advances three theories as to the nature of the problems between physicians and patients and the sources of public dissatisfaction with the profession. First, because of increased medical training, due to advancements in medicine, the services of physicians are more valuable and expensive. Second, because doctors treat more patients today than in the past, doctor-patient communication
and interaction have decreased, increasing dissatisfaction. Third, due to the patients' limited knowledge of medicine, he is incapable of judging the true value of medical care.

Aside from the criticisms of medical care discussed in the foregoing, three studies have explored theories which might explain consumer satisfaction or dissatisfaction with medical care. First, Sira reports that patient satisfaction is dependent upon the patient's ability to comprehend the relationship between the physician's response and the patient's problem. For example, if a patient who presents with a viral infection cannot understand the physician's reason for doing a blood test, then dissatisfaction will occur. Second, Larsen and Rootman found a strong association between a patient's overall level of satisfaction with medical services and the degree to which a physician's perceived role performance corresponds to a patient's definition of that role. It follows, then, that an important source of patient satisfaction is the degree to which a physician fulfills a patient's expectations. Third, McGraw reports that there is great individual variation in the expectations different patients have regarding their health, and variation, also, in the degree of distress which justifies seeking physician help.
Federal and State Health Care Policy

Government policy at both the federal and state levels has become an increasingly important factor in the health care system. In the years after World War II, federal policy resulted in the development of specialized care at the expense of everyday care. For example, the Hill-Burton Act (The Hospital Survey and Construction Act of 1946) provided substantial funds for hospital construction to remedy the shortage and maldistribution of hospital facilities created by the lack of construction during the depression and World War II. Then, to control the rapid growth in health facilities stimulated by the Hill-Burton Act, the Comprehensive Health Planning and Public Health Service Amendments of 1966 authorized funds for state and areawide Comprehensive Health Planning Agencies. In 1974 Congress passed a new law, the National Health Planning and Resource Development Act of 1974, which was designed to put some teeth into comprehensive health planning efforts and to combine into one program, comprehensive health planning, the Hill-Burton Program, and the Regional Medical Program.

In the area of government financing of health care, the Social Security Act of 1965 was passed to reduce financial barriers to health care for the elderly and needy. Medicare, a health insurance program for the aged, was created by Title 18 and went into effect in 1966. By 1972, over 95 percent of those aged 65 and older were covered by Part A of medicare which provides insurance for hospital care. Medicaid was created by the same 1965 Social Security Act that brought
Medicare into existence. Medicaid, which is designed to pay health care costs of the poor, unlike Medicare, is a state program. Each state has its own Medicaid program and determines its own eligibility requirements and its own Medicaid benefits, although the federal government sets some benefit and eligibility standards. States finance 17 to 50 percent of their Medicaid program while the remaining portion is financed by the federal government.

In 1965, congress also enacted the Comprehensive Health Planning and Public Health Service Amendment which created the first Regional Medical Program, and the Comprehensive Health Planning Program. In 1972, a major addition to the medicare act mandated review of all capital expenditures and services which received Medicare and Medicaid reimbursement. Also, legislation was passed establishing Professional Standards Review Organizations (PSRO's) with regulatory authority.

As alluded to previously, Public Law 93-641, the National Health Planning and Resources Development Act of 1974 created a new health planning system combining old programs and adding new ones. Ten guidelines of this act for future planning and development of health care include:

1. Development of primary care resources and programs for the underserved in rural and urban areas;
2. Organization of multiinstitutional approaches to delivering specific health services such as obstetrical care, intensive and coronary care, etc.;
3. Promotion of medical group practices, HMO's, and other approaches to organized systems for medical care delivery;
4. Greater effort in training and utilization of physician extenders: nurse practitioners and physicians' assistants;
5. Sharing of services and other coordinated approaches to serving the needs of separate health programs;
6. Responding to improvements needed by PSRO programs as they get underway;
7. Progressive care approaches to medical care delivery;
8. Emphasis on prevention of disease and studies of environmental and nutritional impacts on health with action based on results;
9. Implementation of uniform cost accounting, reimbursement arrangements, and utilization reporting in order to improve management of health care programs;
10. Development of effective methods for educating the public toward effective maintenance of their own health and appropriate utilization of health services.  

In the area of medical education, the Comprehensive Health Manpower Training Act of 1971 marked the first time that any federal agency intervened in the internal program decisions of medical schools through the provision of conditional financial support. Previous institutional grants were replaced by a new system of capitation grants for each student enrolled in health professional schools, again contingent upon increased first year enrollments. Start-up assistance to new schools of medicine, osteopathy, and dentistry were authorized, also in the form of capitation grants.

A second federal intervention in medical education, the Health Professions Educational Assistance Act of 1976 (P.L. 94-484) signaled a shift in congressional concern away from perceived overall shortage of physicians and toward a lack of family practitioners, general internists, and general pediatricians, needed to deliver primary care. As a
condition to capitation support, the following stipulations were set forth:

1. Schools must maintain (a) first year enrollments, and (b) nonfederal expenditures at levels greater than or equal to the preceding year.

2. Medical schools and their affiliated programs must have 35 percent, 40 percent, and 50 percent, of their residency positions in fiscal 1978, 1979, and 1980 respectively, in three primary care specialties—general internal medicine, general pediatrics, and family medicine.

3. Medical schools must reserve an "equitable number" of positions in their classes for United States citizens (a) who were students in foreign medical schools before October 12, 1976, and (b) who have completed at least two years of medical school and passed Part I of the National Boards.¹¹⁴

In the area of primary care health manpower, a major report entitled "A Manpower Policy for Primary Health Care" analyzes policy options for increasing the supply of primary care practitioners.¹¹⁵ This report finds that although an adequate overall supply of physicians exists, there is a shortage of primary care practitioners. It recommends, therefore, maintaining current enrollment levels in medical schools. To enhance the availability of primary care, the report advocates (a) reimbursement for all physicians within a state at the same payment level for the same primary care service; (b) a reduction in payment differentials between
primary care services and nonprimary care services; and (c) reimbursement for educational and preventive services.

At the state level, policy for the education of future physicians is determined primarily by the Ohio Board of Regents. To make sure that Ohio's colleges and universities continue to respond effectively to the needs of Ohio and its citizens, a Master Plan for Higher Education is prepared. This plan identifies goals for higher education, the means by which these goals can be achieved, and the resources which should be committed for their achievement. In the most recent Master Plan for the period, 1976 to 1981, the following recommendations are made regarding pre and post M.D. medical education.

1. No further expansion of medical schools beyond what has been planned is necessary and no additional medical graduates above the level of expected enrollments in 1985 are needed.

2. Medical schools should continue to emphasize primary care education, and family practice programs should continue to be categorically supported, with an increase in funds over the next two biennia.

3. Primary care residency programs which are associated with medical schools should be established throughout Ohio and partially supported by state funds.

4. Medical student loan programs should be established with a forgiveness provision for practice in underserved areas of the state.
5. Specific financial support should be provided to medical schools to initiate special recruitment and development programs for minority and rural students who are traditionally underrepresented.\textsuperscript{116}

At the state level, although policy is primarily formulated by the Board of Regents, the Ohio General Assembly also establishes policy through the passage of legislation. In 1973, support for the expansion of family medicine training was given impetus by the passage of House Bill 474 which required state supported medical schools to have departments of family practice, and, also, family practice residency programs.\textsuperscript{117}

Summary

Presently, many health care consumers are receiving primary care from general internists, obstetrician-gynecologists, and general pediatricians as well as family practitioners. In 1931, general practitioners numbered 112,000, accounting for 80 percent of the physicians in private practice.\textsuperscript{118} In 1972, general and family practitioners, together, numbered only 55,000, accounting for only 20 percent of physicians in private practice.\textsuperscript{119} A corps of physicians, general internists, obstetrician-gynecologists, and general pediatricians function in the realm of family medicine, providing primary care that, in the past, was provided by general practitioners. An important question, who consumers prefer to utilize for primary care needs, remains unanswered.
Based upon the studies reviewed previously, one is unable to conclude whether the general public prefers family practitioners or a combination of primary care physicians comprised of general internists, general pediatricians, and obstetrician-gynecologists. Selective studies may be cited which support contrary consumer preferences, namely, (1) public preferences for the utilization of family practitioners, and (2) public preferences for the utilization of general internists, general pediatricians, and obstetrician-gynecologists. These foregoing discrepancies may be accounted for by significant gaps or flaws in previous studies which explain the apparent paradoxes. First, manpower studies -- physician-to-population ratios, the professional standards approach, and the economic methods approach -- are simply methods for measuring physician supply which assume a static rather than dynamic relationship between resources and utilization. Second, manpower studies fail to include variables of consumers such as race, socioeconomic status and age which may be associated with utilization. Third, consumer preferences for the utilization of primary care physicians have been inferred from utilization patterns, an indirect rather than direct approach. And, fourth, several studies have used nonprobability sampling techniques to make generalizations about the general public -- a serious pitfall. The present study has potential to clarify this area of research because it avoids these pitfalls: it does not involve an approach which assumes a static relationship between resources and utilization; variables such as race,
socioeconomic status, and age which may be related to utilization are included; consumer preferences for the utilization of primary care physicians are measured directly rather than indirectly; and a probability sampling technique is employed. Therefore, the present study will provide a more valid measure than past studies of the extent to which the general public prefers to utilize family practitioners, general internists, general pediatricians, and obstetrician-gynecologists.
FOOTNOTES

1 Stephen F. Loebs, "Health Care Delivery and the Role of a State Medical Care Section," Interaction (Ohio Public Health Association), December, 1975.


7 Ibid.

8 American Public Health Association, op. cit.


12 American Public Health Association, loc. cit.


15 Ibid.


20 Dennis, loc. cit.


36. Ibid.


Ibid.

George Riley, et. al., op. cit.

Ibid.


Ibid., p. 341

Ibid., p. 344


Ibid.


William W. Engstrom, op. cit.


P. DeVise, op. cit.

54 Ibid.


58 Ibid.

59 J. M. McGinnis, loc. cit.


61 Anne A. Scitovsky, et. al., op. cit.

62 The physician-to-population method is the simplest and most frequently used. It entails identifying an area in which the ratio seems adequate to establish an ideal ratio. This ratio provides a model, against which all others may be judged. A limitation of the method is that the selection of any given physician-to-population ratio is completely arbitrary.

63 The professional-standards approach, often resulting in a relatively high estimate of need, involves four steps. First, the frequency of illness in the population is established. Second, the number of services required to diagnose and treat the illnesses is established. Third, the number of services physicians provide in an hour is established. Fourth, the number of hours physicians work per year is established.

64 There are a number of economic methods for estimating and projecting physician requirements. Variables affecting utilization such as price, income, socio-economic status, and health insurance are measured in the population. On this basis, estimates for physician requirements are made. The accuracy of this method is dependent upon the stability of the measured variables or the extent to which their change has been anticipated.

Herbert Berger, loc. cit.


An example of a single item measure is: "What is your feeling about the quality of health care given by your doctor -- excellent, good, or average?" Usually, several questions, in different areas, are combined into questionnaires for survey research. Attitude scales have more reliability than questionnaires because multiple items are used to measure the variable of interest.


John E. Ware and M. K. Snyder, "Dimensions of Patient Attitudes Regarding Doctors and Medical Care Services," Medical Care, Vol. 13, No. 8, August, 1975.


John P. Geyman, op. cit.

Robert G. Petersdorf, op. cit.


80 Mary W. Herman, op. cit.


85 Barbara M. Korsch, et. al., op. cit.


88 Mac F. Cahl, op. cit.

89 Ibid.

90 Ibid.


92 Ibid.


94 M. I. Roemer, op. cit.


97 Ibid.


100 John W. McConnell, "Family Practitioner in Minnesota," Minnesota Medicine, Vol. 57, April, 1974.

101 Ibid.


111 Robin E. MacStravic, "Provisions of the National Health Planning and Resource Development Act," Hospital Progress...


115 Richard M. Scheffler, op. cit.

116 Ohio Board of Regents, Higher Education in Ohio Master Plan: 1976, Columbus, Ohio, 1977.

117 David Rader, "Roundup of Medical Health Legislation in the Ohio General Assembly," The Ohio State Medical Journal, Vol. 69, No. 11, November 1975.

