

ACCESS TO CARE OF ADULTS WITH
CHRONIC ILLNESS

CONSTANCE FLYNT MULLINIX

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DEDICATION

This thesis is dedicated
to the memory of
JEAN SIMMONS HAUGHT
(1949-1988)
colleague, nurse and friend.

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ABSTRACT

Access to Care of Adults with Chronic Illness

Constance Flynt Mullinix

Supervisor: Mathy Mezey

This study investigated the relationship of chronic illness and access to health care in adults responding to the 1986 National Access to Health Care Survey. Access to care was defined as actually entering the health system as evidenced by having an ambulatory visit, a hospitalization, or an emergency visit within the previous year.

The sample (N=6,147) was taken from the 48 contiguous states and included hospitalized persons. The sample was limited to persons 17 years and older who agreed to answer the random-digit dialed telephone interview and reported themselves to be well or have one of 11 life-threatening chronic illnesses (asthma or emphysema, cancer, heart disease or a cardiac condition, stroke, high blood pressure, kidney disease, liver disease, diabetes, epilepsy, multiple sclerosis, cerebral palsy or other neurological or neuromuscular disease that affected walking, arm movement, or memory).

The data were analyzed using univariate descriptive statistics, stratified analyses and multivariable logistic regression.

Adults with a chronic illness were 40% more likely to have an ambulatory visit than well adults. Similarly the likelihood that an adult with a chronic illness would be hospitalized during a year was 18 times greater than the likelihood of a well person being hospitalized. Finally, the probability that an adult would have an emergency visit was 60% greater in those with a chronic illness as compared to those with no illness. In fact, persons with chronic illnesses were more likely to have an ambulatory visit, a hospitalization or an emergency visit.

Prior to this research access to care had been studied in combined samples of the seriously and chronically ill. This study suggests that persons with chronic illness form a distinct population and that chronic illness is differentially predictive of ambulatory visits, hospitalizations, and emergency visits in contrast to those who are well. Further, poor health status, which was known to be predictive of entry into the health system, is, in fact, a distinct variable from chronic illness.

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CHAPTER I

The Problem

Access to health care has been an objective of public policy for over 50 years, with the goal explicitly stated in the National Health Planning and Resources Development Act of 1974 (PL. 93-641). As early as 1931, the Committee on the Cost of Medical Care tried to quantify the need for care and the provision of health care to groups within the United States population (Falk, Klem & Sinai, 1933). Since that time, numerous studies have been done to guide policy decisions on allocation of resources for health care (e.g., Aday, Andersen & Fleming, 1980; Davis & Reynolds, 1976). As a research topic, the study of access continues to be timely, paralleling constantly changing public policy decisions. A particular responsibility of researchers is to provide data to enlighten public policy debates.

Access, most simply, may be considered as "...whether those who need care get into the system or not" (Aday & Andersen, 1975, p. 14). In the past, when a population subgroup was identified as having fewer health care visits or hospitalizations than the average for the total population, intense study ensued and policy change was effected to try to bring about equitable access for the

identified group (Aday, Andersen & Fleming, 1980; Andersen, Kravits & Anderson, 1975; Davis & Millman, 1983; Lewis, Fein & Mechanic, 1976). Traditionally, target groups for the study of access have been the underserved: the elderly, minorities, rural residents, the poor, the uninsured, and the unemployed (Andersen, Aday, Lyttle, Cornelius & Chen, 1986; Andersen, Lion & Anderson, 1976; Robert Wood Johnson Foundation (RWJF), 1978, 1983, 1987a).

A series of studies indicating problems of access for the elderly contributed to the enactment of Medicare in 1965 (Andersen & Anderson, 1967; Davis & Millman, 1983). Similarly, many of the same studies demonstrated lack of access to health care for low income persons, and major legislation to bring the care of poor persons to an equal level with that of the majority population was enacted (Andersen & Anderson, 1967; Davis & Millman, 1983). This combined federal/state program, Medicaid, was designed to remove access problems due to low income by providing direct payment to providers to care for the poor (Mullan, 1987; Connor, 1983). Likewise, access to health care for rural residents has received much attention. Legislation has been enacted to increase hospital beds in rural areas through the Hill-Burton Act and to increase health manpower in rural areas through the National Health

Services Corps and Rural Health Clinics (Clark, Field, Koontz & Koontz, 1980; Public Law 95-210; Redman, 1973).

During the period since Medicaid and Medicare were enacted, advances in access to care have been made, especially for the poor and the elderly (Vladeck, 1981). However, Aiken and Blendon (1986), while recognizing that accomplishments in access have been achieved for some groups since 1965, caution that other groups without access remain. Indeed, debate on providing access to minorities, the uninsured, and the unemployed continues (Andersen, Lewis, Giachello, Aday & Chiu, 1981; Freeman, Aiken, Blendon, Sudman, Mullinix, & Corey, 1987; Freeman, Aiken, Blendon, Corey, 1990; Marcus & Stone, 1982; Rice, Drury & Mugge, 1980; RWJF, 1987a, 1987b; Smith, 1987; U.S. Department of Health and Human Services [DHHS], 1985; Wilensky, 1987). It is evident that identifiable groups continue to lack access when compared to the remainder of the population. These groups are significant in numbers and in proportion to the American population (RWJF, 1978, 1983, 1987a).

One such group without access to care is the chronic and serious illness group. A 1986 survey of access to health care in the United States reported that 20% of the United States population, a proportion amounting to almost

50 million people, is affected by a chronic or serious illness (RWJF, 1987a). This portion of the United States population affected by chronic and serious illnesses is significant both in terms of human suffering for individuals and their families and in terms of being underserved (RWJF, 1987a).

The popular press has reported that persons with chronic diseases have difficulty obtaining health care and that insurers attempt to limit their losses by not insuring persons known to have chronic diseases (Chase, 1987; Gottschalk, 1986). Health maintenance organizations are known to market their product to groups who are at low risk for chronic diseases (Iglehart, 1987). In fact, one state, Wisconsin, has taken legislative action to provide financial access to health care for persons with a history of a disease which makes the individual "uninsurable" (Andreano, 1987; "Wisconsin Report", 1987).

If questioned, the majority of Americans probably would say that persons with poor health should have access to health care. Yet, access has not always been available to these individuals. Davis and Reynolds (1976) as well as the Robert Wood Johnson Foundation (1978, 1983, 1987a) have documented fewer physician visits and

hospitalizations for poor people in fair and poor health when compared with the remainder of the population.

Another group known to have worse health than the remainder of the population are those with chronic and serious illnesses. Nearly 16% of the chronically and seriously ill reported not having an ambulatory visit within the 12 months prior to being interviewed (RWJF, 1987a).

It is a given that people with chronic illness need health care services; yet, it is unknown whether these persons have access to health care. To date the chronically ill have not been studied relative to their access to care. They have been studied along with the seriously ill who may or may not have similar health care needs. However, studies of hospital reimbursement show that persons with chronic illnesses consume a large proportion of the health care dollar (Schroeder, Showstack, & Roberts, 1979; Zook & Moore, 1980). Additionally, incidence and prevalence of chronic diseases have increased (Olshansky & Ault, 1986). Both the consumption of resources and the increasing proportion of the United States population afflicted with chronic illness suggest that the study of access to care of

persons with chronic illness, as a separate and distinct group, is appropriate.

Purpose of the Study

This study examined the relationship between chronic illness and access to health care. Access to health care was defined as actual entry into the health care system as evidenced by an ambulatory visit, a hospitalization, or an emergency visit.

Statement of the Problem

What is the relationship between the access to care of adults with chronic illness and the access to care of well adults in the National Access to Health Care Survey?

Framework

This study is based on the assumption that any sub-population of the total United States population should have the same rate of ambulatory visits, hospitalizations, and emergency visits as the remainder of the population. Any sub-group with a smaller proportion receiving an ambulatory visit, a hospitalization or an emergency visit would be considered to have less access to care. This definition is based on the framework of Aday and Andersen (1975).

Aday and Andersen (1975) first presented a framework for the study of access to care in 1975 based on earlier work by Andersen (1968). The original work was a behavioral model of family care-seeking (Andersen, 1968). The 1975 model combined characteristics of the health care system with those of a population-at-risk (Aday & Andersen, 1975). The study of access could then be approached from either a health care system or a population perspective. Measurement of access was accomplished by determining the actual utilization of health services and consumer satisfaction with these services. Health policy was said to influence characteristics of the health delivery system and characteristics of the population-at-risk. In other words, the framework is based on health policy's influence on characteristics of both the health delivery system and the population-at-risk with ultimate measurable effects on utilization of health services and consumer satisfaction with these services (Aday & Andersen, 1975). Appendix A contains a diagram of the relationship of health policy to the four key concepts:

- (1) health delivery system,
- (2) population-at-risk,
- (3) utilization of health services, and
- (4) consumer satisfaction.

For the purpose of this study, one characteristic of the population-at-risk (chronic illness) is hypothesized to be related to utilization of health services (ambulatory visit, hospitalization, or emergency visit).

Characteristics of the population-at-risk include those variables that describe the propensity of individuals to use services. The propensities which exist prior to the onset of an illness episode, include such things as age, sex, race, religion, and values concerning health and illness (Aday & Andersen, 1975).

Utilization of health services is external validation of the effect of those characteristics of the population-at-risk on an individual's entry (or non-entry) into the system. The level of the population's actual utilization of the health care system is one objective measure of access (Aday & Andersen, 1975). Objective measures of entry into the health care system are ambulatory visits, hospitalizations, or emergency visits.

The Aday-Andersen (1975) model has been used in other studies of populations with compromised access to care: the poor, the uninsured, the elderly, rural residents, and minorities (Aday, et al., 1980; Taylor, Montgomery & Menza, 1983; Fleming & Andersen, 1986a, 1986b). The predisposing characteristics previously studied are age,

gender, ethnicity, marital status, residence, education, income, insurance, employment, health status, and regular source of care. Other studies of access have elements common with the Aday and Andersen (1975) framework (e.g., Davis & Reynolds, 1976; Hulka, 1978; Lewis, et al., 1976; Shortell, Richardson, LoGerfo, Diehr, Weaver & Green, 1977; Sloan & Bentkover, 1979; & Salber, Greene, Feldman & Hunter, 1976).

Research Hypotheses

In the 1986 National Access to Health Care Survey:

- (1) Adults with chronic illness are more likely to have an ambulatory visit than adults who are well.
- (2) Adults with a chronic illness are more likely to have a hospitalization than adults who are well.
- (3) Adults with a chronic illness are no more or less likely to have an emergency visit than adults who are well.

It was thought that a larger proportion of adults with chronic illness would have an ambulatory visit or a hospitalization since their health care needs are greater. In contrast, it was thought that adults with chronic illness would use emergency services at the same rate as the remainder of the population. The maintenance and crisis needs resulting from the chronic illness were thought to have been met by their routine health care provider. Emergency visits would thus be for trauma and

acute care which should occur at the same rate for the chronically ill as for the non-chronically ill.

Research Questions

In the 1986 National Access to Health Care Survey:

- (1) What is the probability that an adult with a chronic illness will have an ambulatory visit?
- (2) What is the probability that an adult with a chronic illness will have a hospitalization?
- (3) What is the probability that an adult with a chronic illness will have an emergency visit?

Significance of the Study

In 1956, chronic illness was labeled America's number one health problem by Mayo, the Chairman of the Commission on Chronic Illness (Mayo, 1956). Since that time, little attention has been focused on chronic illness when compared with acute illnesses; yet, the demand for services by persons with chronic illness continues to increase (Somers, 1986). There is strong evidence of a shift of illnesses from primarily acute to chronic (Olshansky & Ault, 1986; Rice & Estes, 1984; Somers, 1982). The implications of this shift for health care delivery and for policy which facilitates provision of care to a population are dramatic. The increasing demand for health services for people with a chronic illness, the increasing number of persons with a chronic illness, and the increasing lifespan of persons after the onset of

chronic illness suggest that provision of health services in the future will be predominantly for persons with chronic illnesses.

To prepare for the delivery of health services, more information is needed about the population with chronic illnesses and their need for health care. One part of the information needed for future planning and policy decisions is the access to care for persons with chronic illness (Bureau of the Census [Census], 1986). Their known greater demand for physician visits suggests that determining the relation of access to care and chronic illness has implications for planning health care delivery (National Center for Health Statistics, 1987a). As the 1945 cohort approaches the age of increased chronic illness, the demand for health services could easily exceed existing supply. Information on the predictive ability of the characteristic "chronic illness" on access to care is seen as preparatory for establishing health policy and ultimately for the provision of health services.

CHAPTER II

Review of Related Literature

The effect of public policy on access to health care is well documented (President's Commission for the Study of Ethical Problems [President's Commission], 1983; Davis & Millman, 1983). The successes of Medicare and Medicaid in bringing elderly citizens and the poor into the mainstream of health care during the 1960s and 1970s as a result of change in policy is not debatable (Davis & Millman, 1983). The debates, however, do continue on which groups have less access and what policy changes would ensure equitable access to health care for all persons in the United States population (RWJF, 1983, 1987a; President's Commission, 1983).

This investigation focused on the access to care of one of those groups--the chronically ill. Specifically this study looked at adults 17 years and older who responded to the National Access to Care Survey and examined the relationship of chronic illness to the occurrence of an ambulatory visit, a hospitalization, or an emergency visit, i.e. access to care. The review of the literature is organized into three sections: (1) chronic illness, (2) access to care, and (3) chronic illness and access.

Chronic Illness

Definition

Most definitions of chronic illness are derived from the definition first used by the 1956 Commission on Chronic Illness:

All impairment or deviations from normal which have one or more of the following characteristics: are permanent, leave residual disability, are caused by nonreversible pathological alterations, require special training of the patient for rehabilitation, may be expected to require a long period of supervision, observation, or care (Mayo, 1956, p. 14).

The Mayo (1956) definition is useful for clinical-based study which attempts to find a common organizing principle. Strauss and colleagues (1984) expand on the definition by presenting "features of chronic illness." Strauss says chronic illnesses are "...long-term, uncertain, expensive, often multiple, disproportionately intrusive, and they require palliation, especially because they are 'incurable'" (Strauss, Corbin, Fagerhaugh, Glaser, Maines, Suczek, & Weiner, 1984, p. 16).

The National Center for Health Statistics (NCHS) which has tracked chronic conditions since 1969, concludes, "a condition is considered chronic if:

- (1) the respondent indicates it was first noticed more than three months before the reference date of interview, or
- (2) it is a type of condition that ordinarily has a duration of more than three months.

Examples of conditions that are considered chronic regardless of their time of onset are diabetes, heart conditions, emphysema, and arthritis" (NCHS, 1986b, p. 138). From 1969 through its 1978 survey, NCHS tracked a number of chronic conditions causing limitations in activity. This measure was discontinued in 1978. In order to capture chronic conditions, the NCHS's National Health Interview Survey (NHIS) now asks if the respondent or any one in the respondent's family has any of the diseases listed by NCHS (NCHS, 1982). NCHS's effort to be inclusive resulted in duplicate wording of conditions.

It should be noted that the most prevalent chronic illnesses are not necessarily those which cause death. Chronic sinusitis is the most prevalent chronic illness, rarely causes death, and receives little attention at either a clinical or policy level (NCHS, 1986b). Strauss (1984) admits that one of the reasons persons with chronic illnesses have not been able to lobby for services is the lack of a common definition which crosses disease categories.

Freeman (1987) argues that the only information to which policymakers respond is the prevention of premature death. This argument can be substantiated by reviewing the recent funding priorities of Congress. For example,

the National Cancer Institute receives five times the funding of the National Institute on Aging (National Institutes of Health, 1986). The National Access to Care Survey used as the basis of its definition for chronic illness the diseases that cause the most deaths, thus defining chronic illness as meeting one or more of the following diagnoses:

- asthma or emphysema,
- cancer,
- heart disease,
- stroke,
- high blood pressure,
- kidney disease,
- liver disease,
- diabetes,
- cerebral palsy or other neurological or neuromuscular disease that affected walking, arm movement or memory (Freeman, 1987).

Theories

Several competing theories attempt to explain what might be expected in the future as the United States population ages and the incidence and prevalence of chronic illnesses increase (Fries, 1980, 1983, 1984b; Fries, Green & Levine, 1989; Gruenberg, 1977; Manton, 1982; Manton, Patrick & Stallard, 1980; Manton & Stallard, 1982; Wing & Manton, 1981). While these theories assume an aging population and an increased incidence and prevalence of chronic illness, they predict very different characteristics of the chronically ill population of the

future. These theories will be reviewed as background for the understanding of current knowledge on chronic illness. Regardless of the predictive power of any of the theories, information on chronic illness is important for health policy decisions (Olshansky & Ault, 1986; Lilienfeld & Gifford, 1966; Rice & Estes, 1984; Commission on Chronic Illness, 1957; Somers, 1982; Zook & Moore, 1980; Newacheck, Butler, Harper, Piontkowski, & Franks, 1980).

Gruenberg's (1977) theory entitled "the failure of success" suggests that medicine has improved the ability to save lives but has contributed to a prolongation of life for persons with diseases and disabilities. Thus a frail society with much disease and pain results from the "survival of the less fit" (Newquist, 1984). In sharp contrast to this "less fit" idea is the theory of Fries (1980, 1983, 1984a, 1984b, 1989) which suggests that as individuals become more adept at managing chronic illnesses, the average period of diminished vigor will decrease with chronic diseases occupying a smaller proportion of the life span. This "compression of morbidity" theory projects a view of healthy adults well into later years requiring few health services. This theory has been met with much criticism (Schneider &

Brody, 1983) but also thoughtful analysis (Ycas, 1987; Olshansky, 1985).

Manton (1982) used the United States death reporting system to test both the "compression of morbidity" and the "failure of success" theories and partially rejected both. He substitutes his own "equilibrium model" which combines elements of the Fries (1980) and Gruenberg (1977) models. Manton's model suggests that people will live longer and have more chronic diseases but that the time they spend debilitated can be shortened by providing health services which prevent the negative impact of the chronic disease (Manton, 1982). This theory has implications for health service delivery since it predicts that the demand for health services will increase dramatically. Manton (1989) has begun to estimate these unmet needs.

Katz and colleagues (1983, 1985), have presented convincing evidence that the impact of chronic illnesses on the population and health service delivery system may be predicted. By utilizing the expected duration of functional well being, termed "active life expectancy," along with life-table techniques, predictions may be made about the dependence needs of an aging population. The end point of active life expectancy is not death, but

rather the loss of independence in activities of daily living.

The current knowledge on chronic illnesses builds upon these four models. A discussion of incidence, prevalence, and characteristics as well as utilization of health services by persons with chronic illnesses follows.

Incidence, Prevalence and Utilization of Health Services

When chronic illness is mentioned, people often envision an elderly person with limited mobility. In fact, older persons do have more chronic illness but chronic illnesses are not exclusively diseases of the aged. The National Center for Health Statistics reports the incidence and prevalence of chronic conditions per 1,000 persons for a variety of specific conditions. In reviewing these reports, it is obvious that the number of chronic conditions increases with age. For example, for the chronic condition arthritis, there is a prevalence of 129 per 1,000 persons, when all ages are summed. In the 18 to 44 year age group there were 52 persons with arthritis per 1,000; in those aged 45 to 64, there were 268 per 1,000; and of those 65 and over there were 473 persons with arthritis per 1,000 (NCHS, 1985a).

More males than females report having a chronic illness. Death certificates confirm that the rate of

death for men from specific chronic illnesses is greater than that for females (NCHS, 1985a, 1986a). Nathanson (1977) has explored these differences and reports the ratio of men to women for both mortality and morbidity rates from chronic illnesses to indicate males have more illnesses and deaths from chronic illnesses. Updated calculation for several chronic diseases based on 1984 and 1985 data, in Appendix B, are presented. Nathanson's conclusions hold (Nathanson, 1977).

Other information from the National Health Interview Survey indicates that persons with activity limitation due to chronic conditions increased from 31.4 per 1,000 in 1980 to 32.4 per 1,000 in 1982 (NCHS, 1985a). Females reported slightly more chronic conditions than males (United States Department of Commerce, 1987). While more males report having a chronic illness, females report having more chronic illness. The difference in males and females with chronic illness is incidence versus prevalence. Males die at earlier ages as a result of their disease while females continue to live and accumulate chronic conditions.

The Health Interview Survey reports "restricted activity days" and "work lost days" (NCHS, 1983). However, these measures are flawed especially when

measuring the activity of females, since many females report "usual activity" as housework which can be reported being done at some level despite restricted activity.

Ycas (1987) has done further analysis on the number of chronic conditions reported in the Health Interview Survey data. The average number of limiting chronic conditions of persons age 55 to 70 increased from .396 to .543 for men and increased from .327 to .473 for women during the survey years 1968 to 1978. Although these analyses do not provide information on persons younger than 55, the trend of increased chronic illnesses and limitations due to those chronic illnesses for both men and women is evident for persons 55 to 64 as well as those over 65.

Kovar (1983) provided "best estimates" of prevalence of selected conditions among the elderly analyzing the National Health Interview Survey, the National Nursing Home Survey, and the National Health and Nutrition Examination Survey. Considerable differences were found in the three sources, thus supporting Kovar's conclusion as to the problems inherent in the sources for morbidity data in the United States. Similarly, firm conclusions on the incidence and prevalence of chronic illnesses cannot be obtained from the existing data sources. For example, although the National Health Interview Survey reports

incidence and prevalence rates for some chronic conditions, the total number of chronic conditions for each person is not measured (NCHS, 1985).

Ycas (1987), in discussing recent trends in health policy based on the Health Interview Survey, suggests that people continue to become ill at the usual rate (that is, incidence rates are unchanged), but control of the lethal effects and slowing of the progression of disease is keeping persons alive longer. Thus, the number of chronic conditions (the prevalence rate) in the population should be rising steadily. In support of this hypothesis, Ycas (1987) noted that persons retiring for health reasons had increased from 15 to 20 percent between 1970 and 1981.

Kaiser Permanente, with its closed panel HMO data extending from 1966 until the present, has conducted a series of studies focused on specific chronic illnesses (Vogt & Johnson, 1980; Mullooly & Oleinick, 1975; Reich & Johnson, 1985; Johnson & Specht, 1981; Caputo & Vogt, 1985; Johnson, Mullooly & Hurtado, 1986; McFarland, Freeborn, Mullooly & Pope, 1985; Johnson, Vogt & Penn, 1984). The majority of the studies are based on the Northwestern portion of the United States. The ability of Kaiser Permanente to validate its data over time with physical examination obviously contributes to knowledge

about chronic illnesses. These studies as a group document the increased use of health services by persons with chronic illnesses as compared to the general population.

Manton (1989) has used the 1984 National Long Term Care Survey, the 1985 National Nursing Home Survey, 1987 actuarial projections by the Social Security Administration, and demographic projections for the United States to estimate unmet need. His projections capture both the institutionalized and non-institutionalized population. The demand for health services is projected to greatly increase as the post-World War II "baby boomers" approach retirement. Further, he concludes that the health needs are related to chronic illnesses rather than aging and that the projected need requires public policy intervention.

In summary, the incidence of chronic illnesses remains constant while the prevalence is rising steadily. Chronic illness occurs in all ages with some evidence that the number of chronic illnesses have increased in the period 1968 to 1978 for persons 55 and older. Persons with chronic illnesses use health services more than persons without chronic illnesses. The increased use of

services has implications for health care delivery and health policy.

Access to Health Care

There have been numerous studies on access to care. An attempt will be made to review the relevant historical, definitional, and research aspects of access to care in the United States. Next, approaches to measuring access will be considered along with their use in the study of access for persons with chronic illness.

History, Definitions, Research

Since the 1931 Committee on the Cost of Medical Care (Falk, et al., 1933), there has been a proliferation of research on "access to care." Early studies of access focused on the physician per population ratio. This measure is traditionally based on census data and has as its underlying assumption that the availability of physicians implies access to care (United States Department of Commerce (Census), 1935-1985). An extension of this argument, since refuted by Fuchs (1974), would link access to physician care to improved health state. The physician per population ratio has proven inadequate for measuring access, much less health status.

Systematic national studies of access to care were conducted by the Center for Health Administration Studies

of the University of Chicago and the National Opinion Research Center covering the years 1953, 1958, 1963, and 1970 (Aday & Andersen, 1975; Aday, Andersen, & Fleming, 1980; Andersen, Kravits, & Anderson, 1975). These studies of access paralleled efforts by the National Center for Health Statistics' National Health Interview Survey showing visits per person per year based on household surveys (NCHS, 1986b). These surveys emphasize the number of physician visits remembered by the person interviewed. Counting visits provides a measure of a person's actual use of the health care system in contrast to the physician to patient ratio which had been the accepted measure since 1931 (Aday & Andersen, 1975).

A major advance in the study of access occurred in 1975 when Aday and Andersen (1975) developed indices of access to care. Their framework, which was described in Chapter 1, was based on the influence of health policy on characteristics of both the health delivery systems and the population-at-risk with ultimate effects on utilization of health services and consumer satisfaction with those services (Aday & Andersen, 1975). More recent studies have used elements from the Aday and Andersen framework (Aday & Andersen, 1975; Davis & Reynolds, 1976;

Hulka, 1978; Lewis, et al., 1976; Salber, et al., 1976; Shortell, et al., 1977; Sloan & Bentkover, 1979).

Aday and Andersen (1975) define access to health care as "whether those who need care get into the system or not" (p. 14). Access to care can be more precisely defined as, "those dimensions which describe the...entry of a given population group into the health care delivery system" (Aday, Fleming & Andersen, 1984, p. 13). There is general agreement that access should reflect actual contact with a health care system rather than merely the existence of the health care system (President's Commission, 1983).

Traditionally, target groups for the study of access have been underserved groups: minorities, the elderly, the uninsured, rural residents, the poor, and the unemployed (Andersen, Kravits & Anderson, 1975; Andersen, Lion & Anderson, 1976; Andersen, et al., 1988; RWJF 1978, 1983, 1987a). Aday and Andersen argue that each subpopulation should have equal doctor visits to that of the total American population while Davis and colleagues argue that groups, specifically the poor and minorities reporting fair or poor health should have greater numbers of visits and hospitalizations (Davis & Rowland, 1983; Davis & Schoen, 1978). Others have agreed with Davis and

Rowland's argument to the point that there is general acceptance of the idea that persons in a poorer health state should receive more health services (Daniels, 1983; President's Commission, 1983).

An additional point of difference in defining access is the definition of the comparison group. Developers of the access model have argued that the subpopulation is to be compared with the entire United States population (Aday & Andersen, 1975; Aday, Andersen & Fleming, 1980; Andersen, Kravits & Anderson, 1975; Andersen, Lion, Anderson, 1976). Their rationale is that United States citizenship guarantees a quality of life equal to that of the average United States citizen including themselves. Freeman, however, points out that it makes little sense to compare a subgroup with itself and argues that the subgroup should be subtracted from the total population before comparisons are made (RWJF, 1987a; personal communication, March 1987). Freeman's results obviously indicate greater differences of a subgroup from the comparison population (RWJF, 1987a). Neither argument is clearly superior.

One subgroup of Americans which has recently been identified as having problems with access to care are the chronically and seriously ill. The 1982 National Access

to Care Survey indicated that chronic or serious illness affects almost 10% of United States families (Aday, et al., 1984; RWJF, 1983; Taylor, Montgomery & Menza, 1982). Aday and colleagues (1984) note, "Families in which there was a [chronic or] seriously ill family member represent perhaps one of the most important groups in considering target populations in particular need of the services of the health care system" (Aday, et al., 1984, p.87).

Unlike the 1982 survey, the 1986 National Access to Care Survey used the individual rather than the family as the unit for analysis (Freeman, 1987; RWJF, 1987a). The 1986 survey documents that greater than 20% of the United States population is affected by a chronic or serious illness. Of those persons with chronic or serious illness, almost 16% did not have an ambulatory visit within the 12 months prior to the survey. As would be expected, this study also reports that of persons with chronic or serious illnesses, over 30% are in fair or poor health. Little is known, however, about the access to care of persons who are chronically ill as differentiated from seriously ill, which include acute illnesses and trauma.

Measurement

Studies of access have systematically tested relationships between access to health care and characteristics of the population such as:

- (1) age (Long & Settle, 1984; RWJF, 1978; 1983; 1987a),
- (2) race (Guendelman & Schwalbe, 1986; Marcus & Stone, 1982; Andersen, et al., 1981),
- (3) rural and urban residence (Aday, 1985; Salber, et al., 1976; Marcus, Reeder, Jordan & Seeman, 1980).
- (4) income (Kasper, 1987; Wilson & White, 1977),
- (5) insurance status (Berkanovic, Reeder, Marcus, & Schwartz, 1975; Aday & Andersen, 1978; RWJF, 1987a),

These studies are based on indices of access developed by Aday and Andersen (1975). Specifically, research on access has utilized the measures of:

- (1) mean number of physician visits,
- (2) percent (not) seeing a physician,
- (3) percent hospitalized once in the past 12 months,
- (4) percent satisfied with care, and
- (5) regular source of care.

These same measures are used by the National Center for Health Statistics in its National Health Interview Survey and in a variety of its special studies such as the National Medical Care Utilization and Expenditure Survey (NCHS, 1985a; 1986a; 1987a; Schlenger & Corder, 1984).

The measure, "satisfaction with care" has been used to reflect evidence of subjective perceived access (Aday, et al., 1980). Mean number of physician visits, percent

seeing/not seeing a physician, percent hospitalized once in the past 12 months and satisfaction with care are described by Aday & Andersen (1975) as both objective and subjective outcome measures of access to care. In addition, a process indicator, regular source of care, has been shown to be highly correlated with actually receiving health care (Aday & Andersen, 1975). These five measures form the nucleus for measuring access to care and meet the Criteria for Access Measures defined as a minimum for measuring access (Aday, et al., 1984).

The face, content, and predictive validity, as well as the reliability of these measures, have been established (Aday & Andersen, 1975). Information on how to interpret the results has also been published by Andersen, Kasper, Frankel & Associates (1979). In their book, Total Survey Error, estimates of bias and variable error of the sampling and nonsampling type for the series of access surveys are presented. For example, actual validation of doctor's visits reported in the survey were accomplished by reviewing physician records (Andersen, et al., 1979). Rarely do large national surveys receive this attention to assessment of error. The results of this work has been incorporated into subsequent surveys on access (RWJF, 1983; 1987a). The methods for measuring

access to care have been established and tested. Application of these methods to the chronically ill population is seen as an extension of the earlier access studies.

Correlates

Access to care has been studied extensively and has resulted in identification of certain characteristics of a population which are known to relate to access to care (here defined as utilization of health services). Maurana, Eichhorn and Lonnquist (1981) have summarized the extensive literature on correlates of the use of health services. This section relies on their work. They conclude that need for medical care is the correlate which best predicts use of non-discretionary health services.

Health status is the most widely used predictor of need for health care. Self-report of an individual's state of health has been shown to be an accurate indicator of health status (Maddox & Douglass, 1973; Brook, Ware, Davies-Avery, Stewart, Donald, Rogers, Williams & Johnson, 1979; Ware, Davies-Avery & Donald, 1978). The National Health Interview Survey since 1972, as well as the series

of access studies (NCHS, 1974; RWJF, 1978, 1983, 1987a), specifically ask:

Compared to other persons your age, would you say your health is excellent, good, fair, or poor (Freeman, 1987, p. 1)?

Because, self-reported health has been shown to correlate with actual health status, it has been used often as a proxy for health state (Maddox & Douglass, 1973; Brook, et al., 1979; Ware, et al., 1978). Whether self-reported health status is a congruent idea with that of chronic illness is unknown. The relationship of health state and chronic illness should be determined rather than assuming that one reflects or measures the other.

The socio-demographic correlates of access to care are age, gender, race, and education (with the young and old using more services and increased education being related to the use of non-discretionary services). Marital status is thought to affect the use of health services through age and sex composition of the family members (Maurana, et al., 1981).

Economic correlates include income, insurance, and occupation which Maurana, et al. (1981) call socioeconomic status. Insurance is said to moderate the effect of income on the use of health services.

Availability of health services explains differences in use between rural and urban areas with the differences in urban and rural being less than previously when transportation was not as accessible (Maurana, et al., 1981). Regular source of care is termed extremely important in predicting the use of health services.

Aday, Fleming and Andersen (1984) have used these same indicators in attempting to explain the use of health services. The above correlates are included in their framework. Indeed much of the literature reviewed by Maurana, et al., (1981) is based on the work of Andersen and his colleagues.

Chronic Illness and Access

Access to care of persons with chronic illnesses has not been explicitly studied. One difficulty in studying the chronically ill alone has been obtaining an adequate sample. Farley (1986) notes that it is often difficult to obtain cells large enough to accomplish analyses on individual illnesses even when the sample population is quite large. Her comment relates to her work with the 1977 National Medical Care Expenditures Survey (NMCES) which had more than 40,000 people in the survey. To date, attempts to describe this population have coupled seriously and chronically ill persons together. The 1982

and 1986 National Access to Care Surveys studied access to care of persons with chronic and serious illnesses (Aday, et al., 1984; RWJF, 1983; 1987a; Taylor, et al., 1982).

Access questions related to chronic and serious illness in the National Access to Care Survey in 1982 focused on family responsibility for chronic and serious illness but did not obtain information on individuals.

The following points on families with seriously or chronically ill persons are noted:

- (1) Ten percent of United States families cared for a seriously or chronically ill family member living at home.
- (2) Of those chronically or seriously ill and living at home, 26% are elderly; 33% are age 25-54.
- (3) Twenty-three percent of those with a chronically or seriously ill family member report that a chronic or serious illness in the family has caused major financial problems (Taylor, et al., 1982, p. 94).
- (4) More than 11% of the poor and 16% of those not in the labor force have a chronically or seriously ill family member (RWJF, 1983).

Beyond these brief isolated descriptors of families with a serious or chronically ill family member, little is known about access to care of persons with chronic illness.

The 1986 National Access to Care Survey (RWJF, 1987a) focused on individuals and oversampled for persons with chronic and serious illnesses in an attempt to describe this population known to need health services. From this survey, the following points are presented:

- (1) Thirty percent of persons with chronic and serious illness report themselves to be in fair or poor health.
- (2) Nearly 16% of people with a chronic or serious illness did not have an ambulatory visit in the 12 months prior to being interviewed.
- (3) Chronically and seriously ill persons were hospitalized at a rate far exceeding that of the healthy population (29.1% versus 0.9%).
- (4) Chronically and seriously ill persons had ambulatory visits more than twice that of the rest of the population (RWJF, 1987a).

However, since these points relate to both chronically and seriously ill persons, specific information on access to care of persons with chronic illnesses cannot be stated.

In summary, the access to care of sub-groups of the United States population have been studied. However, the access to care of individuals with chronic illnesses as a distinct group have not been studied. Given that the chronically ill have increased health needs and are at risk for encountering barriers to care, the access to health care by the chronically ill is a topic for investigation.

Chapter III

Methodology

This chapter presents the plan and structure of the investigation to answer, "What is the relation of chronic illness and access to care?" The first section presents the research design, which is followed successively by sections on the sample and data collection, questionnaire, data analysis, methodological assumptions, and, finally, limitation of the methodology.

Research Design

The intent of this cross-sectional study was to determine to what extent access to care can be explained by the addition of chronic illness to the variables which are already known to be associated with access to health care. The plan for the study was to approach the general null hypothesis stated as follows:

The access to care of adults with chronic illness is no different from that of the remainder of the population.

Specifically the following hypotheses were tested:

- (1) Adults with a chronic illness are no more or less likely to have an ambulatory visit than the remainder of the population.
- (2) Adults with a chronic illness are no more or less likely to have a hospitalization than the remainder of the population.
- (3) Adults with a chronic illness are no more or less likely to have an emergency visit than the remainder of the population.

The independent variables for the study were presence of chronic illness, age, gender, ethnicity, marital status, residence, education, income, insurance, employment, health status, and regular source of care. The dependent variables for the study were ambulatory visit, hospitalization, and emergency visit within the prior 12 months.

Definition of Terms

Access to care: refers to the potential and actual entry of a given population group to the health care delivery system (Aday, et al., 1984). The realization of the objective of entry is reflected in the population's reported rates of utilization (Aday, et al., 1984). Utilization is measured by reported ambulatory visits, hospitalizations, and emergency visits.

Ambulatory Visit: refers to seeing a health care provider during the preceding 12 months. First, respondents were asked, "What was the month and the year of your most recent medical visit, when you actually saw a doctor in the office or clinic?" Respondents whose most recent visit was within the last 12 months were then asked, "Did you see or talk to a doctor any time during the past 12 months, that is since (date one year ago) 1985? This includes visits to the doctor and any visit to

a nurse or any other medical person on a doctor's staff, instead of the doctor" (Aday, et al., 1984). Excluded are visits by a doctor to a hospital inpatient.

Hospitalization: refers to being admitted to a hospital during the past year. Respondents were asked, "Have you been a patient overnight in a hospital during the past 12 months, since (date one year ago) 1985?"

Emergency Visit: refers to receiving emergency care at a private clinic, hospital outpatient clinic, hospital emergency room, emergency or urgent care center not located in a hospital, community clinic, or some other kind of clinic during the past year. Respondents were asked, "Have you personally had a medical emergency any time in the last year...since (date one year ago) 1985...or not? If yes, the respondent was asked, "Did you go to a doctor's office, a clinic, a hospital or some other place?"

Chronic Illness: refers to having one of the following conditions:

- asthma or emphysema,
- cancer,
- heart disease,
- a stroke,
- high blood pressure,
- kidney disease,
- liver disease,
- diabetes,

cerebral palsy, other neurological or neuromuscular diseases that affect walking, arm movement, or memory (Freeman, 1987).

Age: refers to chronological age at the actual date of interview. Any missing age values were imputed based on the family composition and other characteristics of the respondent.

Gender: refers to male or female. In cases in which the interviewer did not specify sex, classification was made on the basis of information provided in the interview.

Ethnicity: refers to Black, White or Hispanic. Respondents were asked, "Do you consider yourself White, Black, Asian, or other?" "Are you of Spanish/Hispanic origin or descent?" Those who said "yes" to the Hispanic origin question were assigned this status, regardless of their racial classification. All non-Hispanics were then assigned to the White or Black categories, based on their response to the racial classification question. Whites were non-Hispanic Caucasians, Asians, Alaskan Eskimos, Native Americans, and other, except Blacks.

Marital Status: refers to married, living together as married, separated, divorced, widowed, or never married. The categories of married and living together were collapsed into married. Likewise separated and divorce were collapsed to yield divorced.

Residence: refers to urban or rural. Each telephone number in the 1986 sampling frame contained a code for the geographic area encompassed by the area code exchange. (See page 42 for an explanation for those without phones.) The codes were: (1) central city only, (2) Standard Metropolitan Statistical Area (SMSA) only, (3) non-SMSA only, (4) central city and SMSA overlap, (5) central city and non-SMSA overlap, (6) central city, SMSA and non-SMSA overlap, and (7) SMSA and non-SMSA overlap. Respondents in categories (4) and (5) were asked, "Do you live in (name of city), or not?" And respondents in categories (6) and (7) were asked, "What town, city or village do you live in?" Based on the response to either of the two questions, the respondent's residence was then classified in one of the two categories: SMSA (urban) or non-SMSA (rural).

Education: refers to highest grade or year attained in elementary school, high school or college. The answers were coded as, (1) elementary or some high school, (2) high school graduate, (3) some college, and (4) college graduate.

Income: refers to poor or non-poor. The poor category was defined as below 150% of the poverty level established by federal guidelines. Determination of

poverty level conforms to a Social Security Administration index and is based on family size and total family income, excluding the value of non-cost benefits such as Medicaid.

Insurance: refers to insured and uninsured. The uninsured are those who did not have coverage under a health maintenance organization, Medicare, Medicaid, other government health insurance, self-paid health insurance or employer-paid health insurance.

Employment: refers to employed full-time, employed part-time, temporarily out of work, retired, or not usually employed, on disability, keeping house/homemaker, or other. Employed are those employed full-time, part-time, retired, or keeping house.

Health Status: refers to perceived health in general being excellent, good, fair, or poor. Excellent and good are grouped together as are fair and poor.

Regular Source of Care: refers to the one person or place in particular respondents usually go to when they are sick or want advice about health.

Sample and Data Collection

The sample (N=10,131) consisted of all persons responding to the 1986 National Access to Care Survey (RWJF, 1987a). The survey was designed to collect information on health from a randomly selected sample of

persons in the continental United States population. Data were gathered by telephone interviews. Chronically and seriously ill persons were oversampled. The sample was then weighted to reflect the entire United States. Both the non-institutionalized and hospitalized population were captured in the sample.

The telephone interviews were conducted by telephone center locations of the Urbana and Chicago offices of the Survey Research Laboratory of the University of Illinois, and the Madison office of the Wisconsin Survey Research Laboratory, University of Wisconsin. Identical methods were used at the three sites with all interviewers trained by the same field coordinator.

Interviews were conducted in both English and Spanish. The interviews occurred from spring through fall of 1986 and resulted in responses from 10,131 persons. This number represents a 76% completion rate.

When a household was reached through the random-digit dialing, a screening interview was conducted with an adult member of the household. Questions were asked about illness conditions, and household members were listed. The computer then randomly selected the household members to be interviewed.

At the end of the interview with the randomly selected adult, the individual was asked whether any family member had any chronic or serious illness or other health problem that prevented work, school, housekeeping, or carrying out normal activities. If a chronic or seriously ill adult or child was identified, that person (or a proxy) was subsequently contacted for an interview, thus increasing the number of sick persons in the sample.

Telephone interviews have been used extensively in surveys (Corey & Freeman, 1990; Marcus & Crane, 1986). To measure the effects of omitting households without telephones, a separate probability sample of 300 persons in such households was selected and interviewed face-to-face. Persons without telephones were different from people with telephones. However, since an estimated 93% of United States households have telephone coverage, the group missed in sampling was neither so different nor so large that its experience would change the resulting estimates for the population as a whole. The results of the face-to-face survey are reported elsewhere (RWJF, 1987a). One key access indicator, ambulatory visits in the prior 12 months, was identical for the telephone and the non-telephone survey. The differences in telephone and non-telephone samples have been further studied by

Corey and Freeman (1990). They suggest that telephone and non-telephone samples do not vary in reporting ambulatory visits or hospitalizations.

The survey was conducted by Howard E. Freeman, Ph.D., Chairman of the Department of Sociology at the University of California, Los Angeles. The sampling was designed and supervised by Seymour Sudman, Ph.D., of the University of Chicago. Computer-assisted telephone interviewing was used to minimize data-recording errors and also to minimize the time actually spent conducting the interview (Freeman & Shanks, 1983). The total interview lasted approximately 20 minutes and was conducted at a time convenient for the person being interviewed. A data tape was made at the University of Chicago and transferred to the University of California, Los Angeles, for analysis. The computer software package entitled SAS was utilized (SAS Institute, 1983; 1985).

Study Sample

The sample for the study of access to care of adults with chronic illness was a subset of the entire survey. An explanation of the final sample is included in Chapter IV. However, it is appropriate at this point to determine whether the sample was adequate to detect differences.

For the power analysis for the study of chronic illness and access, beta was set at 0.10 and alpha at 0.05. In other words, actual differences of the specified magnitude would be detected 90% of the time and a lack of differences confirmed 95% of the time (Cohen, 1985). The final sample of 6,147 total subjects, with 1,275 chronically ill and 4,872 well, far exceeds the requirement for subjects needed to detect very small differences.

Questionnaire

The questions used in the 1986 National Access to Care Survey are listed in Appendix C. The questions on access are the same as those used in previous surveys on access conducted in 1982, 1976, and earlier. Specific questions used in this study and its relation to a particular variable are listed in Table 1.

Table 1:

Questions (Subset of the National Access to Care Survey
Questionnaire for Use in the Study of Chronic Illness and
Access to Care)

Variable	Question Number
Chronic Illness	208c-208s
Age	Screen*
Gender	Screen*
Ethnicity	82a-82b
Marital Status	80a
Residence	Screen*
Education	205e
Income	206a, 206b, 206c, 206d, 206l, 206m, 206n, 206p, 206q
Insurance	84a, 85a, 85b, 85c, 85d, 85f, 86a, 86c, 88a, 88c, 89, 203a, 204a, 205a, 205b, 205c
Employment	83a
Health Status	1c
Regular Source of Care	22a
Hospitalization	3b, 4c
Ambulatory Visit	21d, 26a
Emergency Visit	29b

* The initial listing of members of the household established the age and gender. The phone exchange established the residence as rural or urban.

Note: The question numbers refer to the questions listed in Appendix C. However, by using the Computer Assisted Telephone Interview, the computer accomplished internal checks and skip patterns which add additional questions for eliciting the same information.

The face, content, predictive validity, and reliability of these measures have been established (Aday & Andersen, 1975). Information on how to interpret the results has also been published (Andersen, Kasper, Frankel and Associates, 1979). In the book Total Survey Error, estimates of bias and variable error of the sampling and non-sampling type for the series of access surveys are presented (Andersen et al., 1979). For example, actual validation of doctor's visits reported in the survey was accomplished by reviewing physician records (Andersen, et al., 1979). The refinements to the access questions have been ongoing and were incorporated into the 1986 National Access to Care Survey. The questions are also the basis for the access questions fielded every other year in the National Health Interview Survey (NCHS, 1985).

Data Analysis

Initially, the data were analyzed by constructing univariate descriptive statistics. Specifically, the sample was described to reflect the percent of the sample with (and without) an ambulatory visit, a hospitalization and an emergency visit, by chronic illness. This analysis provides information on the distribution of the sample. Persons with "serious illness", i.e., accidents, pneumonia and influenza, and other illnesses causing an overnight

stay in a hospital were omitted. These illnesses have traditionally been analyzed with chronic illness but are thought to be dissimilar, potentially masking the effect of chronic illness (RWJF, 1987a).

Next, using the chi-square test, the chronically ill were compared with those who did not report a chronic illness. The chi-square statistic tests for differences in the proportions between each category. Null hypotheses of no difference in proportions were rejected if the significance level of the test was less than $p=.05$.

The chi-square results in information which could lead to accepting or rejecting the null hypothesis. However, from these results, one cannot determine the strength of the relationship or whether the observed difference was influenced by other factors associated with access. The crude relative probability, which measures the strength of the relationship, was calculated using the following formula:

$$\text{Crude Relative Probability} = \frac{\frac{a}{e}}{\frac{c}{f}}$$

Where,

- a = Number (%) of adults with a visit and with chronic illness.
- e = Total number (%) of adults with chronic illness.
- c = Number (%) of adults with a visit and without chronic illness.
- f = Total number (%) of adults without chronic illness.

This idea can be more easily understood by viewing a two-by-two table as follows:

	Visit*	No Visit	Total
Chronic Illness	a	b	e
No Chronic Illness	c	d	f

*Visit = Ambulatory Visit, Hospitalization or Emergency Visit

This formula then yields,

$$\text{Crude Relative Probability} = \frac{[\text{Number (\%)} \text{ of adults with a visit and chronic illness}] / [\text{Total number (\%)} \text{ of adults with chronic illness}]}{[\text{Number (\%)} \text{ of adults with a visit and without chronic illness}] / [\text{Total number (\%)} \text{ of adults without chronic illness}]}$$

Ninety-five percent precision-based confidence intervals were constructed to measure the accuracy of the estimates. A relatively small interval reflects a high probability that the sample estimate was close to the population parameters. An interval excluding one indicates a statistically significant effect of chronic

illness on the probability of a visit. For all of the analyses using confidence intervals, the decision rule was as follows:

If "1" is within the confidence interval, the ratio is not significantly different from 1. If the confidence interval is entirely below "1", the probability is significantly decreased. If the confidence interval is entirely above "1", the probability is significantly increased.

The crude relative odds were then calculated to facilitate comparisons with the multivariable logistic regression models used to simultaneously control for all of the factors described above. The crude relative odds is calculated based on the following formula:

$$\text{Crude Relative Odds} = \frac{\frac{a}{b}}{\frac{c}{d}}$$

Where,

- a = Number (%) of adults with a visit and with chronic illness.
- b = Total number (%) of adults without a visit and with chronic illness.
- c = Number (%) of adults with a visit and without chronic illness.
- d = Total number (%) of adults without a visit and without a chronic illness.

This idea can be more easily understood by viewing a two-by-two table as follows:

	Visit*	No Visit	Total
Chronic Illness	a	b	e
No Chronic Illness	c	d	f

*Visit = Ambulatory Visit, Hospitalization or Emergency Visit

This formula then yields,

$$\text{Crude Relative Odds} = \frac{[\text{Number (\%)} \text{ of adults with a visit and with chronic illness}]/[\text{Number (\%)} \text{ of adults without a visit and with chronic illness}]}{[\text{Number (\%)} \text{ of adults with visit and without chronic illness}]/[\text{Number (\%)} \text{ of adults without a visit and without chronic illness}]}$$

The relative odds is approximately equal to the relative probability for rare outcomes (e.g., hospitalizations).

A series of stratified analyses was constructed to investigate what third factors were important in understanding the relationship between chronic illness and access to care (i.e., ambulatory visit, hospitalization, and emergency visits). The Mantel-Haenszel adjusted relative probabilities and the relative odds were computed, controlling for each variable (Kleinbaum, Kupper, Morgenstern, 1982). Each adjusted relative odds and relative probability was compared with

its crude counterparts. For example, adding gender resulted in the separate comparison of the association of chronic illness and ambulatory visits for males and females. The Breslow-Day Test for homogeneity of the relative odds was used to test for interaction (i.e., differences in the strata specific relative odds ratio). If significant differences were observed then strata specific estimates were interpreted. If no significant differences were found, the Mantel-Haenszel adjusted relative odds and the relative probabilities were used to summarize the relation between chronic illness and access adjusted for the third factors. Adjusted relative odds ratios are appropriately weighted aggregates of strata specific relative odds ratios. It is possible for crude relative odds to show an elevation of risk, while the within-strata relative odds do not and (vice-versa). If there was no interaction (i.e., similar within-strata estimates of odds) the extent to which confounding existed was determined by comparing adjusted with crude ratios.

Joint effects of stratified variables on relationships between chronic illness and the probability of a visit (ambulatory visit, hospitalization, emergency

visit) were examined using multiple logistic regression with the following variables:

- age,
- gender,
- ethnicity,
- marital status,
- residence,
- education,
- income,
- insurance,
- employment,
- health status,
- regular source of care.

The full main effect model and a model including interactions identified by stratified analyses were estimated for ambulatory visit, hospitalization, and emergency visit.

Methodological Assumptions

For this proposed methodology to measure adequately and report the true state of the access to care of adults with chronic illness, the following points were assumed:

- (1) Self-report can accurately reflect health status (Maddox & Douglass, 1973).
- (2) The telephone interview can accurately reflect the health status of the United States population (RWJF, 1987a).
- (3) The response rate does not introduce systematic bias, i.e., those persons not surveyed are not significantly different from those surveyed. (Babbie, 1973; Kerlinger, 1986).

Limitations

Limitations of the Sample

As stated earlier, the National Access to Care Survey sample captured only those persons with telephones. Although efforts were made to estimate the differences in persons with and without telephones, the characteristics of persons without telephones are unknown. Using the results of face-to-face interviews (RWJF, 1987a), one might conclude that persons without telephones are substantially worse off than persons with phones. Any results from this study should be considered as potentially underestimating the illness level of persons in the population from which the sample was drawn. This caution will be utilized in reporting results.