118 Robert G. Petersdorf, op. cit.

119 Robert G. Petersdorf, op. cit.
CHAPTER THREE

METHODOLOGY

Research Design and Procedures

The methodology employed in this study combines descriptive research and quasi-experimental design. First, the study is designed to measure the types of primary care practitioners -- general internists, obstetrician-gynecologists, general pediatricians, and family practitioners -- health care consumers prefer to utilize, for their primary care needs, the descriptive component. Second, through the measurement of consumer preferences for the utilization of primary care physicians, the dependent variable, the study is designed to retrospectively examine the independent variables, -- age, race, and socioeconomic status -- for their possible association with the dependent variable. Because the independent variables are not manipulated by the investigator, the study cannot be termed a true experiment in the Campbell and Stanley sense;\(^1\) therefore, cause and effect interpretations cannot eventuate.\(^2\) Rather, regarding the dependent and independent variables, the investigator is limited to interpretations of association and relation. That is, aside from the descriptive findings that will result, at most, as a result of this study, the investigator will be able
to conclude that an independent variable under study is associated with the dependent variable.\textsuperscript{3,4}

**Dependent Variable**

The dependent variable in the study is the type of primary care physician subjects or respondents prefer to utilize for their primary care needs. There are four levels — namely, family practitioner, general internist, obstetrician-gynecologist, and general pediatrician. A subject's preference for the utilization of a primary care physician was determined by asking several situational questions regarding preference for the utilization of a primary care physician. That is, subjects were asked to indicate the type of primary care physician they would prefer to be treated by, given a hypothetical, primary care problem. For example, males were asked to indicate for each of 13 questions, what kind of physician (general internist or family practitioner) they would prefer to utilize. Similarly, females were asked to indicate for each of 17 questions, what kind of physician (general internist, obstetrician-gynecologist, or family practitioner) they would prefer to utilize. Finally, to determine the utilization preferences of parents for their children's medical care, parents were asked to indicate for each of 11 questions, what kind of physician (general pediatrician or family practitioner) they would prefer to utilize. For each group of respondents — males, females, and parents — if a subject could not decide
on the kind of physician he would prefer to utilize for a
given problem, an undecided response was recorded. For males,
a subject's preference for the utilization of a primary care
physician was determined by combining responses to 13
questions; for females, by combining responses to 17
questions; and for parents, by combining responses to 11
questions. Preference for the utilization of a primary care
physician was operationally defined as the type of physician
choosen most frequently by a respondent. For example, if a
subject indicated that he would prefer to be treated by a
general internist for most questions, his overall preference
for the utilization of a primary care physician was designated
as "general internist." If, for most questions, a subject was
undecided, no overall preference was designated, or if a
subject indicated that he would prefer to be treated by two
different types of primary care practitioners an equal number
of times, again, no preference was designated. Figures 1, 2,
and 3 provide selected examples of how preference was opera­
tionally defined for each of the three groups -- males,
females, and parents.
### FIGURE 1, SELECTED EXAMPLES FOR OPERATIONALLY DEFINING PREFERENCE FOR THE UTILIZATION OF A PRIMARY CARE PHYSICIAN FOR FEMALES

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of Responses</th>
<th>Designated Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioners</td>
<td>General Internist</td>
</tr>
<tr>
<td>Subject 1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Obstetrician-Gynecologist</td>
<td>4</td>
</tr>
<tr>
<td>Subject 2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Subject 3</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

### FIGURE 2, SELECTED EXAMPLES FOR OPERATIONALLY DEFINING PREFERENCE FOR THE UTILIZATION OF A PRIMARY CARE PHYSICIAN FOR PARENTS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of Responses</th>
<th>Designated Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioners</td>
<td>General Pediatrician</td>
</tr>
<tr>
<td>Subject 1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Obstetrician</td>
<td>Undecided</td>
</tr>
<tr>
<td>Subject 2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Subject 3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Because subjects can be classified as having no preference in two circumstances as described previously, the question may be asked: Are subjects really comparable? That is, in figure one, is subject two comparable to subject three? In both cases, the measuring method cannot distinguish a greater preference for one type of physician over another. Therefore, as a measurement decision, it is reasonable to treat subjects as a homogeneous group. In retrospect, this measurement procedure was of no consequence to the investigation because all subjects classified as having no preference resulted from the situation in which subjects indicated, for one or more specialties, that they would prefer to be treated an equal number of times.

Because all problems are not equally likely to occur nor equally likely to be treated by a given primary care practitioner, unless they are selected randomly for subjects, a
biasing factor is presented. For example, it is likely that more females would prefer to be treated by an obstetrician-gynecologist for a pregnancy examination which accounts for 33 percent of visits to obstetrician-gynecologists but only 2.4 percent of visits to family practitioners. Conversely, it is likely that more females would prefer to be treated by a family practitioner for a general physical examination which accounts for 4.9 percent of visits to family practitioners, but less than 1 percent of visits to obstetrician-gynecologists. Therefore, to eliminate the possibility of selecting problems which are more likely to be treated by one kind of primary care practitioner for a given subject, problems were selected and assigned to subjects randomly.

A classification or enumeration system is the method used in this investigation for determining subjects' preferences for the utilization of primary care physicians. Procedures for classifying subjects have been defined in detail. If followed correctly, strict adherence to these procedures would result in the same classification for each subject, regardless of who the investigator is. Both properties or criteria for this level of measurement -- mutual exclusion and exhaustiveness -- have been satisfied. That is, each respondent or subject can be assigned one classification and one classification only, namely, no preference, family practitioner, obstetrician-gynecologist, general internist, or
general pediatrician, the property of mutual exclusion. Also, through the application of these procedures, all subjects are assignable to a classification, the property of exhaustiveness.

A subject's overall preference for the utilization of a primary care physician was determined for males, females, and parents by combining responses to 13, 17, and 11 questions, respectively. This procedure, which is permissible at the classification level of measurement, assures content validity for the measuring procedure. Content validity is the representativeness or sampling adequacy of the content—the substance, the matter, the topics—of a measuring instrument.

For the present study content may be defined as those problems which are presented to primary care physicians. Of the four primary care specialties, because males would utilize either a family practitioner or general internist, content is defined as the most frequently presented problems in general internal medicine and family practice. Similarly, content for females is defined as the most frequently presented problems in family practice, general internal medicine, and obstetrics-gynecology, and for parents, as the most frequently presented problems in family practice and pediatrics. For each group, males, females, and parents, a multiple matrix random sampling technique was employed. For example, for males, the 25 most frequently presented problems in family practice which account for over 59 percent of presented problems, and the 20 most frequently presented problems in general internal medicine,
which account for over 50 percent of presented problems comprised the content. Then, 7 subsamples of items were constructed using a multiple matrix random sampling plan as depicted in Table One (see page 84). Thus, assuring that each subsample contains a proportion of family medicine to general internal medicine problems equal to the proportion for the defined content \((20/25 = 4/5)\). For females and parents a similar procedure was also employed.

**Independent Variables**

The three independent variables in the study are (1) race, a categorical variable; (2) socio-economic status, a continuous variable; and (3) age, also a continuous variable. As defined by Kerlinger, a continuous variable is capable of taking on an ordered set of values within a certain range, while a categorical variable, which belongs to the nominal level of measurement, cannot. For this level, objects are classified by the possession or absence of the characteristics that define a subset. For example, subjects or respondents are classified by the investigator according to race -- white or nonwhite. For socioeconomic status, which is determined for a subject by the amount of their household's total income last year, before taxes, 9 levels were established. They include:

- level 1, less than $4,999 per year
level 2, $5,000 to $9,999 per year
level 3, $10,000 to $14,999 per year
level 4, $15,000 to $19,999 per year
level 5, $20,000 to $24,999 per year
level 6, $25,000 to $29,999 per year
level 7, $30,000 to $34,999 per year
level 8, $35,000 to $39,999 per year
level 9, $40,000 or more per year

A review of the literature revealed that there was no standard breakdown used by researchers to group subjects according to income levels. Previously employed breakdowns, as a maximal level, customarily have $15,000 to $20,000 per year. Because average family income, which was $14,000 in 1976, is increasing, previously used breakdowns must be modified to accommodate today's higher incomes. Therefore, the foregoing breakdown, although similar to what has been employed previously, was constructed specifically for the present study.

Instrumentation and Data Collection

To develop instruments which would provide valid measures of consumer preferences for the utilization of primary care physicians, item or question development was based upon problems presented most frequently to primary care practitioners identified through the National Ambulatory Medical
Care Survey (NAMCS). Conducted in 1975, and reported in February of 1978, the NAMCS was designed to explore the provision and utilization of primary care in the offices of general internists, obstetrician-gynecologists, general pediatricians, and family practitioners. A total of 3,500 physicians, including doctors of medicine and osteopathy, were randomly selected to participate in the study. Each was randomly assigned to 1 of 52 weeks in the survey year, and each was asked to record, for their respective 1 week periods, the reasons (problems, complaints, or symptoms) for patient visits in the patients' words as nearly as possible. For each primary care specialty, data was combined over all physicians and over all 52 weeks to obtain the frequency of each problem, complaint, or symptom. The results were as follows: In general internal medicine, 20 problems, complaints, and symptoms accounted for 50.9 percent of office visits; in general pediatrics, 14 problems, complaints, and symptoms accounted for 67.4 percent of office visits; in obstetrics-gynecology, 15 problems, complaints, and symptoms accounted for 80.6 percent of office visits; and, finally, in family medicine, 25 problems, complaints, and symptoms accounted for 74 percent of office visits.

A situational question, designed to measure a subject's preference for the utilization of a primary care physician,
was constructed for each of the 20 most frequent problems, complaints, and symptoms in general internal medicine; the 14 most frequent problems, complaints, and symptoms in general pediatrics; the 15 most frequent problems, complaints, and symptoms in obstetrics-gynecology, and, finally, the 25 most frequent problems, complaints, and symptoms in family medicine (see appendix A). For problems, complaints, and symptoms in which the condition was listed as a complex differential diagnosis that only a physician would be capable of diagnosing, questions were written in terms the patient would most likely experience. For example, the 14th most frequent condition presented in general medicine is diabetes mellitus, a disease which only a physician could verify or diagnose. Accordingly, the corresponding question is worded: "Suppose you had a continuous feeling of thirst that you could not account for by fluid intake or exercise. What kind of physician would you prefer to see for this problem?"

In order to ensure (1) that each question was medically accurate, (2) that questions would validly measure utilization preferences for the corresponding problem, complaint, or symptom, and (3) to refine the interview schedule, a three stage review and revision process was employed. In stage one, questions were reviewed by a physician who applied the following criteria to each: First, questions should be con-
sistent with current medical knowledge. Second, questions should be clear and concisely worded in layman's terms. And third, questions should validly measure utilization preferences for the corresponding problem, complaint, or symptom. Following a review in which the foregoing criteria were applied to each question by a primary care practitioner, necessary revisions were made in the items as suggested by the reviewer. For example, an item which was worded, "suppose you had inflammation of the sinuses," was changed to "suppose you had a cold." And, an item worded, "suppose you had vaginitis," was changed to "suppose you had a vaginal discharge.

For stage two, to evaluate and improve question clarity from the consumers' standpoint, a focused group interview with male and female health care consumers was conducted. Two males and two females were asked to participate in the process. Each question was reviewed and possible connotations and denotations were discussed by the group members. As a result of this process, numerous improvements, enhancing the clarity of questions, were made (see Appendix A for a list of questions).

For the focused group interview, because a large number of items (74) had to be reviewed in depth, to maximize interaction, participants were kept to a minimum -- 5 including
the investigator. The purpose of the group interview was to identify variance in the interpretation of items and, if possible, to reword them more clearly. For example, the item "suppose upon exertion you developed shortness of breath..." was interpreted differently by participants. That is, some participants believed that shortness of breath was a normal reaction to exertion, while others, an abnormal. Therefore, it was suggested that the item be reworded to "suppose for no apparent reason you developed shortness...", a form which all participants interpreted as an abnormal reaction.

Finally, for stage three, the interview procedure was pilot tested with 20 randomly selected subjects from the population. Some minor modifications of the interview schedule were made as a result of the pilot testing. The final interview schedule, minus questions which, of course, vary due to question sampling and a respondent's sex, appears in Appendix B.

In the pilot testing of the interview schedule, minor modifications were made. For example, instead of reading a list of income categories and asking subjects to indicate to which they belong, it was discovered that simply asking subjects what their income was produced good results.
Although reliability was not anticipated to pose a problem for the instrumentation employed in this study because multiple questions were used to measure the variable of interest, preference for the utilization of a primary care physician, a test-retest procedure was used. For this procedure, 20 subjects were administered two identical versions of the instrument at one week intervals to obtain a measure of how accurately or consistently the instrument measures consumer preferences. For all subjects, preference for the utilization of a primary care physician, as determined by combining responses to multiple questions, was the same for both administrations. It was concluded, therefore, that the instrument had sufficient accuracy or precision for the purposes of the investigation.

Following refinement of questions and the interview procedure, a probability sample of size \( N = 400 \) was drawn from the 1977-1978 Columbus Telephone Directory which provided a listing of subjects in the population. Using a cluster random sampling procedure, 400 pages were selected, and then, 1 sampling unit or subject was randomly selected from each cluster or page.

The method of telephone interviewing was selected as a survey technique because it was thought that a high response rate could be achieved, and a large population could be sampled efficiently and economically. In addition, telephone interviewing was an attractive methodology because previous
investigators of health care problems have reported high levels of cooperation from respondents who were administered a lengthy 20 minute questionnaire. Respondents were contacted in both evening and daytime hours. Because most males are not at home during the day, sampling respondents in the evening increased the representation of males in the sample. In the case of respondents who could not be reached on the initial contact, two additional call-backs were attempted.

For subjects who could not be reached after three attempts (9.25 percent), nonresponse bias is not a concern. It is assumed that reaching a subject or, in the present case, not reaching a subject is a chance occurrence which does not relate to any critical variables such as age, race, income, occupation, marital status, sex, political affiliation, or place of residence. For subjects who refused to participate in the study (8.5 percent), a biasing factor would occur if subjects were similar in socioeconomic status, age, sex, race, occupation, marital status, place of residence or political affiliation. However, as reasons for refusing to participate in the study, most subjects indicated that they were either preparing a meal, eating a meal, preparing to leave the home, or entertaining guests. Therefore, it seems safe to conclude that nonrespondents were not similar in any variable which would create a nonresponse bias.
Population and Sample

Residents of metropolitan Columbus who have both telephone service and listed numbers in the 1977-1978 Columbus Telephone Directory comprise the population for the study. Because residential households with unlisted numbers, comprising 13 percent of households with telephone service in Columbus, and households without telephone service, comprising 3 percent, are not represented in the sample selected; they are excluded from the population, metropolitan Columbus, to which findings are generalizable.

A random sample (N = 400) was drawn from the Columbus 1977-1978 Telephone Directory and subjects were contacted and interviewed via telephone by employing a multiple matrix sampling design. In multiple matrix sampling, different groups of subjects or respondents, are given different sets of items or questions. For example, for males, a total of 45 questions were constructed. Twenty were based upon the most frequently presented problems to general internists, accounting for over 50 percent of office visits, and the remaining 25, on the most frequently presented problems to family practitioners, accounting for over 59 percent of office visits. Then, subsamples of questions were constructed by drawing 7 systematic random samples of size (n = 13) so that each question was included in at least two different subsamples. To eliminate the possibility of investigator
bias, the 7 subsamples were assigned to subjects at random so that an approximately equal number of males received each subsample of questions. Table 3 is an example of the multiple matrix item sampling plan employed.

For females, a total of 60 questions were constructed based upon the 20 most frequently presented problems to general internists, accounting for over 50 percent of office visits; the 25 most frequently presented problems to family practitioners, accounting for over 59 percent of office visits; and the 15 most frequently presented problems to obstetrician-gynecologists, accounting for over 80 percent of office visits. Then, as for males, subsamples of questions were constructed by drawing 8 systematic random samples of size (n = 17) so that each question was included in at least two different subsamples. To eliminate the possibility of investigator bias, the 7 subsamples were assigned to subjects at random so that an approximately equal number of females received each subsample of questions. Table 4 is an example of the multiple matrix item sampling plan employed.
PLEASE NOTE:

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UNIVERSITY MICROFILMS.
| ITEMS | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 33 | 35 | 37 | 39 | 41 | 43 | 45 |
|-------|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Subsample 1 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 2 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 3 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 4 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 5 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 6 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Subsample 7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
For parents, to determine what kind of physician they would prefer to utilize for their children's medical care, a total of 39 questions were constructed based upon the 25 most frequently presented problems to family practitioners, accounting for over 59 percent of office visits; and the 14 most frequently presented problems to pediatricians, accounting for over 67 percent of office visits. Then, as with males and females, subsamples of questions were constructed by drawing 7 systematic random samples of size (n = 11) so that each question was included in at least 2 different subsamples. To eliminate the possibility of investigator bias, the 7 subsamples were assigned to subjects at random so that an approximately equal number of parents received each subsample of questions. Table 5 is an example of the multiple matrix item sampling plan employed.

Multiple matrix sampling involved three steps: First, the item universe was divided into subsamples. For males, as described previously, the item universe of 45 questions was divided into 7 subsamples with 13 questions each; for females, the item universe of 60 questions was divided into 8 subsamples with 17 questions each; and for parents, the item universe of 39 questions was divided into 7 subsamples with 11 questions each. Second, male subjects or respondents were randomly assigned to one of the 7 subsamples for males, female respondents, to 1 of the 7 subsamples for females; and parents, to one of the 7 subsamples for parents. Third, each subsample of questions was incorporated into the interview
### TABLE 4
MULTIPLE MATRIX ITEM SAMPLING PLAN FOR FEMALE SUBSAMPLE

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TABLE 5
MULTIPLE MATRIX ITEM SAMPLING PLAN FOR PARENTS SUBSAMPLE

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schedule and administered to an assigned subject.

A sampling plan in multiple matrix sampling is denoted by \((t/k/n)\) where \(t\) refers to the number of subsamples, \(k\) to the number of items per subsample, and \(n\) to the number of respondents to which each subsample is administered. For males, a \(7/13/n\) sampling plan was employed, for females, a \(8/17/n\) sampling plan, and for parents, a \(7/11/n\) sampling plan. In each sampling plan, although it was impossible to specify \(n\) in advance, for males, \(n\) was approximately equal to 13; for females, 32; and for parents, 11.

The sample size used in the investigation was based upon 3 factors: the desired degree of confidence, the desired degree of accuracy, and the amount of estimated heterogeneity in the population with respect to the variables of interest. For degree of confidence, a value of 95 percent was selected, for desired accuracy, a value of 5 percent, and for the amount of heterogeneity in the population, a maximum value (50 percent was assumed). Equation 1 is the formula for calculating sample size. In equation 1, \(Z\) is equal to the \(Z\) value given the established level for \(\alpha\), and \(PQ\) to the estimated proportions of the population which differ with respect to the variable of interest.

\[
N = \frac{Z^2 \cdot PQ}{(\text{tolerated error})^2}
\]

When the appropriate values corresponding to a confidence interval of 95 percent, a degree of accuracy equal to 5
percent, and for PQ maximum heterogeneity is assumed
(P = 50 percent, Q = 50 percent) the sample size is deter-
mined as in equation 2.

\[
N = \frac{(1.96)^2 \times (50) \times (50)}{(0.05)^2} = 384.16
\]

Although from equation 2 a sample of size (N = 384) would
suffice, a sample of size (N = 400) was selected, enhancing
the study's precision. This is the overall sample size for
the investigation. For the purpose of reporting descriptive
results and testing hypotheses advanced for the investigation,
it was necessary to form three groups -- males, females and
parents. These groups are not mutually exclusive because
parents may be included in two groups -- either the male or
female group and the parents' group. If a given sample size
such as (N = 400) were needed for each group, quota sampling,
an unacceptable nonprobability sampling technique, would be
required because it is impossible to select a random probability
sample of females, males, or parents.

**Generalizability of the Study**

The results of this study are generalizable to the
majority of residents of metropolitan Columbus, the population
from which a sample of health care consumers was selected
and studied. Using the Columbus 1977-1978 telephone direc-
tory, which provided a listing of subjects in the population, a random sample of size N=400 was selected and interviewed via telephone. Because residential households with unlisted numbers, comprising 13 percent of the households with telephone service in Columbus, and households without telephone service, comprising 3 percent, are not represented in the sample selected, they are excluded from the population (metropolitan Columbus) to which findings are generalizable -- a limitation of the study. If having an unlisted number were associated with sex, marital status, race, socioeconomic status or some other unknown variable, results would be biased. However, a review of the literature revealed no studies of people who have unlisted numbers, and the investigator was unable to obtain any information from Ohio Bell on people who have unlisted numbers. Therefore, it cannot be determined, conclusively, to what extent this is a limitation of the study. Similarly, because no previous studies have been conducted of people who do not have telephone service, and, the telephone company was unable to provide any information, it cannot be determined how much of a bias is presented.

Data Analysis

To test for an association between the dependent variable, the type of primary care physician patients prefer, and the independent variables, race, socioeconomic status, and age,
two types of analyses were needed. First, because socio-economic status and age are ratio measures, two one-way analysis of variances (ANOVAs) were computed. Second, because race is a nominal variable, a chi-square statistic was computed. Finally, discriminant analysis, a multiple regression technique, was used to find a combination of the independent variables that would enable the researcher to predict a respondent's preference for the utilization of a primary care physician. In discriminant analysis, the criterion variable (preference for the utilization of a primary care physician) is nominally scaled, whereas the predictor variables may be nominally or intervally scaled. Levels of the predictor variables, which are sometimes termed "discriminants", are combined linearly in the analysis to predict the criterion variable. The result, therefore, is a prediction of each respondent's preference for the utilization of a primary care physician, based upon race, socioeconomic status, and age.

Although it was unnecessary to compute a discriminant analysis to answer the research questions posited for the investigation, because each independent variable was treated in a separate analysis, the combined "strength" of the independent variables in predicting subjects preferences for the utilization of primary care physicians was unknown. A
discriminant analysis was computed, then, to determine how accurately consumers' preferences could be predicted based upon the three independent variables considered simultaneously, rather than individually.
FOOTNOTES


2 Cause-and-effect interpretations are only possible in experiments in which the independent variables are manipulated by the investigator. Investigations of this type are termed "true experiments" by Campbell and Stanley. Experimental designs in which the investigator has less control over the independent variables are termed "quasi-experimental" designs by Campbell and Stanley. Because independent variables are not controlled in ex post facto designs, Campbell and Stanley judge them to be unsatisfactory as quasi-experimental designs. For this reason the proposed investigation may be termed a study and not an experiment in the Campbell and Stanley sense. This distinction is important because the investigator is limited to correlational interpretations only. If small correlations are obtained between the independent and dependent variables the credibility of the hypothesis is lessoned. Conversely, if a high correlation occurs the credibility of the hypothesis is strengthened because it has survived a chance of disconfirmation.


4 Ibid.

5 Ibid, p. 433.

6 Ibid, p. 433.

7 Ibid, p. 458.

9 Ibid, p. 39

10 Ibid, p. 39


15 The amount of heterogeneity in the population with respect to the variable of interest, (e.g. preference for the utilization of a primary care physician) must be estimated by the investigator to compute sample size. As heterogeneity varies from a value of 50 percent, homogeneity increases. And, when homogeneity increases, a smaller sample size is needed. Therefore, when a value of 50 percent is used for heterogeneity, the effect is an increase in the sample size needed.
CHAPTER FOUR

RESULTS

Four major analysis procedures were carried out in this investigation. The first provides descriptive data, the second and third were concerned with testing hypotheses, and the fourth was a discriminant analysis. This chapter presents only the data resulting from the analysis procedures; a discussion of the results will follow in the final chapter.

DESCRIPTIVE DATA FOR MALES, FEMALES AND PARENTS

The purpose of this analysis was to examine the representativeness of the sample upon which the study is based. A random sample of size $N = 400$ was selected, and 329 subjects were interviewed, a response rate of 82.25 percent. Because subject participation was voluntary, some subjects, 8.5 percent, declined to participate. In addition, 9.25 percent of the respondents could not be contacted after three attempts. Tables 6, 7, and 8 provide descriptive data for 3 groups of respondents -- males, females, and parents. The sample appears to be representative of the population. Because children were not included in the sample, the median age for each subgroup exceeds the median age for the population, 25.8 years.\(^1\) With respect to race, nonwhites are underrepresented.
### Table 6

**Descriptive Statistics on Age for Males, Females, and Parents**

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<thead>
<tr>
<th></th>
<th>Males (n=87)</th>
<th>Females (n=242)</th>
<th>Parents (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>50.6</td>
<td>46.5</td>
<td>33.1</td>
</tr>
<tr>
<td>Range</td>
<td>17-81</td>
<td>17-88</td>
<td>19-68</td>
</tr>
<tr>
<td>Median</td>
<td>51</td>
<td>43</td>
<td>32</td>
</tr>
</tbody>
</table>

### Table 7

**Descriptive Statistics on Race for Males, Females, and Parents**

<table>
<thead>
<tr>
<th>Race</th>
<th>Males (n=87)</th>
<th>Females (n=24)</th>
<th>Parents (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>84%</td>
<td>86%</td>
<td>90%</td>
</tr>
<tr>
<td>Nonwhite</td>
<td>16%</td>
<td>14%</td>
<td>10%</td>
</tr>
</tbody>
</table>
TABLE 5

DESCRIPTIVE STATISTICS ON SOCIOECONOMIC STATUS FOR MALES, FEMALES, AND PARENTS

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>Males (n=87)</th>
<th>Females (n=242)</th>
<th>Parents (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than $4,999 per year</td>
<td>19.2%</td>
<td>16.6%</td>
<td>4.8%</td>
</tr>
<tr>
<td>$5,000 to $9,999 per year</td>
<td>13.4%</td>
<td>12.5%</td>
<td>4.8%</td>
</tr>
<tr>
<td>$10,000 to $14,999 per year</td>
<td>23.8%</td>
<td>21.1%</td>
<td>6.0%</td>
</tr>
<tr>
<td>$15,000 to $19,999 per year</td>
<td>15.7%</td>
<td>15.2%</td>
<td>29.2%</td>
</tr>
<tr>
<td>$20,000 to $24,999 per year</td>
<td>12.3%</td>
<td>12.9%</td>
<td>21.9%</td>
</tr>
<tr>
<td>$25,000 to $29,999 per year</td>
<td>8.8%</td>
<td>12.9%</td>
<td>18.2%</td>
</tr>
<tr>
<td>$30,000 to $34,999 per year</td>
<td>5.4%</td>
<td>5.4%</td>
<td>9.7%</td>
</tr>
<tr>
<td>$35,000 to $39,999 per year</td>
<td>1.4%</td>
<td>3.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>$40,000 or more per year</td>
<td>0%</td>
<td>.4%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*For respondents socioeconomic status is determined by the amount of their households total income, in 1977, before taxes.*
in each subgroup. The percentage of non-whites in the population, 18.5 percent, is greater than the percentage of nonwhites in each subgroup. For socioeconomic status which was determined for subjects by the amount of their household's total income last year, before taxes, subgroups appear similar to the population. For the population, 30.2 percent have incomes between $10,000 and $14,999. For males, females, and parents, 23.8, 21.8 and 6.0 percent, respectively, have incomes in this range also. At the higher socioeconomic status levels, subjects may be slightly overrepresented. Although only 4.7 percent of households in the population have incomes greater than $25,000 per year, the corresponding percentages for males, females, and parents are 15.6, 21.3 and 32.7, respectively. Similarly, subjects are overrepresented in the lowest socioeconomic level, less than $4,999 per year. For the population, 7.4 percent would fall into this level, whereas the corresponding percentage for males in the sample is 19.2, for females, 16.6, and for parents, 4.8.

In summary, it may be concluded that generally, the sample is representative of the population. Since the sample statistics do not vary significantly from the population parameters, as discussed in the foregoing, it appears reasonable to expect that findings which apply to the sample also apply to the population.
Preferences of respondents for the utilization of primary care physicians were determined by asking several situational questions regarding preference for the utilization of a primary care physician, given a primary care problem. Overall preference for the utilization of a primary care physician was operationally defined as the type of physician chosen most frequently by a respondent. Eighty-five percent of the males responding preferred a family practitioner, 71.9 percent of the females, and, for their children's primary care needs, 35 percent of parents (see Table 9). Preferences for the utilization of general internists were similar in males and females as 15.0 percent of males and 15.2 percent of females preferred general internists. Seven percent of the females responding preferred to utilize an obstetrician-gynecologist for their primary care needs. For subjects who, for the most questions, responded no preference, or indicated an equal number of preferences in one or more specialties, an over-all preference for the utilization of a primary care physician was not defined. Although a preference was determined for each male responding, 5.3 percent of females were determined to have no preference, and for their children's primary care needs, 4.0 percent of parents. Finally, 61.0 percent of parents responding preferred to utilize a general pediatrician for their children's primary care needs.
### Table 9

**Preferences**\(^a\) of Respondents for the Utilization of a Primary Care\(^b\) Physician

<table>
<thead>
<tr>
<th>Preferences</th>
<th>Males (n=87)</th>
<th>Females (n=242)</th>
<th>Parents (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Preference</td>
<td>0%</td>
<td>5.3%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>85.0%</td>
<td>71.9%</td>
<td>35.0%</td>
</tr>
<tr>
<td>General Internist</td>
<td>15.0%</td>
<td>15.2%</td>
<td></td>
</tr>
<tr>
<td>Obstetrician-Gynecologist</td>
<td>-</td>
<td>7.0%</td>
<td></td>
</tr>
<tr>
<td>General Pediatrician</td>
<td>-</td>
<td>-</td>
<td>61.0%</td>
</tr>
</tbody>
</table>

\(^a\) Preferences of respondents for the utilization of a primary care physician was determined by asking several situational questions regarding preference for the utilization of a primary care physician. That is, given a hypothetical primary care problem, respondents were asked to indicate the type of primary care physician they would prefer to be treated by. Over-all preference for the utilization of a primary care physician was operationally defined as the type of physician chosen most frequently.