An additional limitation of the sample is the response rate--76% percent completion rate was accomplished. While this response rate is generally accepted as adequate for survey research, a higher response rate would be desirable. Nothing is known about the persons who did not answer the phone or refused to respond to the questionnaire (Babbie, 1973). It is, therefore, unknown whether those not responding are randomly distributed or whether their non-response might create systematic bias.

Finally, it should be noted that proxy interviews were accomplished for some persons who were too sick to respond. There may be some differences in what an individual would self-report and what he might report about another person. Proxy interviews are routinely used in survey research and are considered acceptable here.

Limitations of the Analysis

Although health system variables such as location of a health clinic are known to influence access to care, they have been omitted from this analysis (Aday, Fleming & Andersen, 1984). Hershey and colleagues, (1975) have encouraged the use of many variables in the analysis of utilization (Hershey, Luft, & Giararis, 1975). The key determinants of access as reflected in the literature to date have been included. Organization of health care delivery (i.e., the supply of health services) as a determinant of access has been omitted from this study.

Chapter IV

Results

This chapter is organized into three sections. Section one discusses the sample using descriptive statistics. A second section presents the results of analyses for each hypothesis and other variables examined. Finally, the differences in access to care which can be attributed to chronic illness are presented.

Sample: Descriptive Statistics

The sample for this study is a subset of the 1986 National Access to Care Survey. The sample (N=6,147) includes adults age 17 and older who agreed to answer the telephone survey. Children (i.e., those 16 and younger) have been excluded.

Table 2 describes the number and percent of the sample, 17 years and older, sorted by:

- (1) chronic illness combined with serious illness versus well, which is the traditional analysis;
- (2) chronic illness versus serious illness;
- (3) chronic illness versus serious illness versus well; and
- (4) chronic illness versus well.

Percents reporting a chronic or serious illness were 25% (1,582) of the sample. Seventy-five percent (4,872) reported being well. Of the 1,582 reporting a chronic or serious illness, 81% (1,275) reported a chronic illness while 19% (307) reported a serious illness. When

comparing chronic illness with serious illness and well, 20% (1,275) reported a chronic illness; 5% (307) reported having a serious illness; and the majority, 75% (4,872), reported being well. When omitting those reporting a serious illness, persons reporting a chronic illness were 21% (1,275), and those reporting to be well were 79% (4,872), resulting in a total of 100% (6,147). Those reporting serious illness (307) have been omitted from further analyses.

Table 2

Number and Percent of Sample 17 Years and Older Sorted by (1) Chronic Illness Combined with Serious Illness versus Well (Traditional Analysis), (2) Chronic Illness versus Serious Illness, (3) Chronic Illness versus Serious Illness, versus Well, and (4) Chronic Illness versus Well.

	<u>N</u>	<u>%*</u>
Chronic and Serious Illness	1582	25
Well	<u>4872</u>	<u>75</u>
Total	6454	100
Chronic Illness	1275	81
Serious Illness	<u>307</u>	<u>19</u>
Total	1582	100
Chronic Illness	1275	20
Serious Illness	307	5
Well	<u>4872</u>	<u>75</u>
Total	6454	100
Chronic Illness	1275	21
Well	<u>4872</u>	<u>79</u>
Total	6147	100

*Percent may not total to 100 due to rounding.

The sample is further described in Table 3. So that the reader may understand the sample relative to demographics, the number and percent of the sample for each demographic variable are shown.

Table 3

Description of the Sample (excluding serious illness)--
Persons 17 Years and Older Who Responded to the National
Access to Care Survey: Demographics.
 Total N = 6147*

	N	%**
<u>AGE</u>		
17-34	2432	40
35-44	1156	19
45-54	799	13
55-64	749	12
65-74	677	11
75+	334	5
TOTAL	6147	100
<u>GENDER</u>		
Male	2968	48
Female	3179	52
TOTAL	6147	100
<u>ETHNICITY</u>		
Black	608	10
Hispanic	357	6
White	5039	84
TOTAL	6005	100
<u>MARITAL STATUS</u>		
Single	840	14
Married	4132	70
Divorced	494	8
Widowed	448	8
TOTAL	5914	100
<u>RESIDENCE</u>		
Urban	4393	72
Rural	1737	28
TOTAL	6130	100
<u>EDUCATION</u>		
Some HS or less	1041	18
HS Grad	2169	37
Some Col	1346	23
Col Grad	1346	23
TOTAL	5902	101

Table 3 - continued

	N	%**
<u>INCOME</u>		
Below Pov	1032	20
Above Pov	<u>4266</u>	<u>80</u>
TOTAL	5298	100
<u>INSURANCE</u>		
Uninsured	235	9
Insured	<u>5368</u>	<u>91</u>
TOTAL	5603	100
<u>EMPLOYMENT</u>		
Unemployed	242	4
Employed	3747	64
Not in labor force	<u>1852</u>	<u>32</u>
TOTAL	5842	100
<u>HEALTH STATUS</u>		
Excel/Good	5210	86
Fair/Poor	<u>832</u>	<u>14</u>
TOTAL	6042	100
<u>REGULAR SOURCE OF CARE</u>		
Yes	4801	79
No	<u>1255</u>	<u>21</u>
TOTAL	6056	100

* Where N<6147, respondents did not answer the question
 ** Percent may not total to 100% due to rounding.

The demographic characteristics of the respondents included age, gender, ethnicity, marital status, residence, education, income, insurance, employment, health status, and regular source of care. Forty percent (2,432) of those responding to the survey were between the ages of 17 and 34; 19% (1,156) were in the age group 35-44; and 13% (799) were in the age group 45-54. Those responding in the age group 55-64 were 12% (749), with 11% (677) in the 65-74 age group. Five percent (344) were in the 75 and older age group.

Of the sample, 48% (2,968) were male. The largest group was White, comprising 84% (5,039) of this sample. Blacks represented 10% (608), and Hispanics, 6% (357). Seventy percent (4,132) of respondents were married, with the remainder in the categories of single (14%), divorced (8%), and widowed (8%). Seventy-two percent (4,393) lived in urban areas, while 28% (1,737) were in rural areas. Education ranged from some high school or less to college graduates and was distributed relatively evenly throughout the four categories, except that the single largest group, high school graduates, represented 37% (2,169). Twenty percent (1,032) of the sample were below the poverty level. Ninety-one percent (5,368) of the sample reported some type of insurance, while 9% (235) reported having no

insurance. Sixty-four percent (3,747) of respondents were employed, with 32% (1,852) stating that they were not in the labor force and 4% (242) reporting being unemployed.

Eighty-six percent (5,210) reported their health status to be excellent or good, while 14% (832) reported fair or poor health. Seventy-nine percent (4,801) reported having a regular source of care.

The number and percent of the sample having a chronic illness, an ambulatory visit, a hospitalization, or an emergency visit are presented in Table 4.

Table 4

Description of the Sample--Persons 17 Years and Older Who
Responded to the National Access to Care Survey:
Independent and Outcome Variables.
 Total N = 6147*

	N	%**
<u>CHRONIC ILLNESS</u>		
Chronic	1275	21
Well	<u>4872</u>	<u>79</u>
TOTAL	6147	100
<u>AMBULATORY VISIT</u>		
Yes	3855	64
No	<u>2214</u>	<u>36</u>
TOTAL	6069	100
<u>HOSPITALIZATION</u>		
Yes	276	4
No	<u>5866</u>	<u>96</u>
TOTAL	6142	100
<u>EMERGENCY VISIT</u>		
Yes	964	16
No	<u>5126</u>	<u>84</u>
TOTAL	6090	100

* Where N<6147, respondents did not answer the question.

** Percent may not total to 100% due to rounding.

Twenty-one percent (1,275) reported at least one chronic illness while 79% (4,872) considered themselves to be well. These two groups combined comprised the total sample (100%=6,147). Throughout the study, if the total number reported is not equal to 6,147, a question has not been answered. Appendices D, E, and F contain a complete description of the missing data. Overall a very small proportion of data was missing.

The sample is further displayed in Table 4 by outcome variables: ambulatory visit, hospitalization, and emergency visit. Sixty-four percent (3,855) reported at least one ambulatory visit, while 36% (2,214) reported no ambulatory visit. Four percent (276) had been hospitalized within the last year, while the majority (96%; 5,866) reported no hospitalizations. Sixteen percent (964) reported an emergency visit, and 84% (5,126) reported no emergency visit.

Since the purpose of this study is to describe the differences in utilization by chronic versus well persons, the demographic characteristics of persons with chronic illness and those who are well are presented in Table 5.

Table 5

Description of the Sample--Persons 17 Years and Older
Responding to the National Access to Care Survey and
Categorizing Themselves as Either Well (Well) or Having a
Chronic Illness (Chronic)*

	Chronic		Well		
	N	%	N	%	N
<u>AGE</u>					
17-34	237	19	2195	45	2432
35-44	140	11	1016	21	1156
45-54	153	12	646	13	799
55-64	258	20	491	10	749
65-74	305	24	372	8	677
75+	181	14	152	3	334
TOTAL	1275	100	4872	100	6147
Chi-square 5df, 793.5 p<.001					
<u>GENDER</u>					
Male	645	51	2323	48	2968
Female	630	49	2549	52	3179
TOTAL	1275	100	4872	100	6147
Chi-square 1df, 3.4 p=.066					
<u>ETHNICITY</u>					
Black	164	13	444	9	608
Hispanic	58	5	299	6	357
White	1027	82	4012	84	5039
TOTAL	1249	100	4755	99	6004
Chi-square 2df, 18.9 p<.001					
<u>MARITAL STATUS</u>					
Single	139	11	701	15	840
Married	795	64	337	71	4132
Divorced	108	9	386	8	494
Widowed	201	16	247	5	448
TOTAL	1243	100	4671	100	5914
Chi-square 3df, 172.3 p<.001					
<u>RESIDENCE</u>					
Urban	853	67	3541	73	4394
Rural	418	33	1319	27	1737
TOTAL	1271	100	4860	100	6131
Chi-square 1df, 16.5 p<.001					

Table 5 - continued

	Chronic		Well		N
	N	%	N	%	
<u>EDUCATION</u>					
Some HS or less	361	29	681	15	1042
HS Grad	438	35	1731	37	2169
Some Col	224	18	1123	24	1347
Col Grad	212	17	1134	24	1346
TOTAL	1235	100	4669	100	5904
Chi-square 3df, 155.7 p<.001					
<u>INCOME</u>					
Below Pov	286	27	746	18	1032
Above Pov	769	73	3497	82	4266
TOTAL	1055	100	4243	100	5298
Chi-square 1df, 49.1 p<.001					
<u>INSURANCE</u>					
Uninsured	70	6	474	10	544
Insured	1176	94	4193	90	5369
TOTAL	1246	100	4667	100	5913
Chi-square 1df, 24.3 p<.001					
<u>EMPLOYMENT</u>					
Unemployed	42	3	200	4	242
Employed	521	42	3226	70	3747
Not in labor force	671	54	1181	26	1852
TOTAL	1234	99	4607	100	5841
Chi-square 2df, 372.6 p<.001					
<u>HEALTH STATUS</u>					
Excel/Good	798	65	4413	92	5211
Fair/Poor	437	35	395	8	832
TOTAL	1235	100	4808	100	6043
Chi-square 1df, 611.6 p<.001					
<u>REGULAR SOURCE OF CARE</u>					
Yes	1128	91	3673	76	4801
No	108	9	1146	24	1254
TOTAL	1236	100	4819	100	6055
Chi-square 1df, 135.4 p<.001					

*Totals may not equal 100% due to rounding

All demographic characteristics suggest significant ($p < .001$) differences in the chronically ill versus well with the exception of gender. Chronic illness was evenly distributed among males (51%; 645) and females (49%; 630). The largest percent (24%; 305) of the chronically ill were in the 65 to 74 age group, with the percent dropping to 14% (181) in those 75 and older. In contrast, the largest percent (45%; 2,195) of the well were 17-34 years of age. The chi-square 5df was 793.53 ($p < .001$).

Ethnicity also evidenced differences (chi-square 2df = 18.9, $p < .001$). In contrast to the well, those with chronic illness were slightly more likely to be minority with 18% Black (13%; 164) and Hispanic (5%; 58). Within the well, 84% were White, 9% (444) Black and 6% (299) Hispanic.

Sixteen percent (201) of the chronically ill were widowed while only 5% (247) of the well were widowed. Sixty-four percent (795) of the chronically ill were married, and 71% (337) of the well were married. A similar percent of the chronically ill (9%; 108) and well (8%; 386) were divorced. Eleven percent (139) of the chronically ill and 15% (701) of the well reported being single. Those differences were significant, with chi-square 3df = 172.3 ($p < .001$).

Of those reporting a chronic illness, 67% (853) lived in an urban area, while 33% (418) were in rural areas. A slightly higher percent (73%; 3541) of the well lived in urban areas, with 27% (1,319) of the well living in rural areas. These differences were significant (chi-square 1df = 16.5, $p < .001$).

The chronically ill were less well educated. The majority of the chronically ill reported being high school graduates (35%; 438) or having some high school (29%; 3,610). Few of the chronically ill reported being college graduates (17%; 212) or having some college (18%; 224). In contrast, a large proportion of the well were college graduates (24%; 1,134) or had some college (24%; 1,123). These differences were significant (chi-square, 3df = 155.7, $p < .001$).

A greater proportion of the chronically ill reported being below poverty (27%; 286) while 18% (746) of the well reported being below poverty. These differences seem even more dramatic when those above poverty are compared. Here, 82% (3,497) of the well were above poverty while 73% (769) of the chronically ill were above poverty. The differences in the income levels were significant (chi-square 1df = 49.1, $p < .001$). Those with chronic illness were more likely to be insured. Ninety-four percent

(1,176) of the chronically ill reported having insurance in contrast to 90% (4,196) of the well. These differences were significant (chi-square, 1df = 24.3, $p < .001$).

A striking difference between the chronically ill and the well was their employment status. Only 42% (521) of the chronically ill were employed, in contrast to 70% (3,226) of the well. Fifty-four percent (671) of the chronically ill were not in the labor force, (i.e., not seeking work), while 26% (1,181) of the well were not in the labor force. Chronically ill and well were similar in the proportion reporting themselves unemployed with three percent (42) of the chronically ill reported being unemployed, while 4% (200) of the well reported being unemployed (chi-square, 2df = 372.6, $p < .001$).

Health status evidenced differences in the chronically ill versus well. Thirty-five percent (437) of the chronically ill reported being in fair or poor health, while only 8% (395) of the well reported their health as fair or poor (chi-square, 1df = 611.6, $p < .001$).

Likewise, the chronically ill were more likely than the well to report a regular source of care, with 91% (1,128) of the chronically ill reporting a regular source of care in contrast to 76% (3,673) of the well. These

differences were significant (chi-square, 1df = 135.4, $p < .001$).

In summary, these groups differed greatly for some of the variables and at least slightly for almost all. Some of the variables are known to affect access to care. It is important to demonstrate the effect of chronic illness on visits, holding constant these other factors.

Hypotheses

The purpose of this study was to determine the difference in access to care of persons with chronic illness and well persons in the National Access to Care Survey, as evidenced by numbers of ambulatory visits, hospitalizations, and emergency visits.

Hypothesis 1:

Hypothesis 1 predicted that persons with chronic illness would be more likely to have an ambulatory visit than adults who were well. Table 6 describes the number and percent of chronically ill and well persons who had an ambulatory visit within the previous year. Adults with chronic illness were more likely to have had an ambulatory visit than well persons. Eighty-one percent (1,015) of persons with chronic illness had an ambulatory visit within the past year, while 19% (232) had no visit. In contrast, 59% (2840) of well adults had an ambulatory

visit within the past year, and 41% (1982) had not (chi-square, 1 df = 215.8, $p < .001$). Research hypothesis 1 is confirmed.

Table 6

Number* and Percent of Persons Chronic and Well Having an Ambulatory Visit.

	Ambulatory		No Ambulatory		Total	
	N	%	N	%	N	%
Chronic Illness	1015	81	232	19	1247	100
Well	<u>2840</u>	59	<u>1982</u>	41	<u>4822</u>	100
TOTAL	3855		2214		6069	

Chi-square 1df=215.8 ($p < .001$)

Relative Odds (95% C.I.) = 3.0 (2.6-3.5)

Relative Probability (95% C.I.) = 1.4 (1.3-1.4)

*Totals may not be exact due to rounding

Hypothesis 2

Hypothesis 2 predicted that adults with a chronic illness would be more likely to have a hospitalization than well adults. Table 7 presents the number and percent of persons having a hospitalization during the previous year. Adults with a chronic illness were more likely to have a hospitalization than were well adults. Eighteen percent (228) of persons with chronic illness had a hospitalization, while 1% (48) of well adults had a hospitalization. Ninety-nine percent (4,820) of well adults had not been hospitalized. These proportions were significantly different (chi-square, 1df = 672.6, $p < .001$). Research hypothesis 2 is confirmed.

Table 7

Number* and Percent of Persons Chronic and Well Having a Hospitalization

	Hospitalization		No Hospitalization		Total	
	N	%	N	%	N	%
Chronic Illness	228	18	1046	82	1274	100
Well	<u>48</u>	1	<u>4820</u>	99	<u>4868</u>	100
TOTAL	276		5866		6142	

Chi-square 1df=672.6 ($p < .001$)

Relative Odds (95% C.I.) = 22.0 (17.4-27.8)

Relative Probability (95% C.I.) = 18.3 (14.7-22.7)

*Totals may not be exact due to rounding

Hypothesis 3

Hypothesis 3 predicted that adults with a chronic illness were no more or less likely to have an emergency visit than adults who were well. These data are presented in Table 8. Twenty-three percent (286) of adults with chronic illness had an emergency visit, while 14% (679) of well adults reported an emergency visit. Seventy-seven percent (958) of adults with a chronic illness and 86% (4,168) of well adults did not have an emergency visit.

Table 8

Number* and Percent of Persons Chronic and Well Having an Emergency Visit.

	Emergency		No Emergency		Total	
	N	%	N	%	N	%
Chronic Illness	286	23	958	77	1244	100
Well	<u>679</u>	14	<u>4168</u>	86	<u>4846</u>	100
TOTAL	964		5126		6090	

Chi-square 1 df=59.8 ($p < .001$)

Relative Odds (95% C.I.) = 1.8 (1.6-2.1)

Relative Probability (95% C.I.) = 1.6 (1.4-1.9)

*Totals may not be exact due to rounding

These differences were significant (chi-square, 1df = 59.8, $p < .001$). Therefore, null Hypothesis 3 must be rejected. Adults with chronic illness were more likely to have an emergency visit than well adults.

Differences in Access Attributable to Chronic Illness

The purpose of this study was to determine the effect of chronic illness on the outcome variables of ambulatory visit, hospitalization, and emergency visit and to determine if any observed associations between chronic illness and outcome could be explained by other variables associated with the outcome. Additional analyses were performed to see if the effect of chronic illness in producing an ambulatory visit, a hospitalization, or an emergency visit is more or less pronounced in certain subgroups. To this end, an assessment of the statistical interaction and confounding was accomplished utilizing stratified analyses. Finally, logistic regression was used to simultaneously account for the effect of additional variables.

Stratified Analyses

To assess the presence of interaction, stratified analyses of chronic versus well on the ambulatory visit variable (Table 9) were constructed, using a 95% confidence interval. In Table 9, the relative odds for each variable are approximately equal. For example, the relative odds for the age subgroup 17-34 is 3.0 (95% C.I.=2.1-4.2). This relative odds is quite similar to the relative odds for the age group 35-44 (2.2, C.I.=1.5-3.3)

and the relative odds for the age group 45-54 (3.8, C.I.=2.4-5.9). The absence of differences in the relative odds suggests that the effect of chronic illness in producing a visit is similar within age groups. Likewise, the relative probability of having a visit for each variable is similar. Finally, a statistical test for interaction--the Breslow-Day Test for Homogeneity in the odds ratios--was constructed. The Breslow-Day Test was not significant at $p \leq .05$ for any of the variables. Therefore, there is no evidence of strata-to-strata differences on the effect of chronic illness in producing an ambulatory visit. Interaction has been ruled out.

Table 9

Stratified Analysis for Chronic and Well Having an Ambulatory Visit

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>CRUDE</u>	3.0 (2.6-3.5)	1.4 (1.3-1.4)
<u>AGE</u>		
17-34	3.0 (2.1-4.2)	1.4 (1.3-1.5)
35-44	2.2 (1.5-3.3)	1.3 (1.2-1.4)
45-54	3.8 (2.4-5.9)	1.5 (1.4-1.7)
55-64	3.2 (2.2-4.6)	1.4 (1.3-1.6)
65-74	3.0 (2.1-4.3)	1.4 (1.2-1.5)
75+	4.2 (2.2-7.4)	1.5 (1.2-1.7)
Adjusted Mantel-Haenszel =	3.1 (2.6-3.6)	1.4 (1.3-1.5)
Breslow-Day Test for Homogeneity	p=.6	
<u>GENDER</u>		
Male	3.5 (2.9-4.4)	1.5 (1.5-1.6)
Female	2.7 (2.2-3.4)	1.3 (1.2-1.3)
Adjusted Mantel-Haenszel =	3.1 (2.7-3.6)	1.4 (1.3-1.5)
Breslow-Day Test for Homogeneity	p=.1	
<u>ETHNICITY</u>		
Black	2.3 (1.6-3.5)	1.4 (1.2-1.5)
Hispanic	3.0 (1.6-5.8)	1.5 (1.2-1.8)
White	3.2 (2.7-3.9)	1.4 (1.3-1.4)
Adjusted Mantel-Haenszel =	3.1 (2.6-3.6)	1.4 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.5	
<u>MARITAL STATUS</u>		
Single	3.7 (2.3-5.9)	1.4 (1.3-1.6)
Married	3.1 (2.5-3.7)	1.4 (1.3-1.5)
Divorced	1.9 (1.2-3.0)	1.2 (1.1-1.4)
Widowed	3.7 (2.3-5.8)	1.4 (1.3-1.6)
Adjusted Mantel-Haenszel =	3.1 (2.6-3.6)	1.4 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.2	
<u>RESIDENCE</u>		
Urban	3.2 (2.7-3.9)	1.4 (1.3-1.5)
Rural	2.8 (2.1-3.6)	1.4 (1.3-1.5)
Adjusted Mantel-Haenszel =	3.1 (2.6-3.6)	1.4 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.7	

Table 9 - continued

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>EDUCATION</u>		
Some HS or less	3.5 (2.6-4.7)	1.5 (1.4-1.7)
HS Grad	3.0 (2.3-3.8)	1.4 (1.3-1.5)
Some Col	3.4 (2.3-5.0)	1.4 (1.3-1.5)
Col Grad	3.3 (2.2-4.9)	1.4 (1.3-1.5)
Adjusted Mantel-Haenszel =	3.2 (2.8-3.8)	1.4 (1.4-1.5)
Breslow-Day Test for Homogeneity	p=.9	
<u>INCOME</u>		
Below poverty	4.0 (2.8-5.6)	1.5 (1.4-1.6)
Above poverty	3.0 (2.5-3.7)	1.4 (1.3-1.4)
Adjusted Mantel-Haenszel =	3.2 (2.7-3.8)	1.4 (1.3-1.5)
Breslow-Day Test for Homogeneity	p=.4	
<u>INSURANCE</u>		
Insured	3.0 (2.5-3.5)	1.4 (1.3-1.4)
Uninsured	3.4 (1.9-6.3)	1.5 (1.3-1.8)
Adjusted Mantel-Haenszel =	3.0 (2.6-3.5)	1.4 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.9	
<u>EMPLOYMENT</u>		
Unemployed	5.4 (2.1-13.6)	1.6 (1.3-1.9)
Employed	2.5 (2.0-3.1)	1.3 (1.3-1.4)
Not in Labor Force	3.4 (2.7-4.3)	1.4 (1.3-1.5)
Adjusted Mantel-Haenszel =	2.9 (2.5-3.4)	1.4 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.1	
<u>HEALTH STATUS</u>		
Excel/Good	2.8 (2.3-3.4)	1.4 (1.3-1.4)
Fair/Poor	2.6 (1.9-3.6)	1.3 (1.2-1.4)
Adjusted Mantel-Haenszel =	2.8 (2.4-3.2)	1.3 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.9	
<u>REGULAR SOURCE OF CARE</u>		
Yes	2.9 (2.4-3.4)	1.3 (1.3-1.4)
No	2.8 (1.8-4.2)	1.6 (1.3-1.8)
Adjusted Mantel-Haenszel =	2.8 (2.4-3.3)	1.3 (1.3-1.4)
Breslow-Day Test for Homogeneity	p=.99	

Estimates of the effect of chronic illness on ambulatory visit were produced, holding constant each variable one at a time. In Table 9 it can be seen that the adjusted relative odds for each variable are very similar to the crude relative odds. The adjusted Mantel-Haenszel estimates for each variable are all similar to the crude relative odds (95% confidence interval) of 3.0 reported in Table 6. It is therefore appropriate to consider the crude relative odds (and therefore the crude relative probability) for the effect of chronic illness on ambulatory visit as accurately reflecting the effect in all of the strata. There is no evidence of confounding.

Table 10 presents the stratified analysis for chronic versus well having a hospitalization. Again, the relative odds of having a hospitalization are similar among the different strata, with the exception of gender and ethnicity. The relative odds for males was 35.3 (20.7-60.0), compared with 15.3 (10.1-23.0) for females. The effect of chronic illness on producing a hospitalization is significantly greater in males than females. The Breslow-Day Test for Homogeneity was $p=.013$, indicating that gender may interact with the relationship of chronic illness and hospitalization. Testing for confounding was inappropriate since there was some evidence of

interaction. This variable was examined further using logistic regression.