\(^b\) The primary care specialties as defined by the American Medical Association, and the Association of American Medical Colleges are General Internal Medicine, Family Practice, Obstetrics-Gynecology, and General Pediatrics.

Table 10 indicates the percentage of male respondents who would prefer to utilize family practitioners or general internists for the 20 most frequently presented problems in general internal medicine, accounting for over 50 percent of office visits; and the 25 most frequently presented problems
in family medicine, accounting for over 59 percent of office visits. For some problems such as fatigue, problems of the back region, cough, cold, abdominal pain, wounds of the skin, and fever, 90 percent or more of respondents preferred a family practitioner. Conversely, for some problems such as pain in the chest, other symptoms referable to the cardio-vascular system, and surgical aftercare, 50 percent or more of respondents preferred a general internist.
### TABLE 16

PREFERENCES OF MALES FOR THE UTILIZATION OF FAMILY PRACTITIONERS AND GENERAL INTERNISTS
BY PRIMARY CARE PROBLEMS

<table>
<thead>
<tr>
<th>Primary Care Problems By Specialty</th>
<th>Percent Response</th>
<th>Family Practitioner</th>
<th>General Internist</th>
<th>No Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Medicine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>general and required physical examinations</td>
<td>84</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pain in chest</td>
<td>47</td>
<td>53</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>82</td>
<td>18</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>fatigue</td>
<td>91</td>
<td>9</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>abdominal pain</td>
<td>69</td>
<td>31</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>high blood pressure</td>
<td>81</td>
<td>19</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>problems of back region</td>
<td>96</td>
<td>4</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>cough</td>
<td>90</td>
<td>10</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>problems of upper extremity</td>
<td>68</td>
<td>32</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>vertigo-dizziness</td>
<td>79</td>
<td>21</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>shortness of breath</td>
<td>66</td>
<td>34</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>headache</td>
<td>75</td>
<td>25</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>throat soreness</td>
<td>72</td>
<td>25</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>diabetes mellitus</td>
<td>75</td>
<td>25</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>cold</td>
<td>87</td>
<td>13</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>visits for medication</td>
<td>76</td>
<td>20</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>nervousness</td>
<td>79</td>
<td>21</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>problems of face and neck</td>
<td>74</td>
<td>26</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>allergic skin reactions</td>
<td>70</td>
<td>30</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>other symptoms referable to cardio-vascular system</td>
<td>48</td>
<td>52</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 10 (continued)

<table>
<thead>
<tr>
<th>Primary Care Problems by Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Family Medicine</td>
<td></td>
</tr>
<tr>
<td>general and required physical examinations</td>
<td>84</td>
</tr>
<tr>
<td>problems of the back</td>
<td>73</td>
</tr>
<tr>
<td>throat soreness</td>
<td>73</td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>82</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>92</td>
</tr>
<tr>
<td>problems of upper extremity</td>
<td>68</td>
</tr>
<tr>
<td>cough</td>
<td>90</td>
</tr>
<tr>
<td>visit for medication</td>
<td>86</td>
</tr>
<tr>
<td>fatigue</td>
<td>76</td>
</tr>
<tr>
<td>cold</td>
<td>87</td>
</tr>
<tr>
<td>headache</td>
<td>75</td>
</tr>
<tr>
<td>pregnancy examination</td>
<td>-</td>
</tr>
<tr>
<td>pain in chest</td>
<td>47</td>
</tr>
<tr>
<td>allergic skin reaction</td>
<td>70</td>
</tr>
<tr>
<td>wounds of skin</td>
<td>93</td>
</tr>
<tr>
<td>high blood pressure</td>
<td>81</td>
</tr>
<tr>
<td>surgical aftercare</td>
<td>58</td>
</tr>
<tr>
<td>weight gain</td>
<td>75</td>
</tr>
</tbody>
</table>
### TABLE 10 (continued)

<table>
<thead>
<tr>
<th>Primary Care Problems by Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Vertigo-Dizziness</td>
<td>79</td>
</tr>
<tr>
<td>problems of the face or neck</td>
<td>74</td>
</tr>
<tr>
<td>earache</td>
<td>84</td>
</tr>
<tr>
<td>fever</td>
<td>96</td>
</tr>
<tr>
<td>gynecologic examination</td>
<td>67</td>
</tr>
<tr>
<td>shortness of breath</td>
<td>66</td>
</tr>
<tr>
<td>flu</td>
<td>89</td>
</tr>
</tbody>
</table>

- For both specialties, problems are listed from most to least frequently presented. In general internal medicine, these problems account for over 50 percent of office visits, and in family medicine, over 59 percent of office visits.

Table 11 indicates the percentage of female respondents who would prefer to utilize (1) family practitioners, (2) obstetrician-gynecologists, and (3) general internists, for the 25 most frequently presented problems in family medicine, accounting for over 59 percent of office visits; for the 15 most frequently presented problems in obstetrics-gynecology, accounting for over 80 percent of office visits; and, for the 20 most frequently presented problems in general internal medicine, accounting for over 50 percent of office visits. For some ailments such as throat soreness, cold, wounds of the skin, fever, and flu, at least 80 percent of respondents preferred a family practitioner. Conversely, for more complex ailments such as surgical aftercare, menstrual
disorders, vaginal disorders, vulvar disorders, symptoms referable to the female reproductive system, pelvic symptoms, and menopause symptoms, less than 30 percent of female respondents preferred a family practitioner. For problems related to the female reproductive system such as pregnancy examination, gynecologic examination, vaginal discharge, menstrual disorders, vaginal disorders, vulvar disorders, symptoms referable to the female reproductive system, visits for family planning services (counseling, medication, and services) and menopause symptoms, at least 49 percent of respondents preferred an obstetrician-gynecologist. For some complex problems such as pain in chest, high blood pressure, and symptoms referable to the cardiovascular system, at least 30 percent of respondents preferred a general internist. In the case of many female problems previously alluded to such as pregnancy examination, vaginal discharge, vaginal disorders, vulvar disorders, visits for family planning services (counseling, medication, and services), and menopause symptoms, 10 percent or less of respondents preferred a general internist, as an obstetrician-gynecologist was more frequently preferred.
TABLE 11
PREFERENCES OF FEMALES FOR THE UTILIZATION OF FAMILY
PRACTITIONERS, OBSTETRICIAN-GYNECOLOGISTS, AND GENERAL
INTERNISTS BY PRIMARY CARE PROBLEMS

<table>
<thead>
<tr>
<th>Primary Care Problems By Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td></td>
</tr>
<tr>
<td>general and required physical examinations</td>
<td>67</td>
</tr>
<tr>
<td>pain in chest</td>
<td>62</td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>78</td>
</tr>
<tr>
<td>fatigue</td>
<td>65</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>65</td>
</tr>
<tr>
<td>high blood pressure</td>
<td>63</td>
</tr>
<tr>
<td>problems of back region</td>
<td>64</td>
</tr>
<tr>
<td>cough</td>
<td>75</td>
</tr>
<tr>
<td>problems of upper extremity</td>
<td>70</td>
</tr>
<tr>
<td>vertigo-dizziness</td>
<td>71</td>
</tr>
<tr>
<td>shortness of breath</td>
<td>68</td>
</tr>
<tr>
<td>headache</td>
<td>70</td>
</tr>
<tr>
<td>throat soreness</td>
<td>82</td>
</tr>
<tr>
<td>diabetes mellitus</td>
<td>68</td>
</tr>
<tr>
<td>cold</td>
<td>81</td>
</tr>
<tr>
<td>visits for medication</td>
<td>71</td>
</tr>
<tr>
<td>nervousness</td>
<td>75</td>
</tr>
<tr>
<td>problems of face or neck</td>
<td>69</td>
</tr>
<tr>
<td>allergic skin reaction</td>
<td>67</td>
</tr>
<tr>
<td>other symptoms referable to cardio-vascular system</td>
<td>61</td>
</tr>
</tbody>
</table>
TABLE 11 (continued)

<table>
<thead>
<tr>
<th>Primary Care Problems By Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Family Medicine</td>
<td></td>
</tr>
<tr>
<td>general and required physical examinations</td>
<td>67</td>
</tr>
<tr>
<td>problems of back</td>
<td>64</td>
</tr>
<tr>
<td>throat soreness</td>
<td>79</td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>78</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>65</td>
</tr>
<tr>
<td>problems of upper extremity</td>
<td>70</td>
</tr>
<tr>
<td>cough</td>
<td>75</td>
</tr>
<tr>
<td>visit for medication</td>
<td>75</td>
</tr>
<tr>
<td>fatigue</td>
<td>65</td>
</tr>
<tr>
<td>cold</td>
<td>81</td>
</tr>
<tr>
<td>headache</td>
<td>70</td>
</tr>
<tr>
<td>pregnancy examination</td>
<td>38</td>
</tr>
<tr>
<td>pain in chest</td>
<td>62</td>
</tr>
<tr>
<td>allergic skin reaction</td>
<td>67</td>
</tr>
<tr>
<td>wounds of skin</td>
<td>81</td>
</tr>
<tr>
<td>high blood pressure</td>
<td>63</td>
</tr>
<tr>
<td>surgical aftercare</td>
<td>60</td>
</tr>
<tr>
<td>weight gain</td>
<td>76</td>
</tr>
<tr>
<td>vertigo-dizziness</td>
<td>71</td>
</tr>
<tr>
<td>problems of face or neck</td>
<td>69</td>
</tr>
<tr>
<td>earache</td>
<td>75</td>
</tr>
<tr>
<td>fever</td>
<td>80</td>
</tr>
<tr>
<td>gynecologic examination</td>
<td>34</td>
</tr>
</tbody>
</table>
### TABLE 11 (continued)

<table>
<thead>
<tr>
<th>Primary Care Problems By Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>shortness of breath</td>
<td>68</td>
</tr>
<tr>
<td>flu</td>
<td>80</td>
</tr>
<tr>
<td><strong>Obstetrics-Gynecology</strong></td>
<td></td>
</tr>
<tr>
<td>pregnancy examination, routine</td>
<td>38</td>
</tr>
<tr>
<td>gynecologic examination</td>
<td>34</td>
</tr>
<tr>
<td>vaginal discharge</td>
<td>35</td>
</tr>
<tr>
<td>surgical aftercare</td>
<td>20</td>
</tr>
<tr>
<td>menstrual disorders</td>
<td>29</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>65</td>
</tr>
<tr>
<td>vaginal disorders</td>
<td>27</td>
</tr>
<tr>
<td>vulvar disorders</td>
<td>19</td>
</tr>
<tr>
<td>other symptoms referable to the female reproductive system</td>
<td>27</td>
</tr>
<tr>
<td>visit for family planning services, counseling</td>
<td>43</td>
</tr>
<tr>
<td>pelvic symptoms</td>
<td>25</td>
</tr>
<tr>
<td>visit for family planning services, medication</td>
<td>38</td>
</tr>
<tr>
<td>none</td>
<td>69</td>
</tr>
<tr>
<td>visit for family planning services, services</td>
<td>36</td>
</tr>
<tr>
<td>menopause symptoms</td>
<td>28</td>
</tr>
</tbody>
</table>

*aFor all specialties, problems are listed from most to least frequently presented. In general internal medicine, these problems account for over 50 percent of office visits, in family medicine, over 59 percent, and in obstetrics-gynecology, over 80 percent.*
Table 12 indicates the percentage of parents who would prefer to have their children treated by (1) a pediatrician and (2) a family practitioner for the 14 most frequently presented problems in pediatrics, accounting for over 67 percent of presented problems, and the 25 most frequently presented problems in family medicine, accounting for over 59 percent of problems. For some ailments such as well baby examinations, fever, visits for medication, throat soreness, allergic skin reactions, abdominal pain, problems of the lower extremity, general and required physical examinations, headache, pregnancy examination, weight gain, vertigo-dizziness, earache, and flu, at least 70 percent of respondents preferred to utilize a pediatrician. Conversely, for other ailments such as problems of the upper extremity, fatigue, pain in the chest, and problems of the face or neck, at least 40 percent of respondents preferred to utilize a family practitioner. For all problems, the percentage of respondents preferring a family never exceeded 42 percent. And for some problems such as problems of the lower extremity, earache, allergic skin reaction, abdominal pain, general and required physical examinations, headache, pregnancy examination, weight gain, vertigo-dizziness, fever, and flu, less than 30 percent of respondents preferred a family practitioner.
<table>
<thead>
<tr>
<th>Primary Care Problems By Specialty^a</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Pediatrics</td>
<td></td>
</tr>
<tr>
<td>well baby examinations</td>
<td>22</td>
</tr>
<tr>
<td>general medical examination</td>
<td>36</td>
</tr>
<tr>
<td>cough</td>
<td>36</td>
</tr>
<tr>
<td>fever</td>
<td>27</td>
</tr>
<tr>
<td>visit for medication</td>
<td>30</td>
</tr>
<tr>
<td>throat soreness</td>
<td>36</td>
</tr>
<tr>
<td>earache</td>
<td>27</td>
</tr>
<tr>
<td>allergic skin reaction</td>
<td>27</td>
</tr>
<tr>
<td>cold</td>
<td>39</td>
</tr>
<tr>
<td>required physical examination</td>
<td>36</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>27</td>
</tr>
<tr>
<td>wounds of skin</td>
<td>34</td>
</tr>
<tr>
<td>nausea and vomiting</td>
<td>31</td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>18</td>
</tr>
<tr>
<td>Family Medicine</td>
<td></td>
</tr>
<tr>
<td>general and required physical exam-</td>
<td>22</td>
</tr>
<tr>
<td>inations</td>
<td></td>
</tr>
<tr>
<td>problems of back</td>
<td>39</td>
</tr>
<tr>
<td>throat soreness</td>
<td>36</td>
</tr>
<tr>
<td>problems of lower extremity</td>
<td>18</td>
</tr>
<tr>
<td>abdominal pain</td>
<td>27</td>
</tr>
<tr>
<td>problems of upper extremity</td>
<td>42</td>
</tr>
</tbody>
</table>
Table 12 (continued)