Table 10

Stratified Analysis for Chronic and Well Having a Hospitalization

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>CRUDE</u>	22.0 (17.4-27.8)	18.3 (14.7-22.7)
<u>AGE</u>		
17-34	11.8 (6.9-20.1)	10.4 (6.3-17.1)
35-44	35.9 (11.2-115.3)	32.0 (10.3-99.9)
45-54	21.9 (7.7-62.2)	19.1 (6.9-52.6)
55-64	30.8 (11.3-83.9)	24.5 (9.2-65.1)
65-74	17.4 (6.8-44.2)	14.3 (5.8-35.3)
75+	18.2 (5.4-59.5)	13.6 (4.3-42.6)
Adjusted Mantel-Haenszel=	18.7 (14.0-25.0)	15.5 (11.8-20.3)
Breslow-Day Test for Homogeneity	p=.5	
<u>GENDER</u>		
Male	35.3 (20.7-60.0)	28.6 (17.1-47.9)
Female	15.3 (11.1-23.0)	13.0 (8.8-19.1)
Adjusted Mantel-Haenszel=	22.2 (17.5-28.0)	18.5 (14.8-23.1)
Breslow-Day Test for Homogeneity	p=.013	
<u>ETHNICITY</u>		
Black	6.7 (3.2-14.0)	5.9 (2.9-11.7)
Hispanic	*	*
White	27.4 (18.8-39.8)	22.4 (15.6-32.1)
Adjusted Mantel-Haenszel=	21.4 (16.9-27.1)	17.8 (14.3-22.2)
Breslow-Day Test for Homogeneity	p=.004	
<u>MARITAL STATUS</u>		
Single	12.6 (5.5-29.1)	11.1 (5.0-24.4)
Married	26.1 (17.6-38.6)	21.1 (14.5-30.7)
Divorced	28.3 (6.3-127.9)	24.8 (5.7-108.5)
Widowed	24.6 (6.0-99.9)	20.4 (5.2-81.0)
Adjusted Mantel-Haenszel=	23.8 (18.6-30.4)	19.6 (15.6-24.7)
Breslow-Day Test for Homogeneity	p=.6	
<u>RESIDENCE</u>		
Urban	17.7 (12.3-25.4)	14.9 (10.6-21.0)
Rural	41.2 (20.0-85.2)	33.0 (16.3-66.9)
Adjusted Mantel-Haenszel=	22.3 (17.6-28.3)	18.6 (14.9-23.3)
Breslow-Day Test for Homogeneity	p=.1	

Table 10 - continued

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>EDUCATION</u>		
Some HS or less	16.9 (8.4-33.8)	13.8 (7.1-27.0)
HS Grad	26.5 (14.4-48.7)	22.3 (12.3-40.3)
Some Col	25.0 (12.8-48.8)	20.1 (10.7-37.9)
Col Grad	21.8 (10.8-44.0)	18.2 (9.3-35.7)
Adjusted Mantel-Haenszel	=22.0 (17.2-28.2)	18.2 (14.4-22.9)
Breslow-Day Test for Homogeneity p=.9		
<u>INCOME</u>		
Below poverty	15.3 (8.1-28.7)	12.3 (6.8-22.5)
Above poverty	22.8 (15.4-33.9)	19.0 (13.0-27.7)
Adjusted Mantel-Haenszel	=20.1 (15.6-25.8)	16.5 (13.1-20.9)
Breslow-Day Test for Homogeneity p=.6		
<u>INSURANCE</u>		
Insured	22.3 (16.0-31.0)	18.4 (13.4-25.3)
Uninsured	14.7 (4.4-49.3)	13.0 (4.1-41.4)
Adjusted Mantel-Haenszel	=21.8 (17.2-27.6)	18.1 (14.5-22.6)
Breslow-Day Test for Homogeneity p=.8		
<u>EMPLOYMENT</u>		
Unemployed	8.2 (2.7-25.0)	6.8 (2.5-18.4)
Employed	16.6 (10.5-26.4)	14.7 (9.5-22.8)
Not in Labor Force	33.2 (17.4-63.2)	26.0 (13.9-48.8)
Adjusted Mantel-Haenszel	=22.4 (17.0-29.6)	18.6 (14.3-24.2)
Breslow-Day Test for Homogeneity p=.1		
<u>HEALTH STATUS</u>		
Excel/Good	17.2 (11.7-25.4)	15.2 (10.5-22.1)
Fair/Poor	13.2 (7.1-24.6)	9.7 (5.4-17.6)
Adjusted Mantel-Haenszel	=15.3 (11.6-20.2)	12.4 (9.6-15.9)
Breslow-Day Test for Homogeneity p=.8		
<u>REGULAR SOURCE OF CARE</u>		
Yes	21.2 (14.8-30.4)	17.6 (12.5-24.7)
No	26.9 (11.2-64.9)	22.9 (10.0-52.6)

* Not computed since the cell for Hispanic well persons being hospitalized was zero.

The stratified analyses for ethnicity resulted in there being no Hispanics who were well and who stayed over night in a hospital. The strata for Hispanics therefore could not be analyzed. However, this result suggests that Hispanics are possibly quite different from Blacks and Whites and that this finding should not be ignored. Hispanics were, however, omitted from the analysis presented in Table 10 so that only Blacks and Whites were compared. It should be noted that there was evidence of interaction of chronic illness and ethnicity. The relative odds of a Black with chronic illness being hospitalized was 6.7 versus a value of 27.4 for a White with chronic illness being hospitalized. These values were significantly different (Breslow-Day Test for Homogeneity $p=.004$). Ethnicity was further analyzed using multivariable techniques.

Apart from gender and ethnicity, the remaining variables had no effect. The adjusted Mantel-Haenszel relative odds and relative probability for remaining variables are similar to their respective crude values (Table 7). Therefore, confounding was ruled out except for gender and ethnicity.

Stratified analyses for chronic versus well having an emergency visit were also conducted. The relative odds

within each strata were similar. All of the Breslow-Day Tests for Homogeneity were not significant. There was no evidence of interaction.

The stratified analysis for chronic versus well having an emergency visit (Table 11) demonstrates that the Mantel-Haenszel adjusted relative odds (95% confidence interval) is similar for each strata to the crude relative odds reported in Table 8. The crude relative odds (relative probability) of 1.8 (1.6) is considered to accurately reflect the relationship of chronic illness to having an emergency visit.

Table 11

Stratified Analysis for Chronic and Well Having an
Emergency Visit

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>CRUDE</u>	1.8 (1.6-2.1)	1.6 (1.4-1.9)
<u>AGE</u>		
17-34	2.9 (2.2-3.9)	2.2 (1.8-2.7)
35-44	1.7 (1.1-2.7)	1.6 (1.1-2.2)
45-54	2.4 (1.5-3.8)	2.1 (1.4-3.0)
55-64	1.7 (1.1-2.6)	1.6 (1.1-2.3)
65-74	2.3 (1.4-3.7)	2.1 (1.4-3.2)
75+	2.3 (1.3-4.2)	2.0 (1.2-3.3)
Adjusted Mantel-Haenszel =	2.3 (1.9-2.7)	1.9 (1.7-2.2)
Breslow-Day Test for Homogeneity	p=.4	
<u>GENDER</u>		
Male	1.8 (1.4-2.2)	1.6 (1.3-1.9)
Female	1.9 (1.5-2.3)	1.7 (1.4-2.0)
Adjusted Mantel-Haenszel =	1.8 (1.6-2.1)	1.6 (1.4-1.9)
Breslow-Day Test for Homogeneity	p=.8	
<u>ETHNICITY</u>		
Black	1.8 (1.1-2.8)	1.6 (1.1-2.3)
Hispanic	1.5 (.8-2.9)	1.4 (.8-2.2)
White	1.9 (1.6-2.2)	1.7 (1.5-1.9)
Adjusted Mantel-Haenszel =	1.9 (1.6-2.2)	1.6 (1.5-1.9)
Breslow-Day Test for Homogeneity	p=.9	
<u>MARITAL STATUS</u>		
Single	2.3 (1.5-3.6)	1.9 (1.4-2.7)
Married	1.8 (1.5-2.2)	1.6 (1.4-1.9)
Divorced	2.2 (1.3-3.7)	1.9 (1.3-2.7)
Widowed	2.2 (1.3-3.7)	1.9 (1.2-2.1)
Adjusted Mantel Haenszel =	2.0 (1.7-2.3)	1.7 (1.5-2.0)
Breslow-Day Test for Homogeneity	p=.8	
<u>RESIDENCE</u>		
Urban	1.9 (1.5-2.2)	1.7 (1.4-1.9)
Rural	1.8 (1.4-2.4)	1.6 (1.3-2.1)
Adjusted Mantel-Haenszel =	1.8 (1.6-2.2)	1.7 (1.5-1.9)
Breslow-Day Test for Homogeneity	p=1.0	

Table 11 - continued

	Relative Odds (95% C.I.)	Relative Probability (95% C.I.)
<u>EDUCATION</u>		
Some HS or less	2.5 (1.8-3.5)	2.1 (1.6-2.8)
HS Grad	1.8 (1.4-2.4)	1.6 (1.4-1.0)
Some Col	1.7 (1.2-2.5)	1.6 (1.2-1.6)
Col Grad	1.7 (1.2-1.4)	1.5 (1.1-2.1)
Adjusted Mantel Haenszel =	1.9 (1.6-2.2)	1.7 (1.5-1.9)
Breslow-Day Test for Homogeneity p=.5		
<u>INCOME</u>		
Below poverty	2.6 (1.8-3.6)	12.1 (1.6-2.7)
Above poverty	1.8 (1.4-2.1)	1.6 (1.4-1.8)
Adjusted Mantel-Haenszel =	1.9 (1.6-2.3)	1.7 (1.5-2.0)
Breslow-Day Test for Homogeneity p=.2		
<u>INSURANCE</u>		
Insured	1.8 (1.5-2.1)	1.6 (1.4-2.0)
Uninsured	2.4 (1.4-4.3)	2.0 (1.3-2.9)
Adjusted Mantel-Haenszel =	1.8 (1.6-2.2)	1.7 (1.5-1.9)
Breslow-Day Test for Homogeneity p=.6		
<u>EMPLOYMENT</u>		
Unemployed	2.6 (1.2-5.7)	2.1 (1.2-3.8)
Employed	2.0 (1.6-2.5)	1.7 (1.5-1.0)
Not in Labor Force	2.3 (1.7-3.0)	2.0 (1.6-2.5)
Adjusted Mantel Haenszel =	2.1 (1.8-2.5)	1.8 (1.6-2.1)
Breslow-Day Test for Homogeneity p=.8		
<u>HEALTH STATUS</u>		
Excel/Good	1.6 (1.3-1.9)	1.5 (1.2-1.7)
Fair/Poor	1.3 (1.0-1.8)	1.2 (1.0-1.5)
Adjusted Mantel-Haenszel =	1.5 (1.3-1.8)	1.4 (1.2-1.6)
Breslow-Day Test for Homogeneity p=.7		
<u>REGULAR SOURCE OF CARE</u>		
Yes	1.8 (1.5-2.1)	1.6 (1.4-1.8)
No	2.7 (1.7-4.3)	2.2 (1.6-3.1)
Adjusted Mantel Haenszel =	1.9 (1.6-2.2)	1.7 (1.5-1.9)
Breslow-Day Test for Homogeneity p=.2		

In summary, the relationship of chronic illness being predicative of an ambulatory visit, a hospitalization and an emergency visit holds. Two subgroups, gender and ethnicity, differ in the relationship of chronic illness and hospitalization. Further analyses were conducted using multivariable analyses to estimate the effect of chronic illness on the outcome variables, simultaneously holding constant all of the variables.

Logistic Regression

The stratified analyses previously reported for adults with chronic illness having ambulatory visits, hospitalizations, and emergency visits suggested that there are potential interactions between gender and chronic illness in predicting hospitalizations and potential interactions of ethnicity and chronic illness in predicting hospitalizations. In order to better understand these potential interactions and also to simultaneously control for all variables, a series of logistic regressions for chronic illness and ambulatory visits, chronic illness and hospitalizations, and chronic illness and emergency visits was conducted. The purpose of these regressions was to determine what model best fit the data in predicting the outcome variables. In other words, the variables chronic illness, age, gender,

ethnicity, marital status, residence, education, income, insurance, employment, health status, and regular source of care were simultaneously entered in three separate equations which predicted ambulatory visits, hospitalizations, and emergency visits.

Dummy variables were used for variables which were not dichotomous. Age was entered as a categorical variable with six categories. Each age category was compared with the 17-34 year age group. Likewise, ethnicity, marital status, and employment status were entered as categorical variables.

Gender, residence, income, insurance, health status and regular source of care were entered as dichotomous variables. Education status could have been entered as either a continuous or nominal variable. The decision was made to enter education status as a continuous variable since there was some indication of a linear trend for ambulatory visits and hospitalizations (see Tables in Appendix D, E, and F).

The results of the final logistic model for ambulatory visit can be seen in Table 12. Appendix G presents the parameter estimates. The effect of chronic illness predicting an ambulatory visit which was reported previously from other analyses holds even when

simultaneously controlling for other variables. A person with a chronic illness is 2.95 times more likely to have an ambulatory visit than a well person (C.I.=2.42-3.59). Chronic illness is predictive of an ambulatory visit holding constant age, ethnicity, income and health status, variables previously identified as predictive of utilization.

Table 12

Logistic Regression Model for Ambulatory Visit

<u>Variable</u>	<u>Relative Odds</u>	<u>95% Confidence Interval</u>
<u>CHRONIC ILLNESS</u>	2.95	(2.42-3.59)
<u>AGE</u>		
35-44 vs. 17-34	0.80	(0.79-0.81)
45-54 vs. 17-34	0.73	(0.71-0.74)
55-64 vs. 17-34	0.75	(0.74-0.77)
65-74 vs. 17-34	0.86	(0.82-0.89)
75+ vs. 17-34	0.93	(0.84-1.01)
<u>GENDER</u>		
Male	0.60	(0.52-0.68)
<u>ETHNICITY</u>		
Hispanic vs. Black	1.17	(1.11-1.23)
White vs. Black	1.45	(1.39-1.52)
<u>MARITAL STATUS</u>		
Married vs. Single	1.01	(0.99-1.03)
Divorced vs. Single	1.19	(1.15-1.24)
Widowed vs. Single	0.94	(0.88-1.02)
<u>RESIDENCE</u>		
Urban	1.14	(0.99-1.31)
<u>EDUCATION*</u>	1.17	(1.09-1.25)
<u>INCOME</u>		
Below Poverty	0.93	(0.77-1.11)
<u>INSURANCE</u>		
Insured	0.83	(0.66-1.04)
<u>EMPLOYMENT</u>		
Unemployed vs. Employed	0.90	(0.86-0.95)
Not in Labor Force vs. Employed	0.98	(0.95-1.02)

Table 12 continued

Variable	Relative Odds	95% Confidence Interval
<u>HEALTH STATUS</u>		
Excel/Good Health	0.59	(0.47-0.74)
<u>REGULAR SOURCE OF CARE</u>	1.93	(1.67-2.24)

* Education: Relative Odds represents the effect on Ambulatory Visits for each one unit increment in education level (eg., from "some high school or less" to "high school graduate" is one unit increment).

The results for the final logistic regression model for hospitalization including interactions may be seen in Table 13. The basic model and two interaction models were used to make these estimates. The parameter estimates for the three models are presented in Appendices H, I and J. Chronic illness, when simultaneously entered with other variables, no longer has the predictive power reported earlier. The relative odds is 15.00 (C.I.=9.91-22.71) which is less than the relative odds of 22.00 reported previously. In other words, when all variables are simultaneously entered, the odds that an adult with a chronic illness will have a hospitalization is 15 times larger than the odds that a well adult will have a hospitalization. A significant interaction was found between gender and chronic illness. The effect of chronic illness on producing a hospitalization was greater in males than females. In males with a chronic illness the odds was 24.68 (C.I.=12.93-47.15). In females, the odds was 10.24 (C.I.=6.11-17.14).

Table 13

Logistic Regression Model with Interactions for Hospitalizations

Variable	Relative Odds	95% Confidence Interval
<u>CHRONIC ILLNESS</u>	15.00	(9.91-22.71)
By Gender ^{1,3}		
Male	24.68	(12.93-47.12)
Female	10.24	(6.11-17.14)
By Ethnicity ^{1,2}		
Black	5.21	(2.01-13.49)
White	17.50	(2.81-96.50)
<u>AGE</u>		
35-44 vs. 17-34	0.49	(0.41- 0.60)
45-54 vs. 17-34	0.58	(0.48- 0.71)
55-64 vs. 17-34	0.75	(0.63- 0.87)
65-74 vs. 17-34	0.70	(0.58- 0.84)
75+ vs. 17-34	1.16	(0.74- 1.82)
<u>GENDER</u> ^{3,5}		
<u>ETHNICITY</u> ^{4,5}		
<u>MARITAL STATUS</u>		
Married vs. Single	1.11	(0.96- 1.28)
Divorced vs. Single	0.67	(0.47- 0.92)
Widowed vs. Single	0.94	(0.62- 1.41)
<u>RESIDENCE</u>		
Urban	0.92	(0.66- 1.28)
<u>EDUCATION</u> ⁶	1.16	(0.99- 1.37)
<u>INCOME</u>		
Below Poverty	0.90	(0.60- 1.33)
<u>INSURANCE</u>		
Insured	1.00	(0.50- 2.00)
<u>EMPLOYMENT</u>		
Unemployed vs. Employed	2.10	(1.53- 2.86)
Not in Labor Force vs. Employed	1.61	(1.29- 2.02)

Table 13 - continued

Variable	Relative Odds	95% Confidence Interval
<u>HEALTH STATUS</u>		
Excel/Good Health	0.32	(0.22- 0.45)
<u>REGULAR SOURCE OF CARE</u>	1.05	(0.63- 1.75)

¹ Interactions were estimated separately.

² Hispanics were omitted since there was a zero cell for hispanic well persons being hospitalized.

³ Chi-square test for statistical interaction with gender = 4.76, df=1, p=.03.

⁴ Chi-square test for statistical interaction with ethnicity = 6.15, df=1, p=.01.

⁵ Main effect not estimated due to interaction with chronic illness.

⁶ Education: Relative Odds represents the effect on hospitalization for each one unit increment in education level (eg. from "high school or less" to "high school graduate" is one unit increment).

Likewise there was statistical interaction between ethnicity and chronic illness in predicting a hospitalization. For this model Hispanics were excluded since there were no well Hispanics reporting a hospitalization. The relative odds of having a hospitalization for Whites with a chronic illness was 17.5 (C.I.=2.81-96.5) while in Blacks with chronic illness, the odds of having a hospitalization was 5.21 (C.I.=2.01-13.5). Therefore, the effect of chronic illness in producing a hospitalization was greater in Whites than Blacks.

Finally, Table 14 presents the logistic regression model for emergency visits. The parameter estimates are presented in Appendix K. All variables were simultaneously entered to determine the best model for predicting emergency visits. Chronic illness continued to be the characteristic among the variables most predictive of an emergency visit. The odds that an adult with a chronic illness would have an emergency visit was 2.14 (C.I.=1.74-2.62).

Table 14

Logistic Regression Model for Emergency Visit

Variable	Relative Odds	95% Confidence Interval
<u>CHRONIC ILLNESS</u>	2.14	(1.74-2.62)
<u>AGE</u>		
35-44 vs. 17-34	0.80	(0.79-0.82)
45-54 vs. 17-34	0.50	(0.48-0.52)
55-64 vs. 17-34	0.51	(0.48-0.53)
65-74 vs. 17-34	0.45	(0.42-0.48)
75+ vs. 17-34	0.60	(0.41-0.51)
<u>GENDER</u>		
Male	1.03	(0.87-1.21)
<u>ETHNICITY</u>		
Hispanic vs. Black	1.45	(1.35-1.57)
White vs. Black	1.07	(1.00-1.15)
<u>MARITAL STATUS</u>		
Married vs. Single	1.01	(0.99-1.03)
Divorced vs. Single	1.19	(1.15-1.24)
Widowed vs. Single	0.94	(0.88-1.02)
<u>RESIDENCE</u>		
Urban	1.03	(0.66-1.22)
<u>EDUCATION*</u>	1.03	(0.95-1.13)
<u>INCOME</u>		
Below Poverty	1.06	(0.85-1.32)
<u>INSURANCE</u>		
Insured	1.07	(0.80-1.42)
<u>EMPLOYMENT</u>		
Unemployed vs. Employed	0.90	(0.86-0.95)
Not in Labor Force vs. Employed	0.98	(0.94-1.02)

Table 14- continued

Variable	Relative Odds	95% Confidence Interval
<u>HEALTH STATUS</u>		
Excel/Good Health	0.41	(0.33-0.51)
<u>REGULAR SOURCE OF CARE</u>	1.18	(0.96-1.45)

* Education: Relative Odds represents the effect on Hospitalization for each one unit increment in education level (eg., from "high school or less" to "high school graduate" is one unit increment).

In summary, the finding that chronic illness is predictive of an adult having an ambulatory visit a hospitalization, and an emergency visit hold. There is significant data to suggest that chronic illness and being male as well as having a chronic illness and being White and having a chronic illness increase the likelihood of having a hospitalization.

CHAPTER V

Discussion

This chapter is organized into five sections. The first section presents a summary of the study's purpose, method, and results. Section two discusses the results in relation to previous research. Thirdly, limitations in the consideration of the present findings are presented. The fourth section discusses implications of the present findings. Finally, some conclusions and recommendations for future studies are presented.

Summary

The purpose of this investigation was to assess the relationship between chronic illness and access to care, with access to care evidenced by an ambulatory visit, a hospitalization, or an emergency visit. Adults participating in the 1986 National Access to Care Survey were queried about the presence or absence of a chronic illness. A chronic illness was defined as having one of the following:

- asthma or emphysema,
- cancer,
- heart disease,
- stroke,
- high blood pressure,
- kidney disease,
- liver disease,
- diabetes,

cerebral palsy or other neurological or neuromuscular diseases that affected walking, arm movement, or memory.

Well adults were persons who reported themselves to be well. All children and any adults with trauma, mental retardation, or acute illnesses were omitted from the final study population.

Participants were interviewed by telephone and asked whether or not they had had an ambulatory visit, a hospitalization or an emergency visit within the last year. Socioeconomic and other demographic characteristics of the sample were also elicited. The sample was selected by random-digit telephone dialing, and interviews were conducted by telephone. The survey did not capture adults without a telephone, but since it is estimated that 93% of the United States population now have telephones, these omissions were not considered to change the findings of the study. The entire sample consisted of 6,147 subjects with 1,275 (21%) having a chronic illness and 4,872 (79%) reporting themselves to be well.

Results were analyzed initially by constructing univariate descriptive statistics. The chi-square test for statistical significance was used, and $p < .05$ was accepted. Relative odds and relative probabilities of a person with a chronic illness having an ambulatory visit, a hospitalization, or an emergency visit were constructed.

A 95% confidence interval was utilized. Stratified analyses were constructed to rule out statistical interaction and confounding of the main effect by third factors. The potential third factors were age, gender, ethnicity, marital status, residence, education, income, insurance, employment, health status and regular source of care. Finally, multivariable logistic regression analyses were conducted to estimate simultaneously the main effect taking into account all variables. Additional analyses were conducted for those variables which indicated statistical interaction: gender and ethnicity.

Two hypotheses were supported by the data, and one hypothesis was rejected. The results indicate that having a chronic illness is predictive of having an ambulatory visit and a hospitalization. That is, a person with a chronic illness is three times more likely to have an ambulatory visit in a year and 18 times more likely to have a hospitalization.

There was evidence of statistical interaction between being male and having a chronic illness predicting a hospitalization. When gender and chronic illness were simultaneously taken into account, the relative odds of having a hospitalization was 25 for the male with chronic illness and the overall predictive power of chronic

illness for hospitalization was reduced from an odds of 22 to 15.

Likewise, being White and having a chronic illness was predictive of having a hospitalization. The effect of chronic illness on predicting a visit, as reported earlier without the interaction term, ethnicity, included, was 22 times greater for a person with a chronic illness than for a well adult. When the statistical interaction of ethnicity and chronic illness was taken into account, the odds of a White adult with a chronic illness having a hospitalization was 17.5 and the overall predictive power of chronic illness changed from an odds of 18 to an odds of 15.

Hypothesis 3 predicted that an adult with a chronic illness would have an emergency visit at the same rate as well adults. This hypothesis was not confirmed. In fact, adults with a chronic illness were 1.8 times more likely to have an emergency visit than a well person.

Explication of Results

In the discussion of results, findings related to chronic and serious illnesses will be discussed first, followed by discussions of findings related to ethnicity and health status. Finally, results related to excess

need and increased utilization of health services will be discussed.

Chronic and Serious Illness: The present study examined the relationship between chronic illness and the occurrence of an ambulatory visit, a hospitalization, or an emergency visit. In previous studies chronic illnesses had been combined with serious illnesses. Aday, et al., (1984) had described families with chronic and seriously ill members and the impact on families. In 1987, Freeman described individuals with chronic and serious illnesses which were considered life threatening. Freeman's definition included persons with:

- asthma or emphysema,
- cancer,
- heart disease,
- stroke,
- high blood pressure,
- kidney disease,
- liver disease,
- diabetes,
- neurological disorders, mental retardation, pneumonia
- or influenza, serious injury or other disabilities.

Freeman's study included both children and adults, while the current study was limited entirely to adults.

However, comparing ambulatory visits of the current study with those reported by Freeman suggests differences.

Freeman (1987) reports that 16% of the chronically and seriously ill were without an ambulatory visit during the

previous year, while the current study found 19% of the chronically ill were without an ambulatory visit.

Likewise, hospitalizations in the current study were compared with the results of the Freeman (1987) study. Twenty-nine percent of the chronic and seriously ill had been hospitalized during the past year in the Freeman study, while 18% of the chronically ill were hospitalized in this study. These comparisons suggest that the chronically ill are less likely to have a hospitalization when compared with chronic and seriously ill as reported by Freeman (1987). The results of the present study suggest that the chronically ill are a distinct population from the seriously ill and that the combined study possibly masks significant information about the access to care of adults with chronic illness.