<table>
<thead>
<tr>
<th>Primary Care Problems by Specialty</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>cough</td>
<td>36</td>
</tr>
<tr>
<td>visit for medication</td>
<td>30</td>
</tr>
<tr>
<td>fatigue</td>
<td>42</td>
</tr>
<tr>
<td>cold</td>
<td>39</td>
</tr>
<tr>
<td>headache</td>
<td>18</td>
</tr>
<tr>
<td>pregnancy examination</td>
<td>24</td>
</tr>
<tr>
<td>pain in chest</td>
<td>42</td>
</tr>
<tr>
<td>allergic skin reaction</td>
<td>27</td>
</tr>
<tr>
<td>wounds of skin</td>
<td>34</td>
</tr>
<tr>
<td>high blood pressure</td>
<td>33</td>
</tr>
<tr>
<td>surgical aftercare</td>
<td>38</td>
</tr>
<tr>
<td>weight gain</td>
<td>18</td>
</tr>
<tr>
<td>vertigo-dizziness</td>
<td>24</td>
</tr>
<tr>
<td>problems of face or neck</td>
<td>42</td>
</tr>
<tr>
<td>earache</td>
<td>27</td>
</tr>
<tr>
<td>fever</td>
<td>27</td>
</tr>
<tr>
<td>gynecologic examination</td>
<td>-</td>
</tr>
<tr>
<td>shortness of breath</td>
<td>36</td>
</tr>
<tr>
<td>flu</td>
<td>25</td>
</tr>
</tbody>
</table>

^For all specialties, problems are listed from most to least frequently presented. In pediatrics, these problems account for over 67 percent of office visits, in family medicine, over 59 percent.
TEST OF HYPOTHESES

The level of significance established for this investigation is .05. This level was chosen because there are no gross departures from normality, homogeneity, and equal intervals which would necessitate a more conservative level. Also, a more conservative level would increase the probability of type II error or failure to reject the null when, in actuality, it is false. Because these relationships have not been investigated previously, a level of significance less conservative than .05 was avoided because the probability of rejecting the null when there are no differences would be greater, increasing the probability of serious decision errors.

Test of Hypotheses For Females

An ANOVA was computed to determine if age is related to preferences for the utilization of a primary care physician in the female subgroup. In order to use a parametric test such as ANOVA, three assumptions must be met -- assumption of normality, homogeneity of variance, and equal intervals of measure. For the first assumption, there is no reason to believe that the populations from which samples were drawn are not normally distributed, as a tally of the criterion measures indicates that the distribution is both homogeneous in form for three treatment populations, and not markedly peaked or flat. According to Lindquist, because the F distribution is so insensitive to the form of the distribution of criterion measures, tests to detect non-normality are unnecessary. For
the assumption, homogeneity of variance, inspection reveals that the variances for groups, which range from a minimum of 267.3 to 340.9 are the same within the bounds of random variation. Although Bartlett's test would be appropriate to test this assumption because groups have unequal n's, it was not necessary to compute. It is only necessary to compute this statistic when the treatment groups are quite small. And, in the present case, the smallest n for any treatment group, 13, is sufficiently large. Finally, potential violation of the assumption, equal intervals of measure, is of no concern because clearly, age is a ratio measure.

Table 13 is the analysis of variance (ANOVA) summary table computed to test for a relationship between age and preference for the utilization of a primary care physician for female respondents. A significant relationship between age and preference for the utilization of a primary care physician is revealed. Because the probability of obtaining a F value equal to 2.59 is .0375, less than the .05 level established for the study (∝ = .05), the null hypothesis that age makes no difference in the preferences of females for the utilization of a primary care physician may be rejected. Accordingly, the experimental hypothesis, that age is related to preferences for the utilization of a primary care physician, may be accepted because it has survived a chance of disconfirmation.
TABLE 13
ANALYSIS OF VARIANCE OF PREFERENCES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS BY AGE FOR FEMALES

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>4</td>
<td>3744.1273</td>
<td>936.0318</td>
<td>2.59*</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>237</td>
<td>85688.1701</td>
<td>361.5534</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>89432.2975</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* < .05

TABLE 14
MEANS AND STANDARD DEVIATIONS OF AGE FOR FEMALES BY PREFERENCES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS

<table>
<thead>
<tr>
<th>Preferences</th>
<th>Family Practitioners</th>
<th>Obstetrician-Gynecologists</th>
<th>General Internists</th>
<th>No Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Means</td>
<td>46.4</td>
<td>34.3</td>
<td>52.2</td>
<td>47</td>
</tr>
<tr>
<td>Group SD's</td>
<td>19.4281</td>
<td>16.3513</td>
<td>18.4652</td>
<td>17.8792</td>
</tr>
</tbody>
</table>

Table 14 depicts the relationship between age and preference for the utilization of a primary care physician for females alluded to previously. Females who prefer an
obstetrician-gynecologist were found to be the youngest in age, 34.3 years, followed by those who prefer a family practitioner, 46.4 years, and, finally, those who prefer a general internist, 52.2 years.

The Scheffe\(^8\) test for pairwise comparisons with unequal treatment group n's was applied to determine which group means were significantly different. For the contrast between the group means for those who prefer a general internist and those who prefer an obstetrician-gynecologist, an F value of 3.61 was obtained, exceeding the critical value of 2.67, \(df_1 = 3, df_2 = 237\). Additional pairwise comparisons revealed no significant differences between group means.

The relation between socioeconomic status and preference for the utilization of a primary care physician was tested by ANOVA. Inspection revealed that the samples did not depart from normality or homogeneity, two assumptions underlying ANOVA. Also, because socioeconomic status is a continuous variable with equal intervals, the third ANOVA assumption is satisfied.

Table 15 is the ANOVA summary table for female respondents computed to test for a relationship between socioeconomic status and preference for the utilization of a primary care physician. No relationship between socioeconomic status and preference for the utilization of a primary care physician
is revealed, as the probability of obtaining a F value equal to 1.28 is .2766, exceeding the established level for \( \alpha \) of .05. Therefore, the null hypothesis, that there is no relationship between socioeconomic status and preference for the utilization of a primary care physician, cannot be rejected.

**TABLE 15**

**ANALYSIS OF VARIANCE OF PREFERENCES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS BY SOCIOECONOMIC STATUS FOR FEMALES**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>4</td>
<td>24.1659</td>
<td>6.0414</td>
<td>1.28 (N.S.)</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>237</td>
<td>1114.3671</td>
<td>4.7019</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>1138.5330</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 16, which also refers to female respondents, is a bivariate table of race by preference for the utilization of a primary care physician. From the distribution appearing in Table 4, a value of 2.1289 was obtained for chi-square. Because this did not exceed the critical value for chi-square, 5.99 (d.f. = 2, \( \alpha \) = .05), the null hypothesis, that there is no relationship between race and preference for the utilization of a primary care physician, cannot be rejected.
TABLE 16

RELATION BETWEEN RACE AND PREFERENCES OF FEMALES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS

<table>
<thead>
<tr>
<th>Race</th>
<th>Preferences*</th>
<th>Family Practitioners</th>
<th>Obstetrician-Gynecologists or General Internists*</th>
<th>No Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>152</td>
<td>47</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Nonwhite</td>
<td>21</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

*Two groups of subjects, those preferring a general internist and obstetrician-gynecologist are combined in the table. According to Cochran, groups should be combined so that not more than 1 cell in 5 has an expected value less than 5. If these two groups were not combined, the expected values would be too low to yield a quantity whose distribution approximates the chi-square distribution.

Tests of Hypotheses For Males

To examine the association between preference for the utilization of primary care physicians and the independent variables, socio-economic status and age, two one-way ANOVA's were computed. For both analyses, there is no reason to believe that the populations which were sampled are not normally distributed, thus, the assumption of normality is satisfied. Also, variances of groups in both analyses were roughly equivalent; therefore, the assumption homogeneity of variance is not violated. Finally, the assumption, equal intervals of measurement, is satisfied because intervals
between consecutive values are equal for the independent variables.

Table 17 is the ANOVA summary table for male respondents computed to test for a relationship between age and preference for the utilization of a primary care physician. No relationship between age and preference for the utilization of a primary care physician is revealed, as the probability of obtaining a F value equal to 1.04 is .3807, exceeding the established level for α of .05. Therefore, the null hypothesis, that there is no relationship between age and preference for the utilization of a primary care physician, cannot be rejected.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>3</td>
<td>1188.6643</td>
<td>396.2214</td>
<td>1.04 (N.S.)</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>63</td>
<td>31654.3242</td>
<td>381.3774</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>32842.9885</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 13 is the ANOVA summary table for male respondents computed to test for a relationship between socioeconomic status and preference for the utilization of a primary care physician. No relationship between socioeconomic status and preference for the utilization of a primary care physician is revealed, as the probability of obtaining a F value equal to 2.30 is .0824, exceeding the established level for F of .05. Therefore, the null hypothesis, that there is no relationship between socioeconomic status and preference for the utilization of a primary care physician, cannot be rejected.

### Table 13

**ANALYSIS OF VARIANCE OF PREFERENCES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS BY SOCIOECONOMIC STATUS FOR MALE RESPONDENTS**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>3</td>
<td>27.0439</td>
<td>9.0146</td>
<td>2.30 (N.S.)</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>83</td>
<td>325.8755</td>
<td>3.9262</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>86</td>
<td>352.9195</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 19, which also refers to male respondents, is a bivariate table of race by preference for the utilization of a primary care physician. From the distribution appearing in Table 19, a value of .183 was obtained for chi-square. Because this did not exceed the critical value of 3.84 (d.f. = 4, \(\alpha = .05\)), the null hypothesis, that there is no relationship between race and preference for the utilization of a primary care physician, cannot be rejected. A correction for continuity, Yates' correction, was used because the expected value for one cell is less than 5, as recommended by Cochran.

TABLE 19
RELATION BETWEEN RACE AND PREFERENCES OF MALES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS

<table>
<thead>
<tr>
<th>Race</th>
<th>Preferences</th>
<th>General</th>
<th>Internist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>62</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Nonwhite</td>
<td>10</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Tests of Hypotheses for Parents

For the final subgroup, parents, ANOVA's were used to test for relationships between the independent and dependent variables. Because notable departures from normality, homogeneity, or equal intervals were not apparent, a parametric statistic such as ANOVA was deemed appropriate.
Table 20 is the ANOVA summary table for parent respondents, computed to test for a relationship between preferences of parents for utilization of primary care physicians for their children's medical care needs and age. No relationship between age and preference for the utilization of a primary care physician is revealed, as the probability of obtaining a $F$ value equal to 1.64 is .1863, exceeding the established level for $\alpha$ of .05. Accordingly, the null hypothesis, that there is no relationship between the age of parents and preferences for the utilization of primary care physicians for their children's medical care, cannot be rejected.

**Table 20**

**ANALYSIS OF VARIANCE OF PREFERENCES OF PARENTS FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS FOR THEIR CHILDREN'S MEDICAL CARE NEEDS BY AGE**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>3</td>
<td>320.9073</td>
<td>106.9691</td>
<td>1.64 (N.S.)</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>78</td>
<td>5099.8731</td>
<td>65.3829</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>5420.7804</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21 is an ANOVA summary table for parent respondents indicating that there is no relationship between preferences of parents for the utilization of primary care physicians for their children's medical care and socioeconomic status. Because the probability of obtaining a $F$ value equal to .08
is .9632, exceeding the established level of .05 for $\chi^2$, no association between the foregoing variables is revealed. The null hypothesis, then, that there is no relationship between preferences of parents for the utilization of primary care physicians for their children's medical care needs and socio-economic status, cannot be rejected.

TABLE 21
ANALYSIS OF VARIANCE OF PREFERENCES OF PARENTS FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS FOR THEIR CHILDREN'S MEDICAL CARE NEEDS BY SOCIOECONOMIC STATUS

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (model)</td>
<td>3</td>
<td>.7189</td>
<td>.2396</td>
<td>.08  (N.S.)</td>
</tr>
<tr>
<td>S/A (error)</td>
<td>78</td>
<td>221.8786</td>
<td>2.8445</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>222.5975</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 22 is a bivariate table of race by parents' preferences for the utilization of primary care physicians for their children's medical care needs. A value of .364 was obtained for chi-square based upon the distribution appearing in Table 20. Since this did not exceed the critical value for chi-square of 5.99 (d.f. = 2, $\chi^2 = .05$), the null hypothesis, that there is no relationship between the preferences of parents for the utilization of primary care physicians for their children's medical care needs and race, cannot be
rejected. As with a previous analysis, Yates' correction for continuity was employed because of a small expected frequency.

### TABLE 22

RELATION BETWEEN RACE AND PREFERENCES OF PARENTS' FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS FOR THEIR CHILDRENS' MEDICAL CARE NEEDS

<table>
<thead>
<tr>
<th>Race</th>
<th>Family Practitioner</th>
<th>Pediatrician</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>26</td>
<td>45</td>
</tr>
<tr>
<td>Nonwhite</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

**Discriminant Analysis Results**

Discriminant analyses were computed for each group — males, females, and parents — to determine if the three groups are significantly different and if so, which variables account most for intergroup differences. That is, to determine the relative importance of each characteristic (age, race, and socioeconomic status) insofar as discriminating the type of primary care practitioners subjects prefer to utilize.

The first step in the analysis is the computation of group averages and mean square deviations of group values from
each group's average (the within group dispersion). Tables 23, 24, and 25 summarize the computations for the tests of homogeneity of within covariances matrices. It is seen that the dispersions, as represented by the natural logarithm of determinant values are small. The results of the tests of significance in each case indicate that the criterion groups may be considered equal in homogeneity.

TABLE 23

WITHIN COVARIANCE MATRIX INFORMATION
FOR MALES

<table>
<thead>
<tr>
<th>Preference</th>
<th>Covariance Matrix Rank</th>
<th>Natural Log of Determinant of the Covariance Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Practitioner</td>
<td>3</td>
<td>5.2956</td>
</tr>
<tr>
<td>General Internist</td>
<td>3</td>
<td>4.8430</td>
</tr>
<tr>
<td>Pooled</td>
<td>3</td>
<td>5.2804</td>
</tr>
</tbody>
</table>

Under Null hypothesis: $-2 \rho \ln \left( \frac{N^{PN/2} \chi^2}{TT N (I)^{PN(I)/2}} \right)$ is distributed approximately as chi-square (DF)

Test chi-square value = 3.7944 with 6 DF, Probability > chi-square = 0.7045. Since the chi-square value is not significant at .1000 level, a pooled covariance matrix was used in the discriminant function.*


a Test of Homogeneity of Within Covariances Matrices
### TABLE 24

**WITHIN COVARIANCE MATRIX INFORMATION FOR PARENTS**

<table>
<thead>
<tr>
<th>Preference</th>
<th>Covariance Matrix Rank</th>
<th>Natural Log of Determinant of the Covariance Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Preference</td>
<td>1</td>
<td>4.85</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>3</td>
<td>3.21</td>
</tr>
<tr>
<td>General Pediatrician</td>
<td>3</td>
<td>2.28</td>
</tr>
<tr>
<td>Pooled</td>
<td>3</td>
<td>2.73</td>
</tr>
</tbody>
</table>

Under Null Hypothesis: \( -2 \times \text{RHO} \times \text{LN} \left( \frac{N^{PN/2} V}{TT N(I)^{PN(I)/2}} \right) \) is distributed approximately as chi-square (DF).

Test chi-square value = 2.2730 with 12 DF Probability > chi-square = .9989. Since the chi-square value is not significant at 0.10000, a pooled covariance matrix was used in the discriminant function.*


\(^{a}\) Test of Homogeneity of Within Covariances Matrices
**TABLE 25**

WITHIN COVARIANCE MATRIX INFORMATION FOR FEMALES

<table>
<thead>
<tr>
<th>Preference</th>
<th>Covariance Matrix Rank</th>
<th>Natural Log of Determinant of Covariance Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Preference</td>
<td>3</td>
<td>4.80</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>3</td>
<td>5.06</td>
</tr>
<tr>
<td>Obstetrician-Gynecologist</td>
<td>3</td>
<td>5.20</td>
</tr>
<tr>
<td>General Internist</td>
<td>3</td>
<td>5.13</td>
</tr>
<tr>
<td>Pooled</td>
<td>3</td>
<td>5.13</td>
</tr>
</tbody>
</table>

Under Null Hypothesis:\[^a^] -2 RHO LN \[
\frac{NP^{N/2}}{TT N(I)PN(I)/2}\] is distributed approximately as Chi-square (DF)

Test chi-square value = 12.5650 with 18 DF Probability > chi-square = 0.8167. Since the chi-square value was not significant at .1000 level, a pooled covariance matrix was used in the discriminant function.*


[^a^] Test of Homogeneity of Within Covariances Matrices
The next step is to compare this to the mean square deviations of the group averages from the overall average (the among-group dispersion). See tables 26, 27, and 28 for males, parents, and females respectively. If the latter is (large relative to the former) we say that the linear function used in these calculations separates the groups well. However, inspection reveals that for males and females, groups were not significantly different. Therefore, no significant discrimination was possible. For parents, however, groups were significantly different. The linearized discriminant function for parents is provided in table 29.

**TABLE 26**

**PAIRWISE SQUARED GENERALIZED DISTANCES BETWEEN GROUPS FOR MALES**

<table>
<thead>
<tr>
<th>From Preference</th>
<th>Generalized Squared Distance to Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>.3044</td>
</tr>
<tr>
<td>General Internist</td>
<td>.4961</td>
</tr>
</tbody>
</table>
TABLE 27
PAIRWISE SQUARED GENERALIZED DISTANCES BETWEEN GROUPS FOR PARENTS

<table>
<thead>
<tr>
<th>From Preference</th>
<th>Generalized Squared Distance From Preference</th>
<th>No Preference</th>
<th>Family Practitioner</th>
<th>General Pediatrician</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Preference</td>
<td>7.4026</td>
<td>2.3081</td>
<td>1.0914</td>
<td></td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>7.6564</td>
<td>2.0543</td>
<td>1.2132</td>
<td></td>
</tr>
<tr>
<td>General Pediatrician</td>
<td>7.5292</td>
<td>2.3026</td>
<td>0.9648</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 28
PAIRWISE SQUARED GENERALIZED DISTANCES BETWEEN GROUPS FOR FEMALES

<table>
<thead>
<tr>
<th>From Preference</th>
<th>Generalized Squared Distance to Preference</th>
<th>Obstetrician-Gynecologist</th>
<th>General Internist</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Preference</td>
<td>5.8397</td>
<td>.9366</td>
<td>5.8558</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>6.1249</td>
<td>.6514</td>
<td>5.7535</td>
</tr>
<tr>
<td>Obstetrician-Gynecologist</td>
<td>6.3923</td>
<td>1.1018</td>
<td>5.3032</td>
</tr>
<tr>
<td>General Internist</td>
<td>6.7901</td>
<td>0.9170</td>
<td>6.5526</td>
</tr>
</tbody>
</table>
Table 29 presents predicted preferences of parents for the utilization of primary care physicians for their children's medical care in comparison to actual preference. Eighty-one predictions were made, 48 were correct, an accuracy rate of 59 percent. Because variation in predicted preferences occurred, chi-square was computed to determine whether discrimination was significant. The number of cells with expected frequencies less than 5 exceeds that which is allowed; therefore, two groups, no preference and family practitioner, were combined resulting in a 2 x 2 table for

<table>
<thead>
<tr>
<th>Preference</th>
<th>No Preference</th>
<th>Family Practitioner</th>
<th>General Practitioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTANT</td>
<td>-16.0853</td>
<td>-14.9155</td>
<td>-12.2993</td>
</tr>
<tr>
<td>AGE</td>
<td>0.4833</td>
<td>0.5294</td>
<td>0.4675</td>
</tr>
<tr>
<td>RACE</td>
<td>4.1151</td>
<td>5.2961</td>
<td>5.1264</td>
</tr>
<tr>
<td>SES</td>
<td>1.7636</td>
<td>1.7347</td>
<td>1.7419</td>
</tr>
</tbody>
</table>
the chi-square computation. The value obtained for chi-square, .0383, does not exceed the critical value, 3.84, \( \alpha = .05, \) d.f. = 1. It was concluded, therefore, that the accuracy of predictions did not exceed chance expectations.

<table>
<thead>
<tr>
<th>Predicted Preference</th>
<th>Actual Preference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Preference</td>
<td>Family Practitioner</td>
</tr>
<tr>
<td>No Preference</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>General Pediatrician</td>
<td>2</td>
<td>26</td>
</tr>
</tbody>
</table>

Chi-square for 2 x 2 table = .0383

Where chi-square (0.05, 1) = 3.84

\[ a \] The two neighboring classes (Family Practitioner and No Preference) were combined because more than 1 cell had an expected value less than 5 in the 3 x 3 form. This is suggested by Lewis and Burke to obtain frequencies of reasonable size.

\[ b \] Because \( N > 40, \) and 1 expected value is less than 5, Yates Correction For Continuity was used, as recommended by Cochran.


4. Ibid.

5. Ibid.


CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

INTRODUCTION

The major findings of this investigation will be discussed in relation to the two research questions posed for the study. First, to what extent do health care consumers prefer to utilize general internists, family practitioners, general pediatricians, and obstetrician-gynecologists for their primary care needs? Second, are consumers' preferences for the utilization of primary care physicians related to race, socioeconomic status, or age? In addition, when relevant, the findings of this investigation will be compared to the findings of previous research by noting areas of agreement and, in the case of disagreement, through the analysis of potential explanations. Findings will also be discussed in relation to federal and state policy for the training of primary care practitioners.

The response rate for this investigation, 82.25 percent, is considered to be excellent by Babbie for survey research. Of those failing to respond, approximately half could not be reached after 3 attempts, and half preferred not to participate in the study. Although males are underrepresented in the sample, only 26.4 percent, according to Blackwell and Talarzyk, since females make the majority of families' decisions regarding...
the utilization of health care, overrepresentation of females in the sample may be desirable because the validity of results would be enhanced. With respect to age, a variable of interest in the proposed study, the average age of males, 50.6 years, is similar to the average age for females, 46.5 years. As expected, the average age for parents, 33.1 years, is less than either males or females. With respect to race, a second variable of interest in the investigation, the groups are relatively similar. For males, 86 percent were white; for females, 87 percent; and for parents, 90 percent. For socioeconomic status, although the 3 groups are relatively comparable as measured by income level, the means computed from group data appear slightly inflated. For males, the average household's income before taxes was $17,337 per year; for females, $16,780 per year; and for parents, $23,239 per year. As a possible explanation, when self-reporting is involved, respondents may have a tendency to overstate their income levels. Because there is no reason to believe that the overstaters were concentrated within any level for socioeconomic status, the findings of the study are not considered to be in jeopardy.

As discussed previously, nonrespondents fall into two basic categories -- those who could not be reached, and those who refused to participate. For the percentage which could not be reached, 9.25 percent, two factors are responsible.
The majority, 5.5 percent, could not be contacted on any of three attempts; and the remaining nonresponders, 3.75 percent, had disconnected numbers. It is assumed that not being able to reach a subject at home is a chance factor, and no bias is introduced. For those with disconnected numbers, a bias may be introduced if the subjects are characterized by a particular age, race, or socioeconomic status. No information was available on why subjects have their service disconnected. It cannot be determined, therefore, to what extent this is a bias. For the percentage refusing to participate, 8.5 percent, a bias could also be introduced if they were characterized by a given race, socioeconomic status, or age. Since most subjects, as reasons for declining to participate indicated that they were preparing a meal, eating, preparing to leave, or entertaining, it seems safe to assume that this is a chance occurrence, and that, therefore, a bias is not introduced.

DISCUSSION OF MAJOR HYPOTHESES FOR FEMALES

It was hypothesized that this study would reveal a relationship between age, an independent variable, and preference for the utilization of a primary care physician, the dependent variable. For the female subsample, although a relationship was revealed, it differs from that which was hypothesized for the investigation. It was hypothesized that younger subjects would have preferences for the utilization of general internists and obstetrician-gynecologists, while older subjects, preferences for the utilization of family practitioners. Instead,
the findings revealed that younger subjects have preferences for obstetrician-gynecologists, older subjects, preferences for general internists, and those in between, preferences for family practitioners. As a possible explanation, although preferences for the utilization of primary care physicians are clearly related to age, females of different ages probably have different medical care needs which, in part, determine preferences. For example, young women probably have greater needs for obstetrical and gynecological care, and older women, greater needs for care of problems involving the internal organs of the body. Preferences of females for the utilization of a primary care physician, in general, can be expected to vary from an obstetrician-gynecologist in the younger, child bearing years, a family practitioner in the middle years, and, finally, a general internist in the latter years when problems with the internal organs predominant.

It was hypothesized for females that low socioeconomic status would be associated with preferences for the utilization of family practitioners and high socioeconomic status with preferences for the utilization of general internists and obstetrician-gynecologists. The findings of this study, however, do not support the foregoing hypothesis as no relationship between preferences for the utilization of primary care practitioners and socioeconomic status was revealed. In light of previous research reported by Cahl, that families with lower incomes tend to utilize family practitioners, and those
with higher incomes, general internists, general pediatricians, and obstetrician-gynecologists, this finding appears incongruous. Based upon the present study, however, it may be concluded that although some females prefer an obstetrician-gynecologist, some a general internist, and some a family practitioner, preferences are not related to socioeconomic status as measured by income level.

Finally, for females it was hypothesized that white race would be associated with preferences for the utilization of general internists, and obstetrician-gynecologists, and nonwhite race with preferences for the utilization of family practitioners. A chi-square statistic was used to test for this relationship. The hypothesis tested by chi-square is that the observed frequencies in each category do not differ from the frequencies expected by chance alone. No relationship between race and preference for utilization was revealed by the analysis (see table 16). Thus, the null hypothesis that there is no relationship between race and preference for the utilization of a primary care physician cannot be rejected. That is, the findings of the investigation do not support the hypothesis that white race is associated with preferences for general internists, general pediatricians, and obstetrician-gynecologists, while nonwhite race, with preferences for the utilization of family practitioners. Notable, however, is the fact that the percentage of nonwhites having no preference for the utilization of a primary care physician, 9.67 percent, although not significantly different,
is almost twice that of whites, 4.78 percent. It appears, therefore, that interactions between whites and physicians may be more solid and continuous, whereas interactions between nonwhites and physicians, more tenuous and episodic. This finding is consistent with research by Riley, Willie, and Haggerty who reported from a utilization study that 79 percent of whites and 34 percent of nonwhites were considered continuity patients. Although statistical significance was not revealed in this area by the present study, further investigation seems warranted.