While definitive answers to the questions these findings raise can not be stated, possible explanations can be considered. First, it is possible that persons with acute illnesses such as pneumonia and injuries are more likely to enter the health system. The urgency of such an acute illness or injury might command entrance into the system; in contrast, the person with a chronic illness might delay entrance into the health system.

Secondly, it is also possible that persons with chronic illnesses perceive that the health system, as it is currently organized, might not provide services which would benefit the individual with a chronic illness. Could it be that the current health care system is effective in dealing with acute illnesses and injuries but less effective in dealing with the prolonged, lingering chronic illnesses? Is it possible that a person with a chronic illness perceives that there is little benefit from having an ambulatory visit or hospitalization?

Thirdly, it is possible that the effort which the person with a chronic illness must expend to receive care from the ambulatory care system is greater than the benefit received from the visit. The physical barriers to receiving care are a possible deterrent to the person with a chronic illness.

Finally, the possible economic barriers to receiving an ambulatory visit and hospitalizations have not been ruled out. Although this study simultaneously controlled for the effect of income and insurance on predicting an ambulatory visit, it did not address the question of the effect of financial barriers experienced by persons with chronic illness. Most insurance policies have restrictions on pre-existing conditions. By definition,

chronic illnesses are long-term and, at most points in time, are pre-existing conditions which are then excluded from coverage. These insurance restrictions may reduce the willingness of a person with a chronic illness to seek care.

The health care system's ability or inability to provide beneficial care to the person with chronic illness is not within the control of a person with chronic illness. It is within the policy arena for change to occur in the actual or perceived benefits of health care for persons with chronic illness. Additionally, the mechanical and financial barriers to health care are mutable only to policy solutions. Ginzberg (1990) suggests that, as yet the government, private funders and health care providers have been unwilling to make the changes in the health care system to address the known barriers to care.

Ethnicity: Prior studies have reported that Blacks have increased incidence of chronic illnesses such as hypertension and other cardiovascular diseases (NCHS, 1987b). Yet, the results of this study suggest that being of the White race and having a chronic illness is predictive of having a hospitalization. The relative odds of a White with a chronic illness having a hospitalization

was 17.5 while the relative odds of a Black with a chronic illness having a hospitalization was only 5.21. The differences between ethnic groups were not evidenced in the proportion of each group having ambulatory visits or emergency visits. The differences in the proportion of minority populations being hospitalized is striking.

Although this study did not address the effect of ethnicity on access to care, the finding of reduced access of Blacks with chronic illness to hospitalizations despite their known greater incidence of chronic illness is disturbing. Is it possible that the decreased access to care of minorities reported in earlier access studies continues (RWJF, 1978, 1983, 1987a)? Might it be that Blacks with chronic illness, in fact, have less access to hospital care than the remainder of the population despite their known greater need for care?

Policy interventions have targeted minorities known to have poor health. Minorities with chronic illness should receive increased attention if indeed the goal for health care in the United States is equitable access (President's Commission, 1983).

Health Status: The present study investigated the characteristic "chronic illness," which was thought to be predicative of having an ambulatory visit and a

hospitalization. Prior research summarized by Maurana, et al., (1981) identified correlates of access to care, and overall research suggested that poor health status was the primary predictor of having an ambulatory visit, a hospitalization, or an emergency visit. The present study suggests that chronic illness is more predictive of an ambulatory visit, a hospitalization, and an emergency visit than health status and that chronic illness and health status are two distinct characteristics. These results suggest that health status is not a proxy for chronic illness.

Health status has traditionally been measured by self-reported response to the question, "Compared to other people do you consider your health to be excellent, good, fair or poor?" These responses have then been validated by a physician's assessment of health status and have been shown to be highly correlated (Maddox & Douglas, 1973; Ware, et al., 1978). The current study suggests that the presence of a chronic illness has much greater predictive power than self-reported health status.

Utilization: Numerous studies from Kaiser Permanente Health Plan have suggested that utilization of health care services by adults with specific chronic illnesses is greater than the utilization by the remainder of the

population (Vogt & Johnson, 1980; Mullooly & Olenick, 1975; Reich & Johnson, 1985; Johnson & Specht, 1981; Caputo & Vogt, 1985; Johnson, Mullooly & Hurtado, 1986; McFarland, et al., 1985; Johnson, Vogt & Penn, 1984). Likewise, Manton (1989) has suggested that the need for health care in an aging population is related to chronic illness rather than increased number of years. The present study's findings agree with these earlier studies, concluding that the odds of an ambulatory visit or a hospitalization was from 3 to 15 times greater for a person with chronic illness compared with the well. Additionally, this study found that adults with chronic illness were more likely to have an emergency visit than a well person even though it was hypothesized that the chronically ill would use emergency services at the same rate as the well population.

Emergency visits are reserved for those acute events such as infections or trauma. The study finding that persons with chronic illness use emergency services at a rate greater than that used by well persons suggests that use of emergency services by persons with chronic illnesses is not fully understood. Are persons with chronic illnesses having acute events and thus needing emergency service at a greater rate than non-chronically

ill persons? Might the chronically ill be seeking care associated with the chronic state from emergency providers? With emergency services being the most expensive form of health care delivery, the use of emergency services by persons with chronic illness deserves further study at a policy level. The potential for cost savings through more efficient delivery of care is one potential result of such inquiry.

Limitations

Before discussing the implications of the present investigation, some limitations of the study should be considered. The focus of the present study has been to investigate the relationship of chronic illness to access of care (ambulatory visit, hospitalization, emergency visit). While telephone interviews are commonly used in health survey research, it must be taken into consideration that this survey includes no information on adults without telephones. Though an attempt was made to quantify the differences in adults with telephones compared with those without telephones, by reporting a survey with face-to-face interviews among adults without telephones, the possibility that adults without telephones are significantly different from those with telephones should be considered in interpreting the findings of this

study. Corey and Freeman (1990) have compared the responses from telephone interviews with the responses from face-to-face interviews using data from the National Health Interview Survey. They conclude that utilization responses (i.e. ambulatory visit, and hospitalizations) are quite similar but found that the insurance status of adults without telephones was quite different from adults with telephones. Obviously the findings can be generalized to the population with telephones but no assumptions can be made about the 7% of the population who are estimated to be without phones.

In addition, the degree to which adults are able to report accurately the presence or absence of a chronic illness should be considered a limitation of this study. The National Center for Health Statistics (1987b) has attempted to estimate underreporting and overreporting of chronic conditions by matching responses to health records. They conclude that there is significant underreporting and overreporting of chronic illness. However, these studies were conducted prior to 1963 when health care consumers were less knowledgeable about their own health conditions. Another limitation to the present study is the response rate. The overall sample yielded a 76% response rate, which is considered acceptable for

survey research (Babbie, 1973). As was discussed previously, nothing is known about 24% of the population. There is no way to know if these findings are representative of the total population and that those who answered the survey are similar to those who did not. The response rate should be taken into consideration when the findings are interpreted.

Proxies were interviewed if the chronically ill person was too sick or unavailable to respond. There is no way of knowing whether the response of a proxy reporting on another person is equivalent to the responses that an individual would make about himself or herself. Proxies are routinely used for children and other adults who are unable to respond. However, the use of proxies should be taken into consideration when interpreting these findings.

Although persons categorized as seriously ill (i.e. having acute infections, pneumonia, injury, or trauma) have been excluded from this study, it is possible that a few persons reported having a serious illness and also reported themselves to have a chronic illness. If a person reported both a serious and chronic illness, they were included in the study population. Although the persons having both within the past year are considered

few, the possibility that a subject has both should be remembered when interpreting these findings. This point is particularly important when interpreting the finding of greater use of emergency services by adults with chronic illness. It is possible that the adult with chronic illness sought emergency care for trauma or an acute infection.

The final limitation of this study is the definition of chronic illness which for this study, was defined as those illnesses which were life threatening. Certain significant chronic illnesses, such as arthritis and chronic mental illnesses which cause much pain and suffering were not included in the definition. These illnesses are important but were not within the scope of this study. This limitation further corroborates Kovar's (1983) conclusion that data on chronic illness is inadequate. These findings may be generalized only to the population of adults with chronic illness as defined in this study.

Implications

This study represents the first attempt in the series of access studies to view adults with chronic illness as a distinct group. Prior to this study the chronically and seriously ill have been studied together. The present

study suggests that adults with chronic illness are a distinct group and that future studies should include chronic illness as a population characteristic predictive of ambulatory visit, hospitalizations and emergency visits. Combining the chronically ill with seriously ill potentially masks certain characteristics of both groups.

An interesting finding which is not fully understood is the utilization of emergency rooms by adults with chronic illnesses. It was thought that adults with chronic illnesses would use emergency rooms at the same rate as adults without chronic illness. It was thought that emergency rooms would be giving care for acute illnesses and trauma. However, this study found that adults with chronic illnesses had emergency visits at a greater rate than well adults.

This study suggests also, that the study of chronic illness should pay particular attention to gender and ethnicity as they relate to chronic illness and utilization of health services. This study provides clues that gender and ethnicity in association with chronic illness, especially in predicting hospitalizations, are important but have not been fully explored.

Finally, this study confirms earlier research that adults with chronic illnesses utilize health services in

the form of ambulatory visits, hospitalizations, and emergency visits in greater proportions than well adults. It could be argued that indeed, adults with chronic illness who are known to have greater health needs should receive more ambulatory visits and hospitalizations than well adults. It is suggested that as the number of adults with chronic illnesses increases, the utilization of ambulatory visits, hospitalizations and emergency visits will likewise increase.

Recommendations

A major contribution of the present study to the field of access to health care is the definition of chronically ill as distinct from chronically and seriously ill. One future direction for study is defining further the characteristics of adults with chronic illness as distinct from adults with serious illness. The current study looked only at the presence or absence of a chronic illness. Future studies should look at clusters of chronic illnesses and determine the predictive power of chronic illness on having an ambulatory visit, a hospitalization or an emergency visit as the number of chronic illnesses increase. Does having two or more chronic illnesses increase the probability of having an

ambulatory visit, a hospitalization, or an emergency visit?

Secondly, gender and ethnicity as they relate to chronic illness and the utilization of health services, especially hospitalizations, should be studied. Future studies should replicate and attempt to explain the finding that Blacks who are known to have more chronic illness, receive fewer hospitalizations. Future studies should also over sample Hispanics so that the use of hospital services by Hispanics can be described.

Thirdly, the use of emergency rooms by adults with chronic illness should receive further study. It is puzzling that adults with chronic illness utilize emergency care at a greater rate than well adults. Whether emergency visits are related to the chronic illness or not is unknown.

Finally, chronic illnesses which are not considered life threatening should be studied relative to access to care. It is possible that adults with life threatening chronic illnesses are more likely to have ambulatory visits, hospitalizations, and emergency visits, while those with non-life threatening chronic illnesses indeed have less access to care. It is recommended that the

chronically ill with the non-life threatening yet often
debilitating chronic illnesses be studied.

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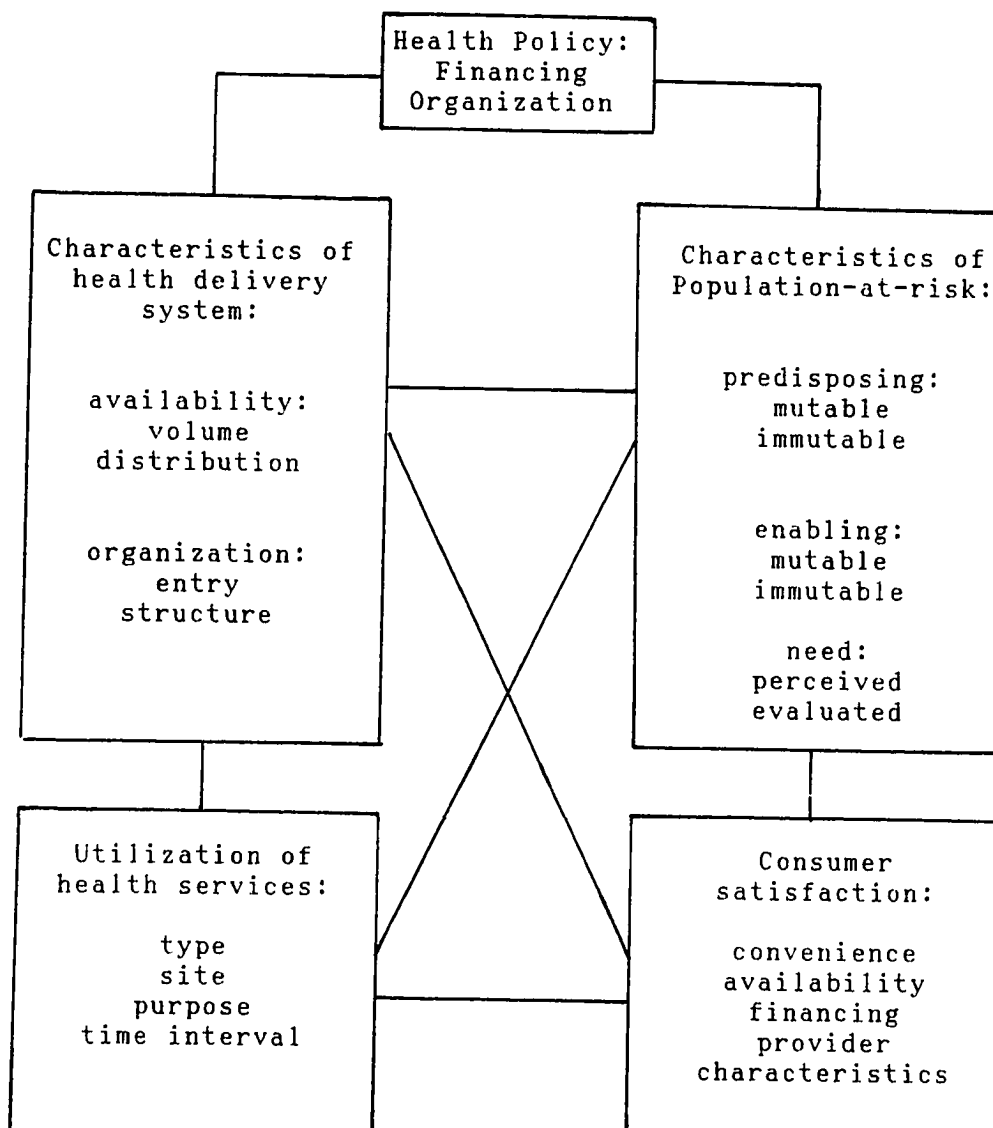
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APPENDIX A

Framework for the Study of Access



Source: Aday, L.A., Fleming, G.V., & Andersen, R. (1984). Access to medical care in the U.S.: Who has it, who doesn't. Chicago: Pluribus Press, p. 14.

APPENDIX B

Ratio of Female/Male
Morbidity and Mortality Rates
for Selected "Killer" Chronic Conditions,
1983-1984

"Killer" Chronic Disease	1983 Morbidity			1984 Mortality		
	M	F	$\frac{F}{M}$	M	F	$\frac{F}{M}$
Asthma or Emphysema				27.6	11.8	.43
				22.8	8.1	.36
Cancer (W)	402.0	311.4	.77	159.0	109.9	.69
(B)	505.9	303.6	.60	234.9	131.0	.56
	1.26	.97				
Heart Disease (W)				249.5	124.0	.5
(B)				300.1	186.6	.62
Stroke (W)				33.9	28.9	.85
				62.8	51.8	.82
High B/P* (W)	45.9	34.6	.75			
(B)	52.8	50.1	.95			
(All)	46.6	36.2	.78			
(At Age 65+)	62.0	63.9	1.03			
Kidney Disease						
Liver Disease				13.2	5.9	.45
				22.5	10.2	.46
Epilepsy, MS, CP						
Other Neuro						
Death Rate All	689.9	391.3	.57			
Causes (1984) (W)	1011.7	585.3	.58			
	1.47	1.50				

W=White, B=Black

*Based on Table 44 Information from 1976 and 1980 NHANES

Source: National Center for Health Statistics (1986a).
Health, United States, 1986. (DHHS Pub. No. PHS 87-1232,
 Public Health Service.) Washington, D.C.: U.S. Government
 Printing Office.

APPENDIX C

Interview Schedule

1986 Access to Health Care Survey
of the
Robert Wood Johnson Foundation

1986 Robert Wood Johnson Foundation Health Survey

Hello, my name is _____, and I'm calling from the University of Illinois/Wisconsin. We're doing a nationwide study of people's health experiences and medical care. I'd like to ask you some questions about your/ [(:B)'s] health experiences and medical care.

question 1c

Would you say your/ [(:B)'s] health, in general, now is . . .

1. Excellent,
2. Good,
3. Fair, or (skip to q 1e)
4. Poor ? (skip to q 1e)

question 1d

Was there any time during the past year when your/ (his/her) health was only fair or poor?

1. Yes, only fair
2. Yes, poor
3. No (skip to q 1f)

question 1e

For how long in the past 12 months was your/ [(:B)'s] health only fair or poor ?

1. Less than one month
2. One to three months
3. Four to six months
4. Seven to twelve months
5. More than one year

question 1f

INTERVIEWER: Is this a proxy interview?

1. Yes (skip to q.2)
2. No

question 1g

Which of the following statements comes closest to expressing your overall view of the American health care system ?
(INTERVIEWER: READ ALL 3 STATEMENTS BEFORE ACCEPTING AN ANSWER.)

1. On the whole, the health care system works pretty well and only minor changes are necessary to make it work.
2. There are some good things in our health care system, but fundamental changes are needed to make it work better.
3. The American health care system has so much wrong with it that we need to completely rebuild it.

question 2

How many days altogether during the past year, that is since (DATE ONE YEAR AGO) 1985, did you/ [(:B)] stay in bed more than half of the day because of illness or injury? Do not include any days spent in the hospital, a nursing home, or a treatment center.

_____ # days

question 2b

During the past twelve months, that is since (DATE ONE YEAR AGO) 1985, have you/ [has (:B)] been a patient OVERNIGHT in a hospital, a nursing home, or a treatment center?

1. Yes
2. No

question 2d
(In the past 12 months . . .) Have you/(Has he/she) been hospital-
ized for mental illness, alcoholism or drug addiction?

1. Yes
2. No
- d. If "no" or d to both Q.2b and 2d, skip to Q.22a

question 3b
Altogether, how many separate times were you/(was) a
patient overnight in a hospital during the past year? _____ times

question 3c
((:B) had _____ hospital visits) (The last time/time before
that/time before that) Did you/ ((:B)) go to a . . .

1. General Hospital,
2. Chronic Disease Hospital,
3. Mental hospital,
4. Alcohol or drug in-patient treatment center,
5. Nursing home, or
6. Some other place? (SPECIFY)

question 4a
(The last time/The time before that when...) You were/ ((:B) was)
told by a doctor that you/ (he/she) needed to go to the general
hospital, chronic disease hospital, mental hospital, alcohol or
drug in-patient treatment center, nursing home, how long was it
before you were/ ((he/she) was) admitted ? _____ days
(INTERVIEWER: ENTER NUMBER OF DAYS.)
d. (skip to Q.4c)
(If one, skip to Q.4c)

question 4b
Why did you/ (he/she) wait for _____ days before entering
the hospital ?

question 4c
How many NIGHTS did you/ ((:B)) spend in the general hospital,
chronic disease hospital, mental hospital, alcohol or drug
in-patient treatment center, nursing home? _____ nights

question 4d
What was the problem or condition for which you were/ ((:B) was)
admitted, that is, what was the technical or specific name for the
problem?

question 5a
Was any kind of surgery performed while you were/ ((:B) was) in
the general hospital, chronic disease hospital, mental hospital,
alcohol or drug in-patient treatment center, nursing home?

1. Yes
2. No (skip to q 8a)
- d. (skip to q 8a)

question 5b
What was the surgery for?

question 5c
How many days after you/ ((:B)) entered the hospital did you/
(he/she) have surgery ? _____ days

question 6a
Were you/ [Was (::B)] given a choice of having the surgery done on an outpatient basis, (that is in a special ambulatory surgical care center, a doctor's office, a clinic, or in an emergency room)?

1. Yes
2. No (skip to q 8a)
3. NOT APPROPRIATE FOR CONDITION (skip to q 8a)
- d. (skip to q 8a)

question 6b
Why did you /(he/she) choose to have it done in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home ?

INTERVIEWER: CIRCLE ALL THAT APPLY

1. Insurance coverage
2. Less Costly
3. More convenient
4. Better care
5. Safer
6. No one to take care of R at home
7. Doctor recommended
8. Other(SPECIFY)

question 8a
What is the name of the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home you/ [(:B)] went to ?

- d. (skip to q 9)

question 8b
In what city and state is this?

City:

State:

question 9
Would you/ (he/she) have preferred to go somewhere else ?

1. Yes
2. No (skip to q. 11a)
- d. (skip to q. 11a)

Would you have preferred that (:B) go somewhere else ?

1. Yes
2. No (skip to q 11a)
- d. (skip to q 11a)

question 9a
Why is that ?

question 9b
Where would you/ (he/she) have preferred to go?

Where would you have preferred that (:B) go ?

- d. (skip to q 11a)

question 10a
Did you/ (he/she) actually try to go to (9b)?

1. Yes (skip to q. 10d)
2. No
- d. (skip to q. 11a)

Did you actually try to have (:B) go to (9b) ?

1. Yes (skip to q 10d)
2. No
- d. (skip to q 11a)

question 10b
Why didn't you/ (he/she) ?

d. (skip to q 11a)

question 10c
INTERVIEWER: CODE REASON R DID NOT GO TO (9b):

1. Lack of money/Financial reason(s) (skip to q 11a)
2. Other (nonfinancial) reason(s) (skip to q 11a)

question 10d
Why didn't you/ [(::B)] go there ?

d. (skip to q 11a)

question 10e
INTERVIEWER: CODE REASON R COULD NOT GO TO (9b).

1. Lack of money/ Financial reason(s)
2. Other (non-financial) reason(s)

question 11a
Do you feel you/ [(::B)] needed (further) surgery or some other kind of treatment that you/ (he/she) did not receive while in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home ?

1. Yes
2. No (skip to q 12a)
- d. (skip to q 12a)

question 11b
What do you feel should have been done?

question 12a
While in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you/ [(::B)] feel you/ (he/she) needed advice or counseling on LIVING ARRANGEMENTS AFTER DISCHARGE?

1. Yes
2. No (skip to q. 12b)
- d. (skip to q. 12b)

While (::B) was in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you feel you needed advice or counseling on (his/her) LIVING ARRANGEMENTS AFTER DISCHARGE ?

1. Yes
2. No (skip to q. 12b)
- d. (skip to q. 12b)

question 12h
While in the hospital, did you (he/she) receive advice or counseling on LIVING ARRANGEMENTS AFTER DISCHARGE?

1. Yes
2. No

question 12b
While in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you/ [did (::B)] feel you/ (he/she) needed advice or counseling on FINANCES ?

1. Yes
2. No (skip to q. 12c)
- d. (skip to q. 12c)

While ([:B]) was in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you feel you needed advice or counseling on FINANCES ?

1. Yes
2. No (skip to q.12c)
- d. (skip to q. 12c)

question 12j

While in the hospital, did you (he/she) receive advice or counseling on FINANCES?

1. Yes
2. No

question 12c

While in the hospital, did you feel you needed advice or counseling on FAMILY MATTERS?

1. Yes
2. No (skip to q.12d)
- d. (skip to q. 12d)

question 12l

While in the hospital, did you (he/she) receive advice or counseling on FAMILY MATTERS?

1. Yes
2. No

question 12d

While in the hospital, did you feel you needed advice or counseling on WORK ACTIVITIES?

1. Yes
2. No (skip to q.12e)
- d. (skip to q. 12e)

question 12n

While in the hospital, did you (he/she) receive advice or counseling on WORK ACTIVITIES?

1. Yes
2. No

question 12e

While in the hospital, did you feel you needed advice or counseling on CARE OF HEALTH PROBLEMS AFTER DISCHARGE ?

1. Yes
2. No (skip to q.12f)
- d. (skip to q. 12f)

question 12p

While in the hospital, did you (he/she) receive advice or counseling on CARE OF HEALTH PROBLEMS AFTER DISCHARGE?

1. Yes
2. No

question 12f

While in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you/ [[:B]] feel you/ (he/she) needed advice or counseling on ANYTHING ELSE?

1. Yes (SPECIFY)
2. No (skip to q.13a)
- d. (skip to q. 13a)

while (::B) was in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, did you feel you needed advice or counseling on ANYTHING ELSE ?

1. Yes (SPECIFY)
2. No (skip to q. 13a)
- d. (skip to q. 13a)

question 12r

While in the hospital, did you (he/she) receive advice or counseling on _____?

1. Yes
2. No

question 13a

Overall, were you/ [was (::B)] completely satisfied, somewhat satisfied, or not at all satisfied with your/ (his/her) experience in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home?

1. Completely satisfied (skip to q. 14)
2. Somewhat satisfied (skip to q. 14)
3. Not at all satisfied
- d. (skip to q. 14)

13a. Overall, were you completely satisfied, somewhat satisfied, or not at all satisfied with (::B)'s experience in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home?

1. Completely satisfied (skip to q 14)
2. Somewhat satisfied (skip to q 14)
3. Not at all satisfied
- d. (skip to q 14)

question 13b

Why were you (was he/she) not at all satisfied ?

question 14

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home, care covered by MEDICAID ?

1. Yes
2. No

(If R is under 18 years old, skip to Q.14c)

question 14b

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by MEDICARE ?

1. Yes
2. No

question 14c

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by PUBLIC ASSISTANCE OR PAID FOR BY WELFARE ?

1. Yes
2. No

question 14d

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by ANY OTHER TYPE OF GOVERNMENT INSURANCE ?

1. Yes (SPECIFY)
2. No

question 14e

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by INSURANCE PAID FOR BY YOU OR A FAMILY MEMBER ?

1. Yes
2. No

question 14f

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by INSURANCE PAID FOR BY AN EMPLOYER ?

1. Yes
2. No

question 14g

Was any of this general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home care covered by ANY OTHER KIND OF INSURANCE ?

1. Yes (SPECIFY)
2. No

question 14h

Did you/ [(:B)] have to pay any costs for this stay that weren't covered by insurance?

1. Yes
2. No (skip to q 15a)
- d. (skip to q 15a)

question 14i

How much? \$ _____

- d. (skip to q 15a)

question 15a

Do you think the time you/ [(:B)] spent in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home was about right, or do you think it was too short a time, or too long a time?

1. About right (skip to q 17a)
2. Too short a time
3. Too long a time (skip to q 17a)
- d. (skip to q 17a)

question 15b

Why is that?

question 16a

Did not staying longer in the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, PARITY \ nursing home result in any continuing problems for you/ (him/her) ?

1. Yes
2. No (skip to q 17a)
- d. (skip to q 17a)

question 16b

What kind of problems?

question 17a

After your/ [(::B)]'s discharge from the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home did the doctor advise you/ (him/her) to go some place other than home ?

1. Yes
2. No (skip to q. 18a)
- d. (skip to q. 18a)

After (::B) 's discharge from the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home did the doctor advise you to have (him/her) go someplace other than home?

1. Yes
2. No (skip to q 18a)
- d. (skip to q 18a)

question 17b

Where did the doctor advise you (him/her) to go?

1. Friends/relatives home
2. General hospital
3. Chronic disease hospital
4. Mental hospital
5. Rehabilitation center
6. Convalescent/Nursing home
7. Other (SPECIFY)

question 17c

Did you (he/she) go there?

1. Yes (skip to q 18a)
2. No
- d. (skip to q 18a)

question 17d

Why not?

- d. (skip to q 18a)

question 17e

INTERVIEWER: CODE REASON R DID NOT GO .

1. Lack of money/financial reasons
2. Other (nonfinancial) reasons (skip to q 18a)

(If answer to q.17b is friends/relatives home, skip to q.18a)

question 17g

Did you /[(::B)] know of a general hospital, chronic disease hospital, mental hospital, rehabilitation center, convalescent/nursing home that would treat you/ (him/her) for free or for an amount that you/(he/she) could have afforded?

1. Yes
2. No (skip to q. 17i)
- d. (skip to q. 17i)

Did you know of a general hospital, chronic disease hospital, mental hospital, rehabilitation center, convalescent/nursing home that would treat (::B) for free or for an amount that you could have afforded ?

1. Yes
2. No (skip to q 17i)
- d. (skip to q 17i)

question 17h

Why didn't you/ (he/she) go there?

question 17i

Where did you/ (he/she) go?

1. Own home
2. Friends/relatives home
3. Chronic disease hospital
4. Mental hospital
5. Psychiatric group home or apartments
6. Rehabilitation center
7. Convalescent/nursing home
8. Other (SPECIFY)
- d. (skip to q. 18f)

question 18a

Did you / ((::B)) think it would have been better if you/ (he/she) had gone some other place after your/ (his/her) discharge?

1. Yes
2. No (skip to q. 19a)
- d. (skip to q. 19a)

Did you think it would have been better if (::B) had gone some other place after (his/her) discharge ?

1. Yes
2. No (skip to q 19a)
- d. (skip to q 19a)

question 18b

Where did you/ (he/she) think it would be better to go?

1. Own home
2. Friends/relatives home
3. General hospital
4. Chronic disease hospital
5. Mental hospital
6. Rehabilitation center
7. Convalescent/Nursing home
8. Other (SPECIFY)
- d. (skip to q. 19a)

Where did you think it would be better for (::B) to go?

1. Own home
2. Friends/relatives home
3. General hospital
4. Chronic disease hospital
5. Mental hospital
6. Rehabilitation center
7. Convalescent/Nursing home
8. Other (SPECIFY)
- d. (skip to q 19a)

question 18c

Why didn't you/ (he/she) go there?

- d. (skip to q 18f)

question 18d

INTERVIEWER: CODE REASON R DID NOT GO .

1. Lack of money/financial reasons
2. Other (nonfinancial) reasons (skip to q 19a)

(If answer to q.18b is "own home" or friends/relatives home, skip to q.19a)

question 18f

Did you/ [(::B)] know of a general hospital, chronic disease hospital, FRAMNG R mental hospital, rehabilitation center, convalescent/nursing home that would treat you/ (him/her) for free or an amount that you/(he/she) could have afforded?

1. Yes
2. No (skip to q. 19a)
- d. (skip to q. 19a)

Did you know of a general hospital, chronic disease hospital, mental hospital, rehabilitation center, convalescent/nursing home that would treat (::B) for free or an amount that you could have afforded?

1. Yes
2. No (skip to q 19a)
- d. (skip to q 19a)

question 18g

Why didn't you/ (he/she) go there?

question 19a

Were there any health care services you/ [(::B)] needed after you/ (he/she) left the general hospital, chronic disease hospital, mental hospital, alcohol or drug in-patient treatment center, nursing home but were/was unable to get?

1. Yes
2. No (skip to q 21a or to next hospital occurrence)
- d. (skip to q 21a)

question 19b

What kind of health care services did you/ [(::B)] need that you were/(he/she was) unable to get?

question 19c

Did you/ (he/she) actually try to obtain these services?

1. Yes (skip to q 20a)
2. No
- d. (skip to q 20e)

question 19d

Why is it that you/ (he/she) did not try to obtain these services?

- d. (skip to q 20e)

question 19e

INTERVIEWER: CODE REASON R DID NOT TRY TO OBTAIN SERVICE:

1. Lack of money/Financial reasons (skip to q 20c)
2. Other (nonfinancial) reasons (skip to q 20e)

question 20a

Why were you/ (was he/she) unable to get these services?

- d. (skip to q 20e)

question 20b

INTERVIEWER: CODE REASON R COULD NOT GET SERVICE:

1. Lack of money/Financial reasons
2. Other (nonfinancial) reasons (skip to q 20e)

question 20c

At that time, did you/ [(::B)] know of a place that would provide the services for free or for an amount you/ (he/she) could have afforded?

1. Yes
2. No (skip to q 20e)
- d. (skip to q 20e)

question 20d
Why didn't you/ (he/she) go there?

question 20e
Did not receiving the health care services have any effect on
your/ [(:B)]'s health?

1. Yes
2. No (skip to q 21a or to next hospital occurrence)
- d. (skip to q. 21a)

question 20f
What effect did it have?

- d. (skip to q 21a or to next hospital occurrence)

question 21a
INTERVIEWER: ENTER CODE FOR CURRENT MONTH

01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December

question 21d
When was the last time you/ [(:B)] saw a doctor in an office or
clinic?
INTERVIEWER: ENTER MONTH CODE.

00. NEVER (skip to q 44a)
01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December

question 21e
INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY)
01. 85. (if less than 12 months, skip to q. 22a, if over 12
months to q. 44a)
02. 86.
19 (skip to q. 44a)
d. (skip to q 44a)

question 22a
Is there one person or place in particular you/ [(:B)] usually
go(es) to when you are/ (he/she is) sick or want advice about
your/ (his/her) health?

1. Yes (skip to q. 23a)
2. No
- d. (skip to q. 44a)

Is there one person or place in particular (:B) usually goes to
when he/she is sick or when you want advise about his/her health ?
1. Yes (skip to q 23a)
2. No
d. (skip to q 44a)

question 22c
Many people do not have one particular place to get medical care.
What is the reason that you do not/ [(:B) does not] have a
regular doctor or place to go? (RECORD VERBATIM; PROBE FOR
COMPLETE ANSWER.)

d. (skip to q 25d)

question 22d
INTERVIEWER: CODE REASON R DOES NOT HAVE REGULAR DOCTOR.

1. Lack of money/ Financial reasons
2. Other (nonfinancial) reasons (skip to q 25d)

question 22e
Do you/ [Does (:B)] know of a doctor or place that would give
you/(him/her) medical care for free or for an amount that you/
(he/she) could afford ?

1. Yes
2. No (skip to q. 25d)
- d. (skip to q. 25d)

Do you know of a doctor or place that would give (:B) medical
care for free or for an amount that you could afford ?

1. Yes
2. No (skip to q 25d)
- d. (skip to q 25d)

question 22f
Why don't you/ (doesn't he/she) go there?

SKIP TO Q.25d
d. (skip to q 25d)

question 23a
Where do you/ [does (:B)] usually go ? To a . . .

1. Doctor's office,
2. Clinic, (skip to q 23e)
3. A hospital, or (skip to q 23f)
4. Some other place ? (skip to q 23g)

question 23b
Is there one particular doctor you/ [(:B)] usually see(s) when
you/ (he/she) go(es) there?

1. Yes
2. No (skip to q 25a)
- d. (skip to q 25a,)

question 23c
What is his or her name? (RECORD FULL NAME OF DOCTOR)

question 23d
In what city and state is this?

City:

State:

SKIP TO Q.25a
d. (skip to q 25a)

question 23e
Is it . . .

1. A private clinic, (skip to q 24a)
2. A hospital outpatient clinic, (skip to q 24a)
3. A hospital emergency room, (skip to q 24a)
4. An emergency or urgent care center (not located in a hospital), (skip to q. 24a)
5. A community or government-sponsored clinic, or (skip to q 24a)
6. Some other kind of clinic ? (SPECIFY) (skip to q 24a)
7. "Just a regular clinic" (Clinic unspecified) (skip to q 24a)
- d. (skip to q 24a)

question 23f
Is it . . .

1. A hospital outpatient clinic, (skip to q 24a)
2. A hospital emergency room, or (skip to q 24a)
3. Some other place ? (SPECIFY) (skip to q 24a)
4. "Just a regular hospital" (Hospital unspecified) (skip to q 24a)
- d. (skip to q 24a)

question 23g
What type of place is it ?

question 24a
Is there one particular doctor you/ [(:B)] usually see(s) when you/ (he/she) go(es) there ?

1. Yes
2. No (skip to q 24f)
- d. (skip to q 24f)

question 24b
What is his or her name? (RECORD FULL NAME OF DOCTOR)

- d. (skip to q 25a)

question 24f
What is the name of the clinic, hospital, place you/ [(:B)] usually go(es) to?

- d. (skip to q 25a)

question 24g
In what city and state is this?

City:

State:

question 25a
Is there a reason that you/ [(:B)] usually go(es) to this particular doctor's office, this particular clinic, this particular hospital, this particular place and not to some other doctor's office, clinic, hospital, place ?

1. Yes
2. No (skip to q 25d)
- d. (skip to q 25d)

question 25b
Why do you/ (does he/she) usually go to this particular doctor's office, clinic, hospital, place ?

- d. (skip to q 25d)

question 25c

INTERVIEWER: CODE REASON R GOES THERE

1. Lack of money
2. Has health plan there (e.g. HMO)
3. Other

question 26a

Have you/ [Has (:B)] seen a medical doctor in an office, in a clinic, or in an emergency room during the past 12 months? (PROBE: Please think about it carefully.)

1. Yes
2. No (skip to q 44a)
- d. (skip to q 44a)

question 26b

When was your/ (his/her) last visit? (ENTER MONTH CODE)

01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December
- d. (skip to q 26d)

question 26c

ENTER YEAR (LAST 2 DIGITS ONLY)
19--

question 26d

(If R has no regular source of health care, skip to q. 28a)

question 27a

Did you/ (he/she) go to your/ (his/her) regular doctor or place for your/ (his/her) last visit?

1. Yes (skip to q 29c)
2. No
- d. (skip to q 28a)

question 27b

Why didn't you/ [(:B)] go to the doctor, clinic, hospital, place you/ (he/she) usually go(es) to on your/(his/her) last visit?

INTERVIEWER: CIRCLE ALL THAT APPLY

1. "Post-op"/Follow up to hospital stay
2. Cost too much
3. Emergency
4. Needed a specialist or specific service
5. Referred by usual source
6. Other (SPECIFY)

question 28a

(On your (his/her) last visit) Did you (he/she) go to a . . .

1. Doctor's office,
2. A clinic,
3. A hospital, or
4. Some other place?

question 28b

(On your (his/her) last visit) What was the name of the doctor, clinic, hospital, place ?

question 28c
In what city and state was this?

City:

State:

(If doctor's office skip to q. 29c; if hospital, skip to q. 29b;
if some other place, skip to q. 29c)

question 29a
(On your (his/her) last visit . . .) Was this a private clinic, a hospital outpatient clinic, an emergency room, an emergency or urgent care center not in a hospital, a clinic in the community supported by the government and sometimes called a community or neighborhood health center, or some other kind of clinic?

1. Private clinic (skip to q 29c)
2. Hospital outpatient clinic (skip to q 29c)
3. Hospital emergency room (skip to q 29c)
4. Emergency or urgent care center not located in a hospital (skip to q 29c)
5. Community clinic (skip to q 29c)
6. Some other kind of clinic (skip to q 29c)
- d. (skip to q 29c)

question 29b
(On your (his/her) last visit . . .) Was this a hospital outpatient clinic, an emergency room, or some other place?

1. Outpatient clinic
2. Emergency room
3. Other (SPECIFY)

question 29c
(On your (his/her) last visit . . .) Was this an emergency visit?

1. Yes (skip to q. 30b)
2. No

question 30a
(On your (his/her) last visit . . .) Was it for...

1. A new illness (skip to q 30d)
2. A new injury (skip to q 30d)
3. Follow up care for an existing condition (skip to q 30d)
4. Follow up care for an existing injury (skip to q 30d)
5. A regular physical checkup, or (skip to q 30d)
6. Some other reason? (SPECIFY) (skip to q 30d)
7. PREGNANCY (skip to q 30d)
- d. (skip to q 30d)

question 30b
(On your (his/her) last visit . . .) Was it for...

1. A new illness
2. A new injury
3. Follow up care for an existing condition
4. Follow up care for an existing injury, or
5. Some other reason? (SPECIFY)
6. PREGNANCY
- d. (skip to q 30d)

(If R under 12 years old, skip to q. 30f)

question 30d
At that time, did you/ [(:B)] have your/ (his/her) blood pressure checked?

1. Yes (skip to q 30f)
2. No
- d. (skip to q 30f)

question 30e
Have you/ [Was (:B)] had your/ (his/her) blood pressure checked
in the past 12 months ?

1. Yes
2. No

question 30f
(If R's last visit was pregnancy or physical check-up, skip to q. 30h)

question 30g
What was the illness or condition you/ [(:B)] had on your/
(his/her) last visit ? (PROBE: Were you/[Was (:B)] given a
technical or specific name ?/Where was (is) the illness or
condition located?/What treatment was given?)

SKIP TO Q.31a
d. (skip to q 31a)

question 30h
At that time did the doctor tell you/ (him/her) that you/ (he/she)
had any illness or health problem?

1. Yes
2. No

question 31a
At your/ [(:B)]'s last office visit, did you/ (he/she) have to
wait more than half an hour (beyond appointment time) before being
seen?

1. Yes
2. No (skip to q 31c)
- d. (skip to q. 31c)

question 31b
Was that because you/ (he/she)...
(CIRCLE ALL THAT APPLY.)

1. Did not have an appointment
2. Found the doctor was running late
3. Had to have special care or tests, or
4. Some other reason? (SPECIFY)

question 31c
At your/ [(:B)]'s last office visit, did you/ (he/she) have any
difficulty talking to the doctor or receiving care because of a
language problem?

1. Yes
2. No (skip to q 31e)
- d. (skip to q 31e)

question 31d
Was that because you/ (he/she)...

1. Do (Does) not speak English well
2. The doctor does not speak English well, or
3. Some other reason? (SPECIFY)

question 31e
At your/ [(:B)]'s last office visit, did you/ (he/she) have any
problems getting there?

1. Yes
2. No (skip to q 32a)
- d. (skip to q 32a)

question 31f
Was that because of working hours or other responsibilities?

1. Yes
2. No

question 31g

Was it because of transportation or the travel time involved?

1. Yes, transportation
2. Yes, travel time
3. Both of the above
4. No

question 32a

Would you/ [(:B)] have preferred to go somewhere else?

1. Yes
2. No (skip to q. 33a)
- d. (skip to q. 33a)

Would you have preferred that (:B) go somewhere else ?

1. Yes
2. No (skip to q 33a)
- d. (skip to q 33a)

question 32b

Where would you/ [(:B)] have preferred to go?

- d. (skip to q. 33a)

Where would you have preferred that (:B) go ?

- d. (skip to q 33a)

question 32c

Why would you/ [(:B)] have preferred to go there?

Why would you have preferred that (:B) go there ?

question 32d

Did you/ [(:B)] actually try to go to (32b)?

1. Yes (skip to q. 32g)
2. No
- d. (skip to q. 33a)

Did you actually try to have (:B) go to (32b) ?

1. Yes (skip to q 32g)
2. No
- d. (skip to q 33a)

question 32e

Why didn't you/ (he/she) ?

- d. (skip to q 33a)

question 32f

CODE REASON R DID NOT TRY TO GO THERE.

1. Lack of money/ Financial reasons (skip to q 33a)
2. Other (nonfinancial) reasons (skip to q 33a)

question 32g

Why didn't you/ (he/she) go there ?

- d. (skip to q 33a)

question 32h

CODE REASON R COULD NOT GO THERE

1. Lack of money/Financial reasons
2. Other (nonfinancial) reasons

question 33a
At your/ [(:B)']s last visit, did you (he/she) get a prescription, for any medicine(s)?

1. Yes
2. No (skip to q 33j)
- d. (skip to q 33j)

question 33b
Were you/ [Was (:B)] given a choice about the medicine(s) to take?

1. Yes
2. No

Were you given a choice about the medicine(s) (:B) should take ?

1. Yes
2. No

question 33c
Were you/ [Was (:B)] told what the medicine(s) prescribed would do for you/ (him/her)?

1. Yes
2. No

question 33d
Were you/ [Was (:B)] given an estimate of how long it would take for the medicine(s) to work?

1. Yes
2. No

question 33e
Were you/ [Was (:B)] told clearly how to take the medicine(s)?

1. Yes
2. No

Were you told clearly how (:B) should take the medicine(s)?

1. Yes
2. No

question 33f
Were you/ (Was he/she) able to obtain the medicine(s)?

1. Yes (skip to q 33j)
2. No
- d. (skip to q 33j)

question 33g
Why was that?

1. IT COST TOO MUCH
2. Other (SPECIFY)

question 33h
What did you/ (he/she) do?

1. Got a less expensive medicine
2. Did not get any medicine
3. Other (SPECIFY)

question 33i
What was the result of not taking the medicine that was prescribed?

question 33j
(Ask Q.34-Q.34F if "new illness or injury" in q. 30a or "yes" to q. 30h, otherwise skip to q. 35a)

question 34

On your/ [(:B)'s] last office visit, did the doctor discuss how the illness/injury/condition might have been prevented?

1. Yes
2. No
8. Not Applicable

(If new injury from Q.30a or 30b, skip to Q.34d)

question 34b

On your/ [(:B)'s] last office visit, did the doctor explain what caused the illness/condition?

1. Yes
2. No
8. Not Applicable

question 34c

On your/ [(:B)'s] last visit, did the doctor give a good idea of changes you/ (he/she) might expect in your/ (his/her) health over the next few weeks and months?

1. Yes
2. No
8. Not Applicable

On [(:B)'s] last visit, did the doctor give a good idea of changes you might expect in (his/her) health over the next few weeks and months?

1. Yes
2. No
8. Not Applicable

question 34d

(On your (his/her) last visit . . .) Did the doctor tell you/ (him/her) how serious your (his/her) illness/injury/condition was?

1. Yes
2. No
8. Not Applicable

(On your (his/her) last visit . . .) Did the doctor tell you how serious (:B)'s illness/injury/condition was?

1. Yes
2. No
8. Not Applicable

question 34e

(On your (his/her) last visit . . .) Did the doctor discuss how much your/ [(:B)'s] health care needs would cost?

1. Yes
2. No
8. Not Applicable

question 34f

On your/ [(:B)'s] last visit, did the doctor discuss how the illness/injury/condition might affect your/ (his/her) work or family life?

1. Yes
2. No
8. Not Applicable

On (:B)'s last visit, did the doctor discuss how the illness/injury/condition might affect (his/her) school work or family life?

1. Yes
2. No
8. Not Applicable

question 35a

Again, referring to your/ [(:B) 's] last visit, did the doctor spend enough time with you/ [(:B)] ?

1. Yes
2. No
8. Not Applicable

question 35b

On your/ [(:B) 's] last visit, did the doctor inquire sufficiently about pain or discomfort?

1. Yes
2. No
8. NOT APPLICABLE

question 35c

(On your (his/her) last visit . . .) Did the doctor tell you/ (him/her) how long to wait before returning for another visit?

1. Yes
2. No
8. NOT APPLICABLE

question 35d

On your/ [(:B) 's] last visit, did the doctor treat you/ (him/her) roughly or cause unnecessary pain?

1. Yes
2. No
8. Not Applicable

question 35e

(On your (his/her) last visit . . .) Did the doctor allow you/ [(:B)] to discuss your/ (his/her) medical concerns as much as you/ (he/she) wanted?

1. Yes
2. No
8. Not Applicable

(On your (his/her) last visit . . .) Did the doctor allow you to discuss your medical concerns about (:B) as much as you wanted?

1. Yes
2. No
8. Not Applicable

question 35f

On your/ [(:B) 's] last visit, did the doctor avoid answering some questions about your/ (his/her) health or medical care?

1. Yes
2. No
8. Not Applicable

question 35g

(On your (his/her) last visit . . .) Did the doctor discuss specific findings of the examination or tests given?

1. Yes
2. No
8. Not Applicable

question 35h

(On your (his/her) last visit . . .) Did the doctor provide you/ (him/her) with all the information you/ (he/she) wanted before the visit ended?

1. Yes
2. No
8. Not Applicable

(On your (his/her) last visit . . .) Did the doctor provide you with all the information you wanted about (:B) before the visit ended?

1. Yes
2. No
3. Not Applicable

question 36a

On your/ [(:B)'s] last visit, did you/ (he/she) feel you/ (he/she) received all the health care you/ (he/she) needed?

1. Yes (skip to q. 37a)
2. No
3. (skip to q. 37a)

On (:B)'s last visit, did you feel (he/she) received all the health care (he/she) needed?

1. Yes (skip to q 37a)
2. No
3. (skip to q 37a)

question 36b

What should have been done?

question 37a

Overall, were you/ [was (:B)] completely satisfied, somewhat satisfied, or not at all satisfied with your/ (his/her) last visit for medical care?

1. Completely satisfied (skip to q. 38a)
2. Somewhat satisfied (skip to q. 38a)
3. Not at all satisfied

Overall, were you completely satisfied, somewhat satisfied, or not at all satisfied with (:B)'s last visit for medical care?

1. Completely satisfied (skip to q 38a)
2. Somewhat satisfied (skip to q 38a)
3. Not at all satisfied
4. (skip to q 38a)

question 37b.

Why were you (was he/she) not at all satisfied?

(If last visit was for an emergency, physical, or pregnancy, skip to q. 38c)

question 38a

Would you/ (he/she) have preferred to have been hospitalized for treatment of your/ (his/her) condition instead of seeing the doctor in (his/her) office?

1. Yes
2. No (skip to q. 38c)
3. (skip to q. 38c)

Would you have preferred (:B) to have been hospitalized for treatment of (his/her) condition instead of seeing the doctor in (his/her) office?

1. Yes
2. No (skip to q 38c)
3. (skip to q 38c)

question 38b

Why would you/ (he/she) have preferred that?

question 38c

(If R is 01-17 years old, skip to q.39b)

question 39a

Was any part of the cost of this last visit for medical care covered by MEDICARE?

1. Yes
2. No

question 39b

Was any part of the cost of this last visit for medical care covered by MEDICAID?

1. Yes
2. No

question 39c

(Was any part of the cost of this last visit covered by) PUBLIC ASSISTANCE OR PAID FOR BY WELFARE?

1. Yes
2. No

question 39d

(Was any part of the cost of this last visit covered by) ANY OTHER KIND OF GOVERNMENT INSURANCE?

1. Yes (SPECIFY)
2. No

question 39e

(Was any part of the cost of this last visit covered by) INSURANCE PAID FOR BY YOU OR A FAMILY MEMBER?

1. Yes
2. No

question 39f

(Was any part of the cost of this last visit covered by) INSURANCE PAID FOR BY AN EMPLOYER ?

1. Yes
2. No

question 39g

(Was any part of the cost of this last visit for medical care covered by) ANY OTHER KIND OF INSURANCE?

1. Yes (SPECIFY)
2. No

question 39h

Did you/(he/she) have to pay any costs for this last visit that weren't covered by insurance?

1. Yes
2. No (skip to q 39m)
- d. (skip to q 39m)

question 39i

How much? \$ _____

- d. (skip to q 39m)

(If last visit was an emergency, accident, or injury, skip to q. 40b)

question 39m

Have you/ [Has (:B)] PERSONALLY had a medical emergency anytime in the last year -- since (DATE ONE YEAR AGO) 1985 -- or not?

1. Yes
2. No (skip to q 40b)
- d. (skip to q 40b)

(If R has no regular source of health care skip to q. 39q)

question 39o

Did you/ [(:B)] go to your/ (his/her) regular doctor or place on your/ (his/her) last visit for emergency medical care?

1. Yes (skip to q 39y)
2. No
- d. (skip to q 39q)

question 39p

Why didn't you/ [(:B)] go to the doctor, clinic, hospital place you/ (he/she) usually go(es) to on your/ (his/her) last visit for emergency care?

INTERVIEWER: CIRCLE ALL THAT APPLY

1. Cost too much
2. Needed a specialist or a specific service
3. Other (SPECIFY)

question 39q

Did you/ (he/she) go to a...

1. Doctor's office,
2. A clinic,
3. A hospital, or
4. Some other place?
- d. (skip to q 39y)

question 39r

What was the name of the doctor, clinic, hospital, place?

question 39s

In what city and state was this?