DISCUSSION OF MAJOR HYPOTHESES FOR MALES

For males, it was hypothesized that younger ages would be associated with preferences for the utilization of general internists and older ages with preferences for the utilization of family practitioners. This relationship was hypothesized because it was believed that older males, who are accustomed to yesterday's general practitioner which is often equated with today's family practitioner, would have preferences for family practitioners; and conversely, younger males, who are more accustomed to having their primary care needs met in part by general internists, would have preferences for general internists. This hypothesis, however, was not supported by the obtained results. It may be concluded, therefore, that for males, age is not associated with preferences for the utilization of primary care physicians.
For males, it was also hypothesized that there would be a relationship between socioeconomic status and preferences for the utilization of primary care physicians. More specifically, it was believed that males in lower socioeconomic status levels would have preferences for family practitioners and those in higher levels, general internists. Findings of the study, however, do not substantiate this relationship. Indeed, the findings disagree with those reported by Cahl who found that higher socioeconomic status families prefer general internists, obstetrician-gynecologists, and pediatricians, whereas lower socioeconomic status families, family practitioners. To summarize for males, the findings of the present study reveal no relationship between socioeconomic status and preference for the utilization of primary care physicians.

Finally, based upon two factors, it was hypothesized that for males, white race would be associated with preferences for the utilization of general internists, and nonwhite race, with preferences for the utilization of family practitioners. First, because general internists are concentrated in the more affluent, predominantly white suburbs, it was believed that whites would be more accustomed to general internists than nonwhites. Second, because nonwhites occupy lower socioeconomic levels than whites, it is logical to expect, based upon a study by Cahl, that they would have greater preferences for family practitioners than nonwhites. No relationship between race and preferences for the utilization of primary
care physicians was revealed, however. It may be concluded, therefore, that despite the geographic maldistribution of physicians, and differences in socioeconomic status between whites and nonwhites, there is no relationship between race and preferences for the utilization of primary care physicians.

DISCUSSION OF MAJOR HYPOTHESES FOR PARENTS

It was hypothesized for parents that for their children's medical care, younger ages would be associated with preferences for the utilization of pediatricians and older ages with preferences for the utilization of family practitioners. As alluded to previously, this hypothesis seemed plausible because older parents are probably more accustomed to family practitioners, whereas younger parents, pediatricians. However, no relationship between age and preferences for the utilization of primary care physicians was revealed by the study. It can be concluded, then, that for their children's medical care, parents' ages are not related to preferences for the utilization of primary care physicians.

Also, it was hypothesized that for their children's medical care, high socioeconomic status parents would prefer a pediatrician, whereas as low socioeconomic status parents, a family practitioner. However, the study revealed that for parents, socioeconomic status is not related to preferences for the utilization of primary care physicians. This finding is notable because it is incongruent with present utilization patterns reported by Miller -- that high income children are
4.5 times more likely to visit a pediatrician than low income children. This finding seems to indicate that preferences of parents for the utilization of primary care physicians for their children's medical care are not related to actual utilization patterns. As a consequence, then, it may be misleading to employ utilization patterns as a basis for making inferences about preferences for the utilization of primary care physicians. More specifically, although high socioeconomic level children are more apt to visit a pediatrician, high socioeconomic parents are not more likely to prefer a pediatrician for their children's medical care needs.

Finally, for parents it was hypothesized that for their children's medical care, white race would be associated with preferences for the utilization of pediatricians and nonwhite race with preferences for the utilization of family practitioners. As alluded to previously, the aforementioned hypothesis seemed plausible because many pediatricians are located in predominately white suburbs, and white parents are accustomed to them. In addition, nonwhite parents, who are lower than whites in socioeconomic status, are more apt to utilize a family practitioner. No relationship between race and socioeconomic status was revealed by the study, however. It seems reasonable to conclude, then, that preferences of parents for the utilization of primary care physicians for their children's medical care are not related to race.
DISCUSSION OF FINDINGS ACROSS THE THREE GROUPS

In relation to the first research question, to what extent do consumers prefer to utilize general internists, general pediatricians, obstetrician-gynecologists, and family practitioners, the findings reveal that consumer preferences for the utilization of primary care physicians' are most diverse for parents, less so for females, and, finally, least for males. Of particular interest are the following findings: (1) only 35.0 percent of parents preferred a family practitioner for their children's medical care needs, 61.0 percent preferred a general pediatrician; (2) 71.9 percent of female respondents preferred a family practitioner, 15.2 percent a general internist, and 7.2 percent an obstetrician-gynecologist; (3) 85.0 percent of male respondents preferred a family practitioner, 15.0 percent a general internist. Although these findings differ from the findings of McKenna and Wacker who report that only 20 percent of families prefer family practitioners, while 80 percent prefer a combination of general internists, obstetrician-gynecologists or general pediatricians, they support the contention advanced by McKenna and Wacker that a notable portion of health care consumers have greater preferences for obstetrician-gynecologists, general internists, and general pediatricians than family practitioners. This discrepancy, a difference in
the magnitude of consumers' preferences for general internists, obstetrician-gynecologists, and general pediatricians, is probably due to the fact that McKenna and Wacker studied a small, homogeneous population, university employees who were members of a health maintenance organization. Had their sample been more heterogeneous with respect to income, occupation, and geographic area, it is likely that their results would approach those of the present study in similarity.

Also, preferences for the utilization of primary care physicians in the study by McKenna and Wacker were inferred from utilization rates in a free-choice, prepaid, setting. Therefore, the results of the present study may be more accurate because a direct rather than indirect method was employed to measure consumers' preferences. Nevertheless, the results of the present study, although less significant or dramatic than McKenna's and Wacker's suggest that a majority of parents, 61 percent, prefer to utilize a general pediatrician to a family practitioner for their children's medical care needs. Conversely, a majority of females, 71.9 percent, preferred a family practitioner to a general internist or obstetrician-gynecologist; and a majority of males, 85.0 percent, preferred a family practitioner to a general internist.
UNEXPECTED FINDINGS

In the preceding sections, major and minor findings were discussed in relation to the research questions posited for the investigation. The purpose of this section, however, is to discuss findings, which although unexpected, are of interest.

An interesting outcome is the identification of problems for which a large percentage of males, 90 percent or more, prefer to utilize a family practitioner.

These include:

1. problems of the back region;
2. cough;
3. cold;
4. abdominal pain;
5. wounds of the skin; and
6. fever.

Although only 71.9 percent of the females studied in the investigation preferred a family practitioner, for some problems 80 percent or more preferred to utilize a family practitioner. Included are the following problems:

1. throat soreness;
2. cold;
3. wounds of the skin;
4. fever; and
5. flu.
Conversely, although many women studied in the investigation preferred a family practitioner to the obstetrician-gynecologist, 71.9 percent, for problems related to the female reproductive system, many preferred an obstetrician-gynecologist. For the following problems, at least 49 percent of the women studied preferred a obstetrician-gynecologist:

1. pregnancy examination;
2. gynecologic examination;
3. vaginal discharge;
4. menstrual disorders;
5. vaginal disorders;
6. vulvar disorders;
7. symptoms referable to the female reproductive system;
8. visits for planning services; and
9. menopause symptoms.

Many parents studied in the investigation, 61.0 percent, preferred to utilize a general pediatrician for their child's medical care rather than a family practitioner. For selected problems, however, at least 70 percent of those studied preferred a general pediatrician. Included are the following problems:

1. well baby examinations;
2. fever;
3. visits for medication;
4. throat soreness;
5. allergic skin reactions;
6. abdominal pain;
7. problems of the lower extremity;
8. general physical examinations;
9. headache;
10. weight gain;
11. dizziness;
12. earache; and
13. flu.

Discriminant analysis, a multiple regression technique, was used to find a combination of the independent variables that would enable prediction of a respondent's preference for the utilization of a primary care physician. Levels of the predictor variables, which are sometimes termed "discriminants", are combined linearly in the analysis to predict the criterion variable. The result, therefore, is a prediction of each respondent's preference for the utilization of a primary care physician based upon race, socioeconomic status, and age. For parents, 48 predictions out of 81 were correct, an accuracy rate of 59 percent. In discriminant analysis, regarding percent accuracy achieved, no acceptable or unacceptable limits have been established. However, the researcher may compare the percent accuracy achieved with that which would
be expected by chance alone. For parents, based upon preferences as actually measured, it was expected that 62 percent would be accurate by chance alone, in actuality, 60 percent were accurate.

For the parents subsample, the discriminant analysis resulted in 33 misclassifications, an error rate of 40 percent. Five misclassifications occurred when predicted preference was a general pediatrician and actual preference, a family practitioner; 26 misclassifications occurred when predicted preference was a family practitioner, and actual preference, a general pediatrician; and, finally, 2 misclassifications occurred when no preference was predicted, and actual preference was a general pediatrician. Again, based upon previous studies, one by Cahl, and the other by Diesher, Engel, and Spielholz, two extraneous variables may have contributed to the misclassifications -- prior experiences with primary care practitioners, and place of residence.

CONSUMER PREFERENCES FOR THE UTILIZATION OF PRIMARY CARE PHYSICIANS AND FEDERAL AND STATE POLICY

This study revealed that a high percentage of both males and females prefer a family physician to other primary care practitioners, while a high percentage of parents prefer a general pediatrician to a family physician. More specifically,
the following findings are revealed:

1. a high percentage of males, 85 percent, prefer a family practitioner to a general internist;
2. a high percentage of females, 71.9 percent, prefer a family practitioner to a general internist or obstetrician-gynecologist; and conversely,
3. a high percentage of parents, 61 percent, prefer a general pediatrician to a family practitioner for their children's physician care.

As a preface to the analysis of federal and state policy related to the training of primary care physicians, the actual supply of physicians for each specialty may be compared to consumer preferences for utilization. Table 31 indicates for males, the ratio who prefer a family practitioner to a general internist, .85 to .15, and the actual ratio of family practitioners to general internists, .52 to .48. Similarly, for females, the ratio who actually prefer a family practitioner to either a general internist or obstetrician-gynecologist, .72 to .15 to .07, may be compared to the actual ratio of family practitioners to general internists to obstetrician-gynecologists, .43 to .40 to .17. Finally, for parents, the ratio who prefer a family practitioner to a general pediatrician, .35 to .61, may be compared to the actual ratio of family practitioners to general pediatricians, .73 to .27.
### Table 3.1

**Ratios of Preferences for the Utilization of Primary Care Physicians and Ratios of the Actual Supply of Primary Care Physicians**

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Males Preferences</th>
<th>Males Supply</th>
<th>Females Preferences</th>
<th>Females Supply</th>
<th>Parents Preferences</th>
<th>Parents Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Practitioner</td>
<td>0.85</td>
<td>0.52</td>
<td>0.72</td>
<td>0.43</td>
<td>0.35</td>
<td>0.73</td>
</tr>
<tr>
<td>General Internist</td>
<td>0.15</td>
<td>0.48</td>
<td>0.15</td>
<td>0.40</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Obstetrician-Gynecologist</td>
<td>-</td>
<td>-</td>
<td>0.07</td>
<td>0.17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General Pediatrician</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.61</td>
<td>0.27</td>
</tr>
<tr>
<td>No Preference</td>
<td>-</td>
<td>-</td>
<td>0.06</td>
<td>-</td>
<td>0.04</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

As a result of this investigation, one cannot make categorical statements regarding public preferences for the utilization of primary care physicians. Indeed, to do so would surely result in inaccuracies and, ultimately, increased confusion. Rather, any statements which are made regarding consumer preferences for the utilization of primary care physicians should be made for subpopulations only -- males, females, or parents. Perhaps this is where previous investigators have erred by utilizing simplistic methodologies which were insensitive to the distinction between the preferences of males, females, and parents for the utilization of primary care physicians. Therefore, in the analysis of federal and state policy which follows, consistencies or inconsistencies with consumer preferences for the utilization of primary care physicians will be discussed for subpopulations rather than the overall general population.

The 1971 passage of the Comprehensive Health Manpower Training Act marked the beginning of federal intervention in the training of physicians. The primary purpose of this bill was to increase the number of students enrolled in health professional schools. It did not recognize, however, specialty maldistribution of physicians.

Between 1971 and 1974, the general public, as well as medical educators, became more concerned about the perceived shortage of primary care physicians and less concerned with the overall physician shortage. As a result, the Health Professions Educational Assistance Act of 1976 was
enacted. In testimony before the subcommittee originally drafting the bill, the Subcommittee on Health of the Committee on Labor and Public Welfare, testimony given by William H. Luginbuhl, Dean, University of Vermont, College of Medicine underscores this concern.

"The problem of specialty distribution is one of inadequate numbers of physicians in primary care -- particularly in family practice, and too many in some specialty areas -- notably surgery." Also testifying before the committee, Dick Clark, U.S. Senator from the state of Iowa, described 3 manpower problems: (1) an overall shortage of doctors; (2) geographical disparity in the distribution of doctors and related health personnel; and (3) a marked imbalance between the number of primary care physicians and specialists. In addition, testimony was also given by eminent leaders in the field -- the Acting Administrator of the Health Services Administration, the President of the American Board of Medical Specialties, and numerous representatives of medical schools and health related organizations.

As a result of this testimony, Public Law 94-484, the Health Professions Education Assistance Act of 1976 has, as a major focus, provisions which will result in the increased production of primary care practitioners. As a condition to the provision of capitation support, the following stipulation was set forth: Medical schools and their affiliated programs must have 35 percent, 40 percent, and 50 percent of their residency positions in fiscal 1978, 1979, and 1980, respectively in three primary care specialties --
general internal medicine, general pediatrics, and family medicine. In addition, the development of family medicine was given special consideration, a policy which appears to be consistent with preferences of males and females for the utilization of primary care physicians, revealed in the present study. Four provisions of the bill which relate to the training of more family practitioners are as follows:

1. A section on health manpower allocates, for departments of family medicine, 10 million dollars in 1978, 15 million dollars in 1979, and 20 million dollars in 1980.


3. A section on Area Health Education Centers (AHEC's) which have pre- and post-doctoral training in family medicine as a primary component allocates 20 million dollars for 1978, 30 million dollars for 1979, and 40 million dollars for 1980.

4. A section on special projects which originally authorized grants for pre- and post-doctoral training in primary care is now replaced by pre-doctoral training in family medicine and faculty development.
Based upon the present study, it appears that public policy embraced by P. L. 94-484 is consistent with consumer preferences for the utilization of primary care physicians. However, given the discrepancy between actual supply of primary care physicians and consumer utilization preferences as revealed in the present study, additional provisions which would result in the increased production of family practitioners seems warranted. For example, as a condition to the provision of capitation support it would appear reasonable to require Medical Schools to have a specified percentage of residencies in university and affiliated hospitals in family medicine. At present, it is conceivable that Medical Schools could meet capitation requirements by having a sufficient number of residencies in two specialties only - general internal medicine and general pediatrics - and none in family medicine.