City:

State:

(If last emergency visit was a hospital, skip to q. 39x, if some other place--skip to q. 39y.)

question 39u

Was this a private clinic, a hospital outpatient clinic, an emergency room, an emergency or urgent care center not in a hospital, a clinic in the community supported by the government and sometimes called a community or neighborhood health center, or some other kind of clinic?

1. Private clinic (skip to q 39y)
2. Hospital outpatient clinic (skip to q 39y)
3. Hospital emergency room (skip to q 39y)
4. Emergency or urgent care center not located in a hospital (skip to q 39y)
5. Community clinic (skip to q 39y)
6. Some other kind of clinic (skip to q 39y)
- d. (skip to q 39y)

question 39x

Was this a hospital outpatient clinic, an emergency room, or some other place?

1. Outpatient clinic
2. Emergency room
3. Other (SPECIFY)

question 39y

(At your/ [(:B)]'s last visit for emergency medical care) Did you/(he/she) have any problems getting there?

1. Yes
2. No (skip to q. 40)
- d. (skip to q 40)

question 39z

What were the problems in getting there?

question 40

Overall, were you/ [was (:B)] completely satisfied, somewhat satisfied, or not at all satisfied with your/ (his/her) last visit for emergency medical care?

1. Completely satisfied (skip to q. 40b)
2. Somewhat satisfied (skip to q. 40b)
3. Not at all satisfied
- d. (skip to q. 40b)

Overall, were you completely satisfied, somewhat satisfied, or not at all satisfied with (:B)'s last visit for emergency medical care?

1. Completely satisfied (skip to q 40b)
2. Somewhat satisfied (skip to q 40b)
3. Not at all satisfied.
- d. (skip to q 40b)

question 40a

Why were you (was he/she) not at all satisfied ?

question 40b

During the past 30 days, did you/ [(:B)] have a sore throat or cold with a fever lasting more than 3 days?

1. Yes
2. No (skip to q 40d)
- d. (skip to q 40d)

question 40c

Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40d

(If R is 01-17 years old, skip to q.40g)

question 40e

During the past 30 days, did you/ [(:B)] have a weight loss of more than 10 pounds (unless you were/ (he/she was) dieting)?

1. Yes
2. No (skip to q 40g)
- d. (skip to q 40g)

question 40f

Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40g

(During the past 30 days), did you/ [(:B)] have an upset stomach for more than 24 hours?

1. Yes
2. No (skip to q 40i)
- d. (skip to q 40i)

question 40h

Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40i
(If R is 1-5 years old, skip to q. 40o)

question 40j
(During the past 30 days), did you/ (he/she) have shortness of breath with light exercise or light work?

1. Yes
2. No (skip to q 40m)
- d. (skip to q 40m)

question 40k
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40m
(During the past 30 days), did you/ [(:B)] have chest pain while exercising?

1. Yes
2. No (skip to q 40o)
- d. (skip to q 40o)

question 40n
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40o
(During the past 30 days), did you/ [(:B)] have a stopped up nose or sneezing or allergies for 2 weeks or more?

1. Yes
2. No (skip to q 40q)
- d. (skip to q 40q)

question 40p
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40q
(If R is 1-5 years old, skip to q. 41a)

question 40r
(During the past 30 days), did you/ (he/she) have headaches almost every day?

1. Yes
2. No (skip to q 40t)
- d. (skip to q 40t)

question 40s
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40t
(During the past 30 days), did you/ [(:B)] have loss of consciousness, fainting, or passing out?

1. Yes
2. No (skip to q 40v)
- d. (skip to q 40v)

question 40u
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 40v
(During the past 30 days), did you/ (he/she) have bleeding (other than nose bleed or periods) not caused by accident or injury?

1. Yes
2. No (skip to q 41a)
- d. (skip to q 41a)

question 40w
Have you/ [Has (:B)] visited or told your (his/her) doctor about it ?

1. Yes
2. No

question 41a
Since (DATE ONE YEAR AGO) 1985, have you/ [has (:B)] had any surgery that did NOT involve staying over night in a hospital?

1. Yes
2. No (skip to q 42a)
- d. (skip to q 42a)

question 41b
Was it done in . . . (CIRCLE ALL THAT APPLY)

1. A private doctor's office
2. A community clinic
3. A hospital clinic
4. A hospital emergency room
5. A special ambulatory surgical care center
6. An emergency or urgent care center not located in a hospital, or
7. Some other place? (SPECIFY)

question 41c
Were you/ (Was he/she) given a choice of having the surgery done in the hospital?

1. Yes
2. No (skip to q 42a)
- d. (skip to q 42a)

question 41d
Why did you/ (he/she) choose to have it done on an outpatient basis?
(CIRCLE ALL THAT APPLY)

1. Insurance coverage
2. Less costly
3. More convenient
4. Didn't have to stay away from home/work
5. Doctor recommended
6. Other (SPECIFY)

question 42a
How many of each of the following kinds of visits did you/ [(:B)] have with a doctor or doctor's assistant during the past 12 months, that is, since (DATE ONE YEAR AGO) 1985? _____ VISITS

(How many) HOUSE CALLS BY A DOCTOR OR DOCTOR'S ASSISTANT?

question 42d
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)] have to a DOCTOR'S OFFICE OR PRIVATE CLINIC ?

question 42g
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to a COMPANY OR UNION CLINIC ?

question 42j
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to a SCHOOL CLINIC ?

question 42m
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to a NEIGHBORHOOD OR GOVERNMENT SPONSORED CLINIC ?

question 42q
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to a HOSPITAL EMERGENCY ROOM ? _____ VISITS

question 42t
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to an EMERGENCY OR URGENT CARE CENTER NOT LOCATED IN A
HOSPITAL?

question 43a
(Since (DATE ONE YEAR AGO) 1985), how many visits did you/ [(:B)]
have to a HOSPITAL OUTPATIENT CLINIC ?

question 43d
Since (DATE ONE YEAR AGO) 1985, how many visits did you/ [(:B)]
have to any OTHER place for medical care, other than when you
(he/she) may have been a patient overnight in a hospital ?

question 43h
Let's see, that adds up to (total #) visits for medical care in
the past 12 months. Is that right?

1. Yes
2. No (INTERVIEWER: REVIEW # OF VISITS AND ENTER CORREC-
TIONS)

(If no visits in q. 42a - 43d, skip to q. 44a)

question 43j
How many of these visits were [Was this visit] within the last 30
days ? _____ visits

question 44a
In the past 12 months was there any time when you were/ [(:B)]
was told by a doctor you/ (he/she) needed surgery but did not get
it?

1. Yes (skip to q. 44c)
2. No

In the past 12 months, was there any time when you were told by a
doctor that (:B) needed surgery but did not get it?

1. Yes (skip to q. 44c)
2. No

question 44b
In the past 12 months, was there any time when you/[(:B)] needed
or thought you/ (he/she) needed medical care but did not get it?

1. Yes
2. No (skip to q. 45j)
- d. (skip to q. 45j)

Thinking back over the past 12 months, was there any time when (:B) needed or you thought [4:85] needed medical care but did not get it?

1. Yes
2. No (skip to q 45j)
- d. (skip to q 45j)

question 44c

What was the condition that required treatment? (Anything else?)
(INTERVIEWER: IF MORE THAN ONE, ASK FOR THE MOST RECENT CONDITION THAT REQUIRED TREATMENT.)

question 4g

Did you/ (he/she) actually try to obtain surgery (medical care)?

1. Yes (skip to q. 45a)
2. No
- d. (skip to q. 45h)

Did you actually try to obtain surgery (medical care) for (:B)?

1. Yes (skip to q. 45a)
2. No
- d. (skip to q 45h)

question 44i

Is that because you/ (he/she) . . .

1. Couldn't afford the cost, (skip to q 45f)
2. Didn't think the problem was serious enough , (skip to q 45f)
3. Had no transportation, or (skip to q 45f)
4. Some other reason? (SPECIFY) (skip to q 45f)
- d. (skip to q 45j)

question 45a

Why were you/ (was he/she) unable to get surgery (medical care)?

1. Lack of money/financial reasons
2. Other (nonfinancial reasons) (skip to q 45j)
- d. (skip to q 45j)

(If R does not have a regular source of health care, skip to q.45d)

question 45c

Was the place where you were/ [(:B)] was) unable to get surgery (medical care) your/ (his/her) regular source of health care?

1. Yes (skip to q 45f)
2. No
- d. (skip to q 45f)

question 45d

Was the place where you were/ [(:B) was] unable to get care a ...

1. Private doctor's office, (skip to q 45f)
2. Community clinic, (skip to q 45f)
3. Emergency or urgent care center not located in a hospital, (skip to q 45f)
4. Hospital clinic,
5. Hospital emergency room, or
6. Some other place? (SPECIFY) (skip to q 45f)
- d. (skip to q 45f)

question 45e
Was it a . . .

1. Public, county, or municipal hospital, or
2. Another hospital?

question 45f

At that time, did you/ (he/she) know of a doctor or clinic that would have treated you/ (him/her) for free or for an amount that you/(he/she) could have afforded?

1. Yes
2. No (skip to q 45h)
- d. (skip to q 45h)

question 45g

Why didn't you/ (he/she) go there ?

question 45h

Did not receiving surgery (medical care) have an effect on your/ [(:B)]'s health ?

1. Yes
2. No (skip to q 45j)
- d. (skip to q 45j)

question 45i

What effect did it have?

question 45j

(If R is 1-2 years old, skip to q. 45r)

question 45k

Since (DATE ONE YEAR AGO) 1985, have you/ [has (:B)] seen a dentist?

1. Yes
2. No (skip to q 45m)
- d. (skip to q 45r)

question 45l

What dental treatments did you/ [(:B)] receive?
(CIRCLE ALL THAT APPLY - CHECKUP INCLUDES X-RAY)

1. Checkup only (skip to q. 45r)
2. Checkup and cleaning (skip to q. 45r)
3. EMERGENCY VISIT for fillings or extractions (skip to q. 45r)
4. NON-emergency visit for fillings or extractions (skip to q. 45r)
5. Gum treatment (skip to q. 45r)
6. Orthodontic (braces, straightening teeth) (skip to q. 45r)
7. Other (SPECIFY)(skip to q. 45r)
- d. (skip to q 45r)

question 45m

Why haven't you/ [hasn't (:B)] seen a dentist ?

1. Lacked money
2. Doctor didn't recommend (skip to q 45p)
3. Don't think it's necessary (skip to q 45p)
4. Other (SPECIFY) (skip to q 45p)
- d. (skip to q 45p)

question 45n

Did you/ [(:B)] know of a dentist or clinic where you/ (he/she) could have obtained these services for free or for an amount you/ (he/she) could have afforded ?

1. Yes
2. No (skip to q 45p)
- d. (skip to q 45p)

question 45o

Why didn't you/ (he/she) go there?

question 45p
When did you/ (he/she) last see a dentist ?

INTERVIEWER: ENTER MONTH CODE

- 00. NEVER (skip to q 45r)
- 01. January
- 02. February
- 03. March
- 04. April
- 05. May
- 06. June
- 07. July
- 08. August
- 09. September
- 10. October
- 11. November
- 12. December

question 45q
INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY)

19__

question 45r
If R hasn't seen doctor in 12 months, skip to q. 45y
If R has seen doctor for physical checkup, skip to q. 45y

If R's last visit was for a physical checkup, skip to q.45y.

question 45s
Since (DATE ONE YEAR AGO) 1985, have you/ [has (:B)] had a regular physical checkup (not because of a health problem requiring treatment)?

- 1. Yes (skip to q 45y)
- 2. No
- d. (skip to q 45y)

question 45t
Why haven't you/ [hasn't (:B)] had a regular physical checkup?

- 1. Lacked money
- 2. Doctor didn't recommend (skip to q 45w)
- 3. Don't think it's necessary (skip to q 45w)
- 4. Other (SPECIFY) (skip to q 45w)
- d. (skip to q 45w)

question 45u
Did you/ [(:B)] know of a doctor or clinic where you/ (he/she) could have obtained these services for free or for an amount you/ (he/she) could have afforded ?

- 1. Yes
- 2. No (skip to q 45w)
- d. (skip to q 45w)

question 45v
Why didn't you/ (he/she) go there?

question 45w
When did you/ (he/she) last have a regular physical checkup?
INTERVIEWER: ENTER MONTH CODE

- 00. NEVER (skip to q 45y)
- 01. January
- 02. February
- 03. March
- 04. April
- 05. May
- 06. June
- 07. July
- 08. August
- 09. September
- 10. October
- 11. November
- 12. December

question 45x
INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 45y
(Ask Q.45z-47y only of females age 18 and over) Male/Female child
ages 1-5, skip to Q.48a. Male/Female 6-17, skip to Q. 49a, Male
18 or over, skip to Q. 49a.

question 45z
Since (DATE ONE YEAR AGO) 1985, have you/ [has (:B)] had a pap
smear?

- 1. Yes (skip to q 46e)
- 2. No
- d. (skip to q 46e)

question 46
Why haven't you/ [hasn't (:B)] had a pap smear ?

- 1. Lacked money
- 2. Doctor didn't recommend (skip to q 46c)
- 3. Don't think it's necessary (skip to q 46c)
- 4. Other (SPECIFY) (skip to q 46c)
- d. (skip to q 46c)

question 46a
Did you/ [(:B)] know of a doctor or clinic where you/ (she) could
have obtained these services for free or for an amount you/ (she)
could have afforded ?

- 1. Yes
- 2. No (skip to q 46c)
- d. (skip to q 46c)

question 46b
Why didn't you/ (she) go there?

question 46c
When did you/ (she) last have a pap smear?
INTERVIEWER: ENTER MONTH CODE

- 00. NEVER (skip to q 46e)
- 01. January
- 02. February
- 03. March
- 04. April
- 05. May
- 06. June
- 07. July
- 08. August
- 09. September
- 10. October
- 11. November
- 12. December

question 46d

INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 46e

Since (DATE ONE YEAR AGO) 1985, have you/ (has she) had a breast examination ?

1. Yes (skip to q 46k)
2. No
- d. (skip to q 46k)

question 46f

Why haven't you/ [hasn't (:B)] had a breast examination ?

1. Lacked money
2. Doctor didn't recommend (skip to q 46i)
3. Don't think it's necessary (skip to q 46i)
4. Other (SPECIFY) (skip to q 46i)
- d. (skip to q 46i)

question 46g

Did you/ [(:B)] know of a doctor or clinic where you/ (she) could have obtained these services for free or for an amount you/ (she) could have afforded ?

1. Yes
2. No (skip to q 46i)
- d. (skip to q 46i)

question 46h

Why didn't you/ (she) go there ?

question 46i

When did you/ (she) last have a breast examination ?

- INTERVIEWER: ENTER MONTH CODE
00. NEVER (skip to q 46k)
 01. January
 02. February
 03. March
 04. April
 05. May
 06. June
 07. July
 08. August
 09. September
 10. October
 11. November
 12. December

question 46j

INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 46k

Since (DATE ONE YEAR AGO) 1985, have you/ (has she) had a breast x-ray called a mammogram ?

1. Yes (skip to q 47a)
2. No
- d. (skip to q 47a)

question 46l

Why haven't you/ [hasn't (:B)] had a mammogram ?

1. Lacked money
2. Doctor didn't recommend (skip to q 46p)
3. Don't think it's necessary (skip to q 46p)
4. Other (SPECIFY) (skip to q 46p)
- d. (skip to q 46p)

question 46m
Did you/ [(:B)] know of a doctor or clinic where you/ (she) could have obtained these services for free or for an amount you/ (she) could have afforded ?

1. Yes
2. No (skip to q 46p)
- d. (skip to q 46p)

question 46n
Why didn't you/ (she) go there ?

question 46p
When did you/ (she) last have a mammogram ?

INTERVIEWER: ENTER MONTH CODE

00. NEVER (skip to q 47a)
01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December

question 46q
INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 47a
(If R is over 45, skip to q. 49a)

question 47b
During the past year have you/ [has (:B)] had a baby?

1. Yes (skip to q 47d)
2. No (skip to q 47f)
3. Had Hysterectomy (skip to q 49a)
- d. (skip to q 47f)

question 47d
When was the baby born ?
ENTER MONTH CODE

1. January
2. February
3. March
4. April
5. May
6. June
7. July
8. August
9. September
10. October
11. November
12. December

question 47e
INTERVIEWER: ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 47f
During the past year have you/ [has (:B)] had a miscarriage?
(INTERVIEWER: IF R HAD MORE THAN ONE MISCARRIAGE IN THE PAST YEAR, ASK ABOUT THE MOST RECENT ONE.)

1. Yes
2. No (skip to q 47i)
- d. (skip to q 47i)

question 47h
How many months pregnant were you/ (was she) ? _____ months

question 47i
During the past year have you/ [has (:B)] had a stillbirth?

1. Yes
2. No (skip to q 47l)
- d. (skip to q 47l)

question 47k
How many months pregnant were you/ (was she) ? _____ months

question 47l
Are you/ [is (:B)] now pregnant?

1. Yes
2. No (skip to q 47t)
- d. (skip to q 47t)

question 47o
How many months were you/ [was (:B)] pregnant when you/ (she)
first saw a doctor ? (INTERVIEWER: IF R WAS PREGNANT MORE THAN
ONCE IN THE PAST YEAR, ASK ABOUT THE MOST RECENT PREGNANCY.)

0. Never saw a doctor
1. One to three months (skip to q. 47t)
2. Four to five months
3. Six to seven months
4. Eight to nine months
- d. (skip to q 47t)

question 47p
Why didn't you/ (she) go to a doctor (sooner) after you/ (she)
became pregnant?

- d. (skip to q 47t)

question 47q
INTERVIEWER: CODE REASON

1. Lack of money/Financial reasons
2. Other (nonfinancial) reasons (skip to q 47t)

question 47r
Did you/ (did she) know of a doctor or clinic that would have
treated you/ (her) for free or an amount that you/ (she) could
afford?

1. Yes
2. No (skip to q 47t)
- d. (skip to q 47t)

question 47s
Why didn't you/ (she) go there?

question 47t
During the past year, have you/ [has (:B)] received any family
planning services?

1. Yes (skip to q 49a)
2. No

question 47u
Did you/ (she) want any services on family planning that you were
/ (she was) unable to obtain?

1. Yes
2. No (skip to q 49a)
- d. (skip to q 49a)

question 47v
Why couldn't you/ (she) obtain the services?
d. (skip to q 49a)

question 47w
ENTER CODE FOR REASON

1. Lack of money/Financial reasons
2. Other (nonfinancial) reasons (skip to q 49a)
- d. (skip to q 49a)

question 47x
Did you/ (Did she) know of a doctor or clinic that would have given advice on family planning for free or an amount you /(she) could afford?

1. Yes
2. No (skip to q 49a)
- d. (skip to q 49a)

question 47y
Why didn't you/ (she) go there?

- SKIP TO QUESTION 49a
d. (skip to q 49a)

question 48a
(Ask for child age 1-5, otherwise skip to q. 49)

question 48b
Have you been told by a doctor or nurse that (:B)'s immunization shots (vaccinations) are up to date ?

1. Yes (skip to q 49)
2. No

question 48c
Has (:B) ever had D.P.T. shots (baby shots) ?

1. Yes (skip to q 48g)
2. No
- d. (skip to q 48g)

question 48d
Why hasn't (:B) ever had D.P.T. shots ?

1. Lacked money
2. Doctor didn't recommend (skip to q 48g)
3. Don't think it's necessary (skip to q 48g)
4. Other (SPECIFY) (skip to q 48g)
- d. (skip to q 48g)

question 48e
Did you know of a doctor or clinic where (he/she) could have obtained these services for free or for an amount you could have afforded ?

1. Yes
2. No (skip to q 48g)
- d. (skip to q 48g)

question 48f
Why didn't you/ (he/she) go there ?

question 48g
Has (:B) ever had immunization for polio ?

1. Yes (skip to q 48a)
2. No
- d. (skip to q 48a)

question 48h
Why hasn't (he/she) ever had immunization for polio ?

1. Lacked money
2. Doctor didn't recommend (skip to q 48s)
3. Don't think it's necessary (skip to q 48s)
4. Other (SPECIFY) (skip to q 48s)
- d. (skip to q 48s)

question 48i
Did you know of a doctor or clinic where (he/she) could have obtained these services for free or for an amount you could have afforded ?

1. Yes
2. No (skip to q 48s)
- d. (skip to q 48s)

question 48j
Why didn't you/ (he/she) go there ?

question 48s
Has (:B) ever had vaccination for rubella- -that is, German Measles ?

1. Yes (skip to q 49)
2. No
- d. (skip to q 49)

question 48t
Why hasn't (he/she) ever had vaccination for rubella?

1. Lacked money
2. Doctor didn't recommend (skip to q 49)
3. Don't think it's necessary (skip to q 49)
4. Other (SPECIFY) (skip to q 49)
- d. (skip to q 49)

question 48u
Did you know of a doctor or clinic where (he/she) could have obtained these services for free or for an amount you could have afforded ?

1. Yes
2. No (skip to q 49)
- d. (skip to q 49)

question 48v
Why didn't you/ (he/she) go there ?

question 49
(If child 1 or 2 years old, skip to q. 63a) (If child 3 through 5, skip to q. 50a)

question 49a
In the past 12 months, have you/ [has (:B)] been to a medical or mental health professional for care of an emotional or psychological problem or for advice (about work)/(about school), family or other personal problems ?

1. Yes (skip to q 50f)
2. No

question 49b
In the past 12 months, have you/ [has (:B)] been to a medical or mental health professional for treatment of alcohol or drug problems?

1. Yes (skip to q 50f)
2. No

question 50a

Since (DATE ONE YEAR AGO) 1985, have you/ (has (:B)) had emotional or psychological problems preventing you/ (him/her) from going to work, going to school or carrying out daily activities for 3 months or more?

1. Yes
2. No (skip to q. 61a)
- d. (skip to q. 61a)

Since (DATE ONE YEAR AGO) 1985, has (:B) had emotional or psychological problems preventing (him/her) from going to school or carrying out daily activities for a period of 3 months or more?

1. Yes
2. No (skip to q 61a)
- d. (skip to q 61a)

question 50b

Have you/ (Has he/she) visited a medical or mental health professional about it?

1. Yes (skip to q 50f)
2. No
- d. (skip to q 61a)

question 50c

Was that because you/ (he/she) . . .

1. Couldn't afford the cost
2. Didn't think the problem was serious enough, (skip to q 61a)
3. Had no transportation, or (skip to q 61a)
4. Some other reason ? (SPECIFY) (skip to q 61a)
- d. (skip to q 61a)

question 50d

Did you/ [(:B)] know of a medical or mental health professional that would treat you/ (him/her) for free or an amount that you/ (he/she) could have afforded?

1. Yes
2. No (skip to q. 61a)
- d. (skip to q. 61a)

Did you know of a medical or mental health professional that would treat (:B) for free or an amount that you could have afforded?

1. Yes
2. No (skip to q 61a)
- d. (skip to q 61a)

question 50e

Why didn't you/ (he/she) go there?

- (SKIP TO Q. 61a)
- d. (skip to q 61a)

question 50f

When was your/ [(:B)]'s last visit (for mental health care)?
ENTER CODE FOR MONTH

01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December

question 50g
ENTER YEAR (LAST 2 DIGITS ONLY) 19__

question 51a
Since (DATE ONE YEAR AGO) 1985, how many visits did you/ [(:B)]
have at the private office of a psychiatrist, psychologist, social
worker, counselor, or other mental health professional? _____ VISITS

question 51c
Since (DATE ONE YEAR AGO) 1985, how many visits did you/ [(:B)]
have with a regular physician for emotional or psychological
conditions? _____ VISITS

question 51e
Since (DATE ONE YEAR AGO) 1985, how many visits did you/ (he/she)
have to a community mental health center or an outpatient clinic
NOT associated with a hospital for mental health care?

question 51g
Since (DATE ONE YEAR AGO), 1985, how many visits did you/ (he/she)
have to a mental health clinic in a hospital?

question 51h
Since (DATE ONE YEAR AGO) 1985, how many visits did you/ (he/she)
have to a HOSPITAL EMERGENCY ROOM for mental health care?

question 51i
Since (DATE ONE YEAR AGO) 1985, did you/ [(:B)] make any visits
to some other person or place for mental health care?

1. Yes (SPECIFY)
2. No (skip to q 52a)
- d. (skip to q 52a)

question 51j
How many visits did you/ [(:B)] have with (51i) ?

question 52a
Let's see, that adds up to (number of) visits for mental health
care. Is that right?

1. Yes
2. No (INTERVIEWER: REVIEW # OF VISITS AND ENTER CORREC-
TIONS.)

question 52c
Did you include all of these visits for mental health care in the
estimate you gave me earlier for the number of general medical
care visits?

1. Yes (skip to q 52e)
2. No
- d. (skip to q 52e)

question 52d
How many visits did you not include? _____ visits

question 52e
If R 1-6 skip to Q.53g

question 53d
In the past 12 months, were you/ [was (:B)] treated for emotional
problems that resulted in contact with the police?

1. Yes
2. No

question 53e
In the past 12 months, were you/ [was (:B)] treated for a nervous
breakdown?

1. Yes
2. No

question 53f
In the past 12 months, were you/ [was (:B)] treated for attempting suicide?

1. Yes
2. No

question 53g
In the past 12 months, were you/ [was (:B)] treated for schizophrenia, or other psychoses?

1. Yes
2. No

In the past 12 months, was (:B) treated for schizophrenia, autism, or other psychoses?

1. Yes
2. No

question 53h
(If R is 1-17 years old: skip to q. 53i)

question 53i
Were you/ [Was (:B)] treated for abusing a child ?

1. Yes
2. No

question 53j
Were you/ [Was (:B)] treated for abusing a person sexually ?

1. Yes
2. No

question 53k
Were you / [Was (:B)] treated for abusing a person physically ?

1. Yes
2. No

question 53l
Were you/ [Was (:B)] treated for some other problem that prevented you/ (him/her) from going to work, going to school, or keeping house for 3 months or more ?