Public law 94-484 also appears consistent with the discrepancy between consumer preferences for the utilization of obstetricians-gynecologists and actual supply as revealed in the present study. As alluded to previously, although P.L. 94-484 is designed to increase the proportion of primary care physicians, it will not result in more obstetrician-gynecologists. Because the present study revealed that the percentage of women preferring an obstetrician-gynecologist is smaller than the proportion of primary care physicians who are obstetrician-gynecologists, increased production would be unwarranted.
At the state level, public policy related to the training of family physicians is determined primarily by the Master Plan for Higher Education. In the area of primary care education, two recommendations are set forth for state supported medical schools. First, it recommends the establishment of primary care residency programs throughout Ohio, partially supported by state funds. And, secondly, the increased emphasis on primary care education in medical schools, and categorical support of family practice programs with an increase in funds over the next two biennia. This policy appears to be consistent with preferences of both males and females for the utilization of family practitioners, and, the actual supply of family practitioners in comparison to other primary care specialists.

Based upon the results of the present study, it would appear that in relation to family medicine training more extreme recommendations seem warranted. Although the plan recognizes both a shortage of primary care practitioners and, also a shortage of family practitioners in Ohio, as a recommendation, the establishment of state supported residencies in primary care, does not suffice. Based upon the present study, it would seem more appropriate to recommend the establishment of state supported residencies in primary care, with a given proportion in the specialty of family medicine.
Finally, at the state level, policy related to the training of primary care physicians is also determined by legislation of the Ohio General Assembly. In 1973, support for the expansion of family medicine training was given impetus by the passage of House Bill 474. State supported medical schools are required by the legislation to have a department of family medicine, and, also, to offer family practice residency programs. It may be concluded, therefore, that state policy, which will result in increased training of family practitioners is consistent with preferences of males and females for the utilization of family practitioners.

In light of consumer preferences for the utilization of primary care physicians and the recognized shortage of primary care physicians, H.B. 474 appears, without question, deficient. Instead of requiring state supported medical schools to offer family medicine residencies, it appears more reasonable to require state supported schools to offer specified percentages of primary care and family medicine residencies. Such a measure would provide greater impetus for the expansion of training in these areas. Because residents are likely to practice in areas where they obtain their training, the shortages of family practitioners, and primary care physicians would be eased. Also, with increased student interest in primary care careers, it seems likely that a high percentage of the residencies could be filled.
EFFICIENCY OF METHODOLOGY

So that future investigators may benefit from this study, strengths and weaknesses which are methodologically related are brought to the attention of the reader in the following:

Measuring Procedure: The system employed for this investigation (classification, or as some prefer, enumeration), worked very well. In order to maximize the accuracy or efficiency of this method, researchers should pay particular attention to the two critical properties -- mutual exclusiveness, and exhaustiveness. Also, careful specification of the classification rules is a must.

Telephone Interviews: As a survey technique, the biggest benefit or advantage over alternative techniques, such as mail surveys, is that a very high response rate can be achieved. Good cooperation can be expected from respondents, if the subject is generally of concern. However, telephone interviewing is a laborious process requiring considerably more effort on the part of the investigator than mail surveys.

Multiple Matrix Sampling: This technique is invaluable for situations in which a large number of items must be administered to a large number of subjects. In essence, it is unnecessary to give all items to all subjects if items and subjects are sampled randomly. Had the tool not been avail-
able to the investigator, the enormity of the procedures necessary to address the present problem, would have precluded investigation.

Discriminant Analysis: This was not a useful technique in the present study. Had the characteristics of race, socio-economic status and age been more closely associated with preferences for the utilization of primary care physicians, subjects preferences could have been predicted more accurately.

RECOMMENDATIONS FOR FUTURE STUDIES

1. Consumer preferences for the utilization of primary care physicians should be measured directly in randomly selected samples which are representative of large populations.

2. The exploration of potential relationships between consumers' preferences for the utilization of primary care physicians and two variables seem warranted: place of residence (rural or urban); and prior associations with primary care practitioners.

3. A more extensive study of consumers' preferences for the utilization of primary care physicians is needed. Because the results of the present study could be generalized to a limited population only, a study of the entire United States population is needed. Based upon the present study, it would appear to be both affordable and feasible, as well as enlightening.
4. Continuity, or perhaps more appropriately, lack of continuity in health care utilization should be the focus of future studies. Findings of this investigation suggest that nonwhites may be more indifferent to the utilization of health care resources than whites.
FOOTNOTES


5 Mac F. Cahl, op. cit.


7 Mac F. Cahl, op. cit.


9 Mac F. Cahl, op. cit.


11 Ibid.

12 Ibid.


15 Ibid.

16 The Ohio Board of Regents, Higher Education in Ohio, Master Plan: 1976, Columbus, Ohio, 1977.

17 David Rader, "Roundup of Medical-Health Legislation in the Ohio General Assembly," The Ohio State Medical Journal, Vol. 69, No. 11, p. 846.

18 Mac F. Cahl, op. cit.


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BOOKS


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Appendix A
Situational Questions

General Internal Medicine

1. Suppose you wanted to have a general physical examination. What kind of doctor would you prefer to see?
2. Suppose one day suddenly a pain developed in your chest and although you thought it was nothing serious, you wanted to be examined by a doctor. What kind of doctor would you prefer to see?
3. Suppose you had a pain in your leg and although you thought it was nothing serious, you wanted to be examined by a doctor. What kind would you prefer to see?
4. Suppose over a period of time you felt tired for no apparent reason, and, therefore, you wanted to see a doctor. What kind would you prefer to see?
5. Suppose you had a pain in your side near your stomach and you wanted to be examined by a doctor. What kind would you prefer to see?
6. Suppose you developed a serious disease like high blood pressure which can be controlled by a doctor. What kind of doctor would you prefer to see?
7. Suppose you had a pain in your lower back and you wanted to be examined by a doctor. What kind of doctor would you prefer to see?
8. Suppose you developed a cough and although you thought it was nothing serious you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

9. Suppose you had a pain in your arm and although you thought it was nothing serious you wanted to see a doctor. What kind would you prefer to see?

10. Suppose you were having periods of dizziness and you, therefore, wanted to be examined by a doctor. What kind of doctor would you prefer to see?

11. Suppose for no apparent reason you developed shortness of breath and, therefore, you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

12. Suppose you were having headaches and you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

13. Suppose you had what you thought was a simple sore throat but you wanted to be examined by a doctor just in case. What kind of doctor would you prefer to see?

14. Suppose you had a continuous feeling of thirst that you could not account for by fluid intake or exercise. What kind of doctor would you prefer to see for this problem?

15. Suppose you had a simple cold and you wanted to be treated by a doctor. What kind of doctor would you prefer to see?

16. Suppose you had an allergy, and you wanted a medication which would help to control your symptoms. What kind of doctor would you prefer to see?
17. Suppose you were nervous and you wanted to see a sympathetic, understanding, and competent doctor who could help you with your problem. What kind of doctor would you prefer to see?

18. Suppose you had a swollen face and you wanted to be examined by a doctor. What kind of doctor would you prefer?

19. Suppose you had an allergic skin reaction and you wanted to be treated by a doctor. What kind would you prefer to see?

20. Suppose you had a problem involving your heart and you, therefore, wanted the best treatment available. What kind of doctor would you prefer to see?

Pediatrics

1. Suppose you had to take your small child in for a routine examination. What kind of doctor would you prefer?

2. Suppose you had to take your child to a doctor for well baby examination and you wanted the best care available. What kind of doctor would you prefer?

3. Suppose your child had a cough and although you thought it was nothing serious you wanted him to be examined by a doctor just in case. What kind of doctor would you prefer?

4. Suppose your child had a fever, you were very concerned, and you wanted him to be examined by a doctor. What kind of doctor would you prefer?
5. Suppose your child had a problem which was nothing serious, but you wanted a medication from a doctor. What kind would you prefer?

6. Suppose your child had a sore throat and although you thought it was nothing serious you wanted him to be examined by a doctor. What kind of doctor would you prefer?

7. Suppose your child had an earache and you wanted him to be examined by a doctor. What kind would you prefer?

8. Suppose your child had an allergic skin reaction and you wanted him to be examined by a doctor. What kind would you prefer?

9. Suppose your child had a simple cold and you wanted him to be treated by a doctor. What kind would you prefer?

10. Suppose your child was required to have a physical examination for school. What kind of doctor would you prefer?

11. Suppose your child had a stomach-ache and you wanted him to be examined by a doctor. What kind of doctor would you prefer?

12. Suppose your child had a cut on his leg from falling off a bike and you wanted to have him examined by a doctor. What kind of doctor would you prefer?

13. Suppose your child had nausea, was vomiting and you wanted him to be examined by a doctor. What kind of doctor would you prefer?
14. Suppose your child complained about a pain in his leg and you, therefore, wanted him to be examined by a doctor. What kind would you prefer?

Obstetrics-Gynecology

1. Suppose you were pregnant and you had to see a doctor for a routine examination. What kind of doctor would you prefer to see?

2. Suppose you wanted to see a doctor for a gynecological examination. What kind would you prefer to see?

3. Suppose you had a vaginal discharge and you wanted to be examined by a doctor. What kind would you prefer?

4. Suppose after having a child, you had to be examined periodically by a doctor. What kind would you prefer?

5. Suppose you had a menstrual problem and you wanted to see a doctor. What kind would you prefer?

6. Suppose you had a pain in your stomach, and although you thought it was nothing serious you wanted to be examined by a doctor. What kind would you prefer to see?

7. Suppose you had a vaginal problem and you wanted to be treated by a doctor. What kind would you prefer to see?

8. Suppose you had a vulvar problem and you wanted to be treated by a doctor. What kind would you prefer to see?

9. Suppose you had a pain in the area of your ovaries and you wanted to be examined by a doctor. What kind would you prefer to see?
10. Suppose you wanted to talk with a doctor about family planning. What kind would you prefer to see?

11. Suppose you had pain in your pelvis and you were unsure of what it could be caused by. What kind of doctor would you prefer to see?

12. Suppose you wanted to obtain a medication for birth control from a doctor. What kind of doctor would you prefer to see?

13. Suppose you had no problems, complaints, or symptoms, but you wanted to see a doctor just in case. What kind of doctor would you prefer to see?

14. Suppose you wanted to see a doctor about family planning services. What kind would you prefer to see?

15. Suppose you had symptoms of menopause and you wanted to be treated by a doctor. What kind would you prefer to see?

Family Medicine

1. Suppose you were required for a job to have a physical examination. What kind of doctor would you prefer to see?

2. Suppose you had a back problem and you wanted to be examined by a physician. What kind of doctor would you prefer to see?

3. Suppose you had a sore throat, and, although you thought it was nothing serious, you wanted to be examined by a doctor. What kind of doctor would you prefer to see?
4. Suppose you had a pain in your leg and although you thought it was nothing serious you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

5. Suppose you had a pain in your stomach and, although you thought it was nothing serious, you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

6. Suppose you had a pain in your arm, and, although you thought it was nothing serious you wanted to be examined by a doctor. What kind would you prefer to see?

7. Suppose you had a cough and you wanted to be examined by a doctor. What kind would you prefer to see?

8. Suppose you had an allergy and you wanted to obtain a medication from a doctor. What kind would you prefer to see?

9. Suppose you were feeling tired for no apparent reason and you wanted to be examined by a doctor. What kind would you prefer?

10. Suppose you had a cold and you wanted to be examined by a doctor. What kind would you prefer to see?

11. Suppose you had a headache and you wanted to be examined by a doctor. What kind would you prefer?

12. Suppose you were pregnant and you wanted to be examined by a doctor. What kind would you prefer?

13. Suppose you had a pain in your chest and you wanted to be examined by a doctor. What kind would you prefer?
14. Suppose you had an allergic skin reaction and you wanted to be examined by a doctor. What kind would you prefer?

15. Suppose you cut your hand with a knife and you wanted to have it examined by a doctor. What kind would you prefer to see?

16. Suppose you had a serious disease like high blood pressure and you had to be treated by a doctor. What kind would you prefer?

17. Suppose you had surgery for a hernia, and afterwards you had to see a doctor periodically. What kind of doctor would you prefer to see?

18. Suppose you were gaining weight and you wanted to be examined by a personable and competent doctor. What kind would you prefer?

19. Suppose you had periods of dizziness and you wanted to be examined by a competent doctor. What kind of doctor would you prefer to see?

20. Suppose you had a swollen face and you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

21. Suppose you had an earache which you thought was nothing serious but you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

22. Suppose you had a fever and you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

23. Suppose you needed to have a gynecological examination. What kind of doctor would you prefer?
24. Suppose you developed shortness of breath and you wanted to be examined by a doctor. What kind of doctor would you prefer to see?

25. Suppose you had a case of the flu and you wanted to be examined by a doctor. What kind would you prefer?
APPENDIX B

INTERVIEW SCHEDULE

Hello, my name is Steve Peterson from the Ohio State University, College of Medicine. We're conducting a study to find out what kind of doctors people prefer for everyday health care. May we have a few minutes of your time to ask you some questions for our study?

(pause)

First of all, do you have children?

(if yes, assign subsample for parents and administer questions)

(then, depending upon whether subject is male or female, assign subsample and administer questions)

We are almost finished, may I ask you three more questions?

First, what is your age?

Second, what is your race; white or nonwhite?

Third, what was your household's total income last year before taxes?

less than $4,999 per year
$5,000 to $9,999 per year
$10,000 to $14,999 per year
$15,000 to $19,999 per year
$20,000 to $24,999 per year
$25,000 to $29,999 per year
$30,000 to $34,999 per year
$35,000 to $39,999 per year
$40,000 or more per year