1. Yes (SPECIFY)
2. No

Was (:B) treated for some other problem that prevented (him/her) from going to school or carrying out normal activities for 3 months or more?

1. Yes (SPECIFY)
2. No

question 54a
What kind of medical or mental health professional, counselor, or place did you/ [(:B)] go to for your/ (his/her) last visit?

1. A private psychiatrist, psychologist, social worker, counselor, or other mental health professional,
2. A regular physician,
3. A community mental health center,
4. A mental health clinic in a hospital, or
5. Some other place or professional? (SPECIFY)
- r. (skip to q 55a)

question 54b

What is the medical or mental health professional's name (or the name of the clinic or other place you/ [(:B)] went to ?
RECORD FULL NAME OF PROFESSIONAL (OR CLINIC)

- d. (skip to q 55a)
- r. (skip to q 55a)

question 54c

In what city and state is this?

City:

State:

question 54f

What is the specific problem for which you've [(:B)] was] been seen? (PROBE: Were you/ [Was (:B)] given a technical or specific name?

question 55a

At your/ [(:B)]'s] last office visit for mental health care, did you/ (he/she) have to wait more than half an hour (beyond appointment time) before being seen?

- 1. Yes
- 2. No (skip to q 55c)
- d. (skip to q 55c)
- r. (skip to q 55c)

question 55b

Was that because you/ (he/she)...

- 1. Did not have an appointment,
- 2. Found the mental health practitioner was running late,
- 3. Had to have special care or tests, or
- 4. Some other reason? (SPECIFY)

question 55c

At your/ [(:B)]'s] last office visit, did you/ (he/she) have any difficulty talking to the mental health practitioner or receiving care because of a language problem?

- 1. Yes
- 2. No (skip to q 55e)
- d. (skip to q 55e)

question 55d

Was that because you/ (he/she)...

- 1. Do (Does) not speak English well
- 2. The mental health practitioner does not speak English well, or
- 3. Some other reason? (SPECIFY)

question 55e

At your/ [(:B)]'s] last office visit, for mental health care, did you/ (he/she) have any problems getting there?

- 1. Yes
- 2. No (skip to q 55h)
- d. (skip to q 55h)

question 55f

Was that because of working hours or other responsibilities?

- 1. Yes
- 2. No

question 55g
Was it because of transportation or the travel time involved?

1. Yes, transportation
2. Yes, travel time
3. Both of the above
4. No

question 55h
Would you/ (he/she) have preferred to go somewhere else?

1. Yes
2. No (skip to q. 56a)
- d. (skip to q. 56a)

Would you have preferred that (:B) go somewhere else?

1. Yes
2. No (skip to q 56a)
- d. (skip to q 56a)

question 55i
Where would you/ (he/she) have preferred to go?

- d. (skip to q. 56a)

Where would you have preferred that (:B) go?

- d. (skip to q 56a)

question 55j
Why would you/ (he/she) have preferred to go there?

Why would you have preferred that (:B) go there?

question 55k
Did you / (he/she) actually try to go to (55i)?

1. Yes (skip to q. 55n)
2. No
- d. (skip to q. 56a)

Did you actually try to have (:B) go to (from q.55i)?

1. Yes (skip to q 55n)
2. No
- d. (skip to q 56a)

question 55l
Why didn't you?

- d. (skip to q 56a)

question 55m
CODE REASON R DID NOT TRY TO GO THERE.

1. Lack of money/ Financial reasons (skip to q 56a)
2. Other (nonfinancial) reasons (skip to q 56a)

question 55n
Why didn't you/ (he/she) go there ?

- d. (skip to q 56a)

question 55p
CODE REASON R COULD NOT GO THERE

1. Lack of money/Financial reasons
2. Other (nonfinancial) reasons

question 56a

At your/ [(:B) 's] last visit for mental health care, did you (he/she) get a prescription for any medicine?

1. Yes
2. No (skip to q 57a)
- d. (skip to q 57a)

question 56b

Were you/ (Was he/she) able to obtain medicine?

1. Yes (skip to q 57a)
2. No
- d. (skip to q 57a)

question 56c

Why was that?

question 56d

What did you/ (he/she) do?

1. Got a less expensive medicine
2. Did not get any medicine
3. Other (SPECIFY)

question 56e

What was the result of not taking the medicine that was prescribed?

question 57a

At your/ [(:B) 's] last visit, did you/ (he/she) feel you/ (he/she) received all the mental health care you/ (he/she) needed?

1. Yes (skip to q. 58a)
2. No
- d. (skip to q. 58a)

At (:B) 's last visit, did you feel (he/she) received all the mental health care (he/she) needed ?

1. Yes (skip to q 58a)
2. No
- d. (skip to q 58a)

question 57b

What should have been done?

question 58a

Overall, were you/ (was (:B)) completely satisfied, somewhat satisfied, or not at all satisfied with your/ (his/her) last visit for mental health care?

1. Completely satisfied (skip to q. 59a)
2. Somewhat satisfied (skip to q. 59a)
3. Not at all satisfied
- d. (skip to q. 59a)

Overall, were you completely satisfied, somewhat satisfied, or not at all satisfied with (:B) 's last visit for mental health care ?

1. Completely satisfied (skip to q 59a)
2. Somewhat satisfied (skip to q 59a)
3. Not at all satisfied
- d. (skip to q 59a)

question 58b

Why were you/ (was he/she) dissatisfied?

question 59a

Would you/ [(:B)] have preferred to have been hospitalized for treatment of your/ (his/her) condition instead of seeing the mental health practitioner in his or her office or at home ?

1. Yes
2. No (skip to q. 60a)
- d. (skip to q. 60a)

Would you have preferred (:B) to have been hospitalized for treatment of (his/her) condition instead of seeing the mental health practitioner in his or her office or at home ?

1. Yes
2. No (skip to q 60a)
- d. (skip to q 60a)

question 59b

Why would you /(he/she) have preferred that?

question 60a

(If R is 01-17 years old, skip to q. 60 c)

question 60b

Was any part of the cost of this last visit for mental health care covered by MEDICARE?

1. Yes
2. No

question 60c

Was any part of the cost of this last visit for mental health care covered by MEDICAID?

1. Yes
2. No

question 60d

(Was any part of the cost of this last visit covered by) PUBLIC ASSISTANCE OR PAID FOR BY WELFARE ?

1. Yes
2. No

question 60e

(Was any part of the cost of this last visit for mental health care covered by) ANY OTHER KIND OF GOVERNMENT INSURANCE? (SPECIFY)

1. Yes (Specify)
2. No

question 60f

(Was any part of the cost of this last visit covered by) INSURANCE PAID FOR BY YOU OR A FAMILY MEMBER ?

1. Yes
2. No

question 60g

(Was any part of the cost of this last visit covered by) INSURANCE PAID FOR BY YOUR/ [(:B)]'s EMPLOYER ?

1. Yes
2. No

question 60i

(Was any part of the cost of this last visit for mental health care covered by) ANY OTHER KIND OF INSURANCE?

1. Yes (SPECIFY)
2. No

question 60j
Did you/ (he/she) have to pay any costs for this last visit that weren't covered by insurance?

1. Yes
2. No (skip to q 61a)
- d. (skip to q 61a)

question 60k
How much? \$ _____

- d. (skip to q 61a)
- r. (skip to q 61a)

question 61a
Has there been any time during the past 12 months when you/ [(:B)] needed or wanted to see a mental health professional or counselor but did not do so ?

1. Yes
2. No (skip to q. 63a)
- d. (skip to q. 63a)

Has there been any time during the past 12 months when (:B) needed or you thought (:B) needed to see a mental health professional or counselor but did not do so ?

1. Yes
2. No (skip to q 63a)
- d. (skip to q 63a)

question 61b
Was that because you/ (he/she) . . .

1. Couldn't afford the cost
2. Didn't think the problem was serious enough (skip to q 63a)
3. Had no transportation (skip to q 63a)
4. Some other reason (SPECIFY) (skip to q 63a)
- d. (skip to q 63a)

question 62a
Did you/ [(:B)] know of a mental health professional or clinic that would treat you/ (him/her) for free or for an amount that you / (he/she) could afford?

1. Yes
2. No (skip to q. 62c)
- d. (skip to q. 62c)

Did you know of a mental health professional or clinic that would treat (:B) for free or for an amount that you could afford ?

1. Yes
2. No (skip to q 62c)
- d. (skip to q 62c)

question 62b
Why didn't you/ (he/she) go there?

question 62c
Did not going for mental health care result in any problems for you/ (him/her)?

1. Yes
2. No (skip to q 63a)
- d. (skip to q 63a)

question 62d
What were they?

question 63a

INTERVIEWER: THINK BACK TO EARLIER IN THE INTERVIEW. IF R IS A "WELL PERSON," SKIP TO Q.79. CONDITION: PREGNANCY, MISCARRIAGE, STILLBIRTH DID R MENTION HE/SHE (:B) SAW A DOCTOR FOR THIS CONDITION?

1. Yes (skip to q. 68f)
2. No

question 63e

It was mentioned earlier that you have/ (:B) has (had) (condition). Are you/ (Is (:B)) currently seeing a doctor about your/ (his/her) (condition)?

1. Yes (skip to q 63j)
2. No
- d. (skip to q 77b or to the next condition)

question 63f

Why aren't you? / Why isn't (he/she) ?

- d. (skip to q 63j)

question 63g

CIRCLE ALL REASONS FOR R NOT GOING TO DOCTOR

1. Lack of money/financial reasons
2. Condition currently not a problem (skip to q 63j)
3. No longer has condition (skip to q 63j)
4. Other (skip to q 63j)

question 63h

Do you/ (Does (:B)) know of a doctor that would see you/ (him/her) for free or an amount you/ (he/she) could afford?

1. Yes
2. No (skip to q. 63j)
- d. (skip to q. 63j)

Do you know of a doctor that would see (:B) for free or an amount you could afford ?

1. Yes
2. No (skip to q 63j)
- d. (skip to q 63j)

question 63i

Why haven't you/ (hasn't he/she) gone there?

question 63j

- | | |
|-------------|--------------|
| 1. January | 7. July |
| 2. February | 8. August |
| 3. March | 9. September |
| 4. April | 10. October |
| 5. May | 11. November |
| 6. June | 12. December |

question 64a

When was your/ (his/her) last visit to a doctor about (condition)?
ENTER MONTH CODE

00. NEVER (skip to q 77b)
01. January
02. February
03. March
04. April
05. May
06. June
07. July
08. August
09. September
10. October
11. November
12. December

question 64b
ENTER YEAR

- 01. 1986
- 02. 1985 (If more than 12 months, skip to q. 77b)
- 03. Other (SPECIFY) 19-- (skip to q. 77b)
- d. (skip to q. 77b) --

(If more than 12 months, skip to q. 77b)

question 67a
Did the doctor advise you/ [(:B)] to take any prescription medicines or injections for your/ (his/her) (:C) ?

- 1. Yes
- 2. No (skip to q 68e)
- 3. "Already discussed that before" [EARLIER IN INTERVIEW]
(skip to q 68e)
- d. (skip to q 68e)

question 67b
Are you/ (Is he/she) currently taking these medicines (or injections) as directed . . . ?

- 1. All the time, (skip to q 68e)
- 2. Part of the time, or
- 3. Never or hardly ever ?
- d. (skip to q 68e)

question 67c
Why aren't you/ (isn't he/she) taking the medicines (or injections)?

question 68e
(If R is 1-5 years old, skip to q. 70j)

question 68f
(Thinking back to your/(his/her) medical care...) Did the doctor advise you/ [(:B)] to cut down on any activities such as sports or heavy work because of your/ (his/her) (:C) ?

- 1. Yes
- 2. No (skip to q 69a)
- d. (skip to q 69a)

question 68g
Are you/ (Is he/she) following the doctor's instructions?

- 1. Yes (skip to q 69a)
- 2. No
- d. (skip to q 69a)

question 68h
Why not?

question 69a
Did the doctor advise you/ (him/her) to go on a special diet or avoid any foods?

- 1. Yes
- 2. No (skip to q 70a)
- d. (skip to q 70a)

question 69b
Have you/ [has (:B)] been following the doctor's instructions?

- 1. Yes (skip to q 70a)
- 2. No
- d. (skip to q 70a)

question 69c
Why not?

question 70a
(If "Other health problem or condition" [from q. 304 on screener]
skip to q. 71)

(If R is 1-5 years old, skip to q. 70j)
(If R is 6-17 years old, skip to q. 70f)

question 70b
Does/Did (the) (:C) prevent you/ [(:B)] from working at a job or
business ?

1. Yes
2. No (skip to q 70d)
9. NOT APPLICABLE (skip to q 70d)
- d. (skip to q 70d)

question 70c
(Has this been/ Was this) for a period of 3 months or more ?

1. Yes
2. No

question 70d
Does/Did this condition prevent you/ [(:B)] from keeping house ?

1. Yes
2. No (skip to q 70f)
9. NOT APPLICABLE (skip to q 70f)
- d. (skip to q. 70f)

question 70e
(Has this been/ Was this) for a period of 3 months or more ?

1. Yes
2. No

question 70f
Does/Did (the) (:C) prevent you/ [(:B)] from going to school ?

1. Yes
2. No (skip to q 70h)
9. NOT APPLICABLE (skip to q 70h)
- d. (skip to q 70h)

question 70g
(Has this been/ Was this) for a period of 3 months or more ?

1. Yes
2. No

question 70h
Does/Did this condition limit you/ (him/her) in some other way ?

1. Yes (SPECIFY)
2. No (skip to q 71)
9. NOT APPLICABLE/NO ANSWER (skip to q 71)
- d. (skip to q 71)

question 70i
(Has this been/ Was this) for a period of 3 months or more ?

1. Yes (skip to q 71)
2. No (skip to q 71)
- d. (skip to q 71)

question 70j
Does/did (the) (:C) prevent (:B) from carrying out normal activities in any way ?

1. Yes
2. No (skip to q 71)
- d. (skip to q 71)

question 70k
In what way ?

(If "No" to Q.70b, and 70d, and 70f, and 70h, and 70j, skip to Q.72)

question 71
How many days in the past year, that is since (DATE ONE YEAR AGO), 1985, did you/ [did (:B)] miss work (or school) or cut down on normal activities in any way because of (:C) ? _____ days

question 72
Again thinking about this particular condition, in the past year, that is since (DATE ONE YEAR AGO) 1985, how serious a financial problem has it been/was it? Has it been/was it . . .

1. A major problem,
2. A minor problem, or (skip to q 73a)
3. No financial problem at all ? (skip to q 73a)
- d. (skip to q 73a)

question 72a
In what way has it been a major financial problem ?

question 73a
Do/did you [Does/did (:B)] need to have someone present in the home all of the time or part of the time because of (:C) ?

1. Yes, all the time (skip to q 73c)
2. Yes, part of the time
3. No (skip to q 74a)
- d. (skip to q 74a)

question 73b
Is/Was it necessary to have someone there . . .

(CIRCLE ALL THAT APPLY.)

1. During the day,
2. At night, or
3. Only special hours such as meal times ?
- d. (skip to q 74a)

question 73c
Are/Were you [Is/was (:B)] able to get the help you/ (he/she) need(ed)?

1. Yes (skip to q 74a)
2. No
- d. (skip to q 74a)

question 73d
How do/did you (does he/she) get along without it?

question 74a
Do you/ [Does (:B)] think that everything (was/is being) done medically for your/ (his/her) (:C) ?

1. Yes (skip to q. 75a)
2. No
- d. (skip to q. 75a)

Do you think that everything (was/is being) done medically for (:B)'s (:C) ?

1. Yes (skip to q 75a)
2. No
- d. (skip to q 75a)

question 74b
What else might be/have been done?

question 75a
(If R is not currently seeing a doctor for condition, skip to q. 77a)

question 75b
Have you/ [Has (:B)] been advised to undergo some kind of treatment, (such as an operation), but have (has) not done so?

1. Yes
2. No (skip to q. 76a)
- d. (skip to q. 76a)

Have you been advised that (:B) should undergo some kind of treatment, (such as an operation), but have (has) not done so?

1. Yes
2. No (skip to q 76a)
- d. (skip to q 76a)

question 75c
Why haven't you/ (hasn't he/she) done so?

- d. (skip to q 76a)

question 75d
CODE REASON

1. Lack of money/financial reasons
2. Other (nonfinancial) reasons (skip to q 76a)

question 75e
Did you/ [(:B)] know of a place that would treat you/ (him/her) for free or an amount that you/ (he/she) could afford?

1. Yes
2. No (skip to q. 76a)
- d. (skip to q. 76a)

Did you know of a place that would treat (:B) for free or an amount that you could afford?

1. Yes
2. No (skip to q 76a)
- d. (skip to q 76a)

question 75f
Why didn't you/ (he/she) go there?

question 76a
Do/Did you (Does/Did) [(:B)] get all the care you/ (he/she) need(ed) while living at home?

1. Yes (skip to q 77a)
2. No
- d. (skip to q 77a)

question 76b
What else do/did you/ [does/did [4:B55]] need?

question 77a
Over the past year, did (the) (:C) result in changes for your/
(his/her) family in jobs, housing, living arrangements, or in some
other way ?

INTERVIEWER: CIRCLE ALL THAT APPLY

1. Jobs
2. Housing
3. Living arrangements
4. Other (SPECIFY)
5. No

question 77b
(If R has more than 1 condition return to q. 63a, otherwise skip
to q. 78b)

question 78b
In the past year have you/ [has (:B)] ever needed a housekeeper
but could not get one ?

1. Yes
2. No (skip to q. 78f)
- d. (skip to q. 78f)

In the past year, have you ever needed a housekeeper because of (:B)'s condition but could not get one?

1. Yes
2. No (skip to q 78f)
- d. (skip to q 78f)

question 78c
Did you/ (he/she) actually try to get a housekeeper ?

1. Yes
2. No (skip to q 78f)
- d. (skip to q 78f)

question 78d
Why couldn't you/ (he/she) get a housekeeper ?

question 78e
What were the consequences of not obtaining a housekeeper ?

question 78f
In the past year, have you/ [has (:B)] ever been unable to make
or keep medical appointments because of a lack of transportation ?

1. Yes
2. No (skip to q. 78j)
- d. (skip to q. 78j)

In the past year, have you ever been unable to make or keep
medical appointments for (:B) because of a lack of transporta-
tion?

1. Yes
2. No (skip to q 78j)
- d. (skip to q 78j)

question 78g
Did you/ (he/she) actually try to get transportation ?

1. Yes
2. No (skip to q 78j)
- d. (skip to q 78j)

question 78h
Why couldn't you/ (he/she) get transportation ?

question 78i
What were the consequences of not obtaining transportation ?

question 78j
In the past year, have you/ [has (:8)] ever been unable to buy prescription drugs because of a lack of money ?

1. Yes
2. No (skip to q. 78n)
- d. (skip to q. 78n)

In the past year, have you ever been unable to buy prescription drugs for (:8) because of a lack of money?

1. Yes
2. No (skip to q 78n)
- d. (skip to q 78n)

question 78k
Did you/ (he/she) actually try to buy prescription drugs at a cost you/ (he/she) could afford ?

1. Yes
2. No (skip to q 78n)
- d. (skip to q 78n)

question 78l
Why couldn't you/ (he/she) buy prescription drugs at a cost you/(he/she) could afford ?

question 78m
What were the consequences of not obtaining the prescription drugs ?

question 78n
In the past year have you/ [has (:8)] ever needed a visit at home from a doctor but could not obtain one ?

1. Yes
2. No (skip to q 78s)
- d. (skip to q 78s)

question 78p
Did you/ (he/she) actually try to get a visit at home from a doctor ?

1. Yes
2. No (skip to q 78s)
- d. (skip to q 78s)

question 78q
Why couldn't you/ (he/she) get a visit at home from a doctor ?

question 78r
What were the consequences of not obtaining a visit at home from a doctor ?

question 78s
In the past year, have you/ [has (:8)] ever needed physical therapy but did not receive treatment ?

1. Yes
2. No (skip to q 78w)
- d. (skip to q 78w)

question 78t
Did you/ (he/she) actually try to get physical therapy ?

1. Yes
2. No (skip to q 78w)
- d. (skip to q 78w)

question 78u
Why couldn't you/ (he/she) get physical therapy ?

question 78v
What were the consequences of not obtaining physical therapy ?

question 78w
(If R is 1-2 years old, skip to q. 79a)

question 78x
In the past year, have you/ [has (:B)] ever needed a psychological counselor but did not receive help ?

1. Yes
2. No (skip to q 79a)
- d. (skip to q 79a)

question 78y
Did you/ (he/she) actually try to get psychological counseling ?

1. Yes
2. No (skip to q 79a)
- d. (skip to q 79a)

question 78z
Why couldn't you/ (he/she) get psychological counseling ?

question 79
What were the consequences of not obtaining psychological counseling ?

question 79a
(In the past year) have you/ [has (:B)] ever needed a nurse to visit the home but could not get one ?

1. Yes
2. No (skip to q. 79e)
- d. (skip to q. 79e)

(In the past year) have you ever needed a nurse to visit (:B) at home but could not get one?

1. Yes
2. No (skip to q 79e)
- d. (skip to q 79e)

question 79b
Did you/ (he/she) actually try to get a nurse to visit the home ?

1. Yes
2. No (skip to q 79e)
- d. (skip to q 79e)

question 79c
Why couldn't you/ (he/she) get a nurse to visit the home ?

question 79d
What were the consequences of not obtaining a nurse to visit the home ?

question 79e

In the past year have you/ [has (:B)] ever needed medical appliances or equipment but could not obtain them ?

1. Yes
2. No (skip to q 79i)
- d. (skip to q 79i)

question 79f

Did you/ (he/she) actually try to get medical appliances or equipment ?

1. Yes
2. No (skip to q 79i)
- d. (skip to q 79i)

question 79g

Why couldn't you/ (he/she) get medical appliances or equipment ?

question 79h

What were the consequences of not obtaining medical appliances or equipment ?

question 79i

(If R is 01-17 years old, skip to q. 79n)

question 79j

In the past year, have you/ [has (:B)] ever needed nursing home or other long term care outside the home but could not get it ?

1. Yes
2. No (skip to q 80a)
- d. (skip to q 80a)

question 79k

Did you/ (he/she) actually try to get nursing home or other long term care ?

1. Yes
2. No (skip to q 80a)
- d. (skip to q 80a)

question 79l

Why couldn't you/ (he/she) get nursing home or other long term care ?

question 79m

What were the consequences of not obtaining nursing home or other long term care ?

- d. (skip to q 80a)

question 79n

(In the past year) [has (:B)] ever needed long term care outside the home but could not get it ?

1. Yes
2. No (skip to q 79s)
- d. (skip to q 79s)

question 79p

Did you (he/she) actually try to get long term care ?

1. Yes
2. No (skip to q 79s)
- d. (skip to q 79s)

question 79q

Why couldn't you/ (he/she) get long term care ?

question 79r
What were the consequences of not obtaining long term care ?

question 79s
(If R IS 1-2 YEARS OLD, END INTERVIEW)

(IF R IS 6-17 YEARS OLD, SKIP TO q. 79x; IF R IS OVER 17 YEARS OLD, SKIP TO q. 80a)

ASK IF R IS CHILD AGES 3 THROUGH 5.

question 79t column(s)
Is (:B) enrolled in school or a child care program ?

1. Yes
2. No (END INTERVIEW)
- d. (END INTERVIEW)

question 79u
In what kind of program ?

(IF "WELL CHILD" END INTERVIEW)

question 79w
Does (:B) receive any special school or child care services because of his/her condition ?

1. Yes (END INTERVIEW)
2. No (END INTERVIEW)
- d. (END INTERVIEW)

(ASK IF CHILD IS 6-17 YEARS OLD)

question 79x
What kind of school program is (:B) currently attending ?
INT: READ IF NECESSARY

1. Regular class, full time (END INTERVIEW)
2. Regular class with resource room (END INTERVIEW)
3. Special classes in regular school (END INTERVIEW)
4. Special classes in special school (END INTERVIEW)
5. Other (SPECIFY) (END INTERVIEW)
- d. (END INTERVIEW)

question 80a
I'd like to ask some background questions to help analyze the results of the study. Are you/ [Is (:B)] now . . .

1. Married,
2. Living together as married,
3. Separated,
4. Divorced,
5. Widowed, or
6. Never married ?

question 81

What is the highest grade or year in elementary school, high school, or college you have (he/she has) completed?

- 00. None
- 01. Elementary --1 yr
- 02. --2 yrs
- 03. --3 yrs
- 04. --4 yrs
- 05. --5 yrs
- 06. --6 yrs
- 07. --7 yrs
- 08. --8 yrs
- 09. High School--9 yrs
- 10. --10yrs
- 11. --11yrs
- 12. High School--12yrs
- 13. College --13yrs
- 14. --14yrs
- 15. --15yrs
- 16. --16yrs
- 17. Some graduate school
- 18. Graduate or professional

question 82a

What race do you/ [does (:B)] consider yourself/ (himself/her-self)? Are you/ (is he/she) . . .

- 1. White
- 2. Black
- 3. Asian (skip to q 83a)
- 4. Other (SPECIFY) _____ (skip to q 83a)
- d. _____
- e. (skip to q 83a)

question 82b

Are you/ (is he/she) of Spanish/Hispanic origin or descent?

- 1. Yes
- 2. No

question 83a

Are you/ (is he/she) currently . . .

- 1. Employed full time
- 2. Employed part time
- 3. Temporarily out of work
- 4. Retired, or
- 5. Not usually employed?
- 6. ON DISABILITY
- 7. KEEPING HOUSE/HOMEMAKER
- 8. Other (SPECIFY)

question 84a

Do you/ [Does (:B)] belong to an HMO (Health Maintenance Organization)? (In an HMO an individual, employer, or the government pays a set amount of money and the person covered goes to one place for all or most of his medical care.)

- 1. Yes
- 2. No

question 85a

At the present time, do you/ (Does (:B)) have MEDICARE ?

- 1. Yes
- 2. No

question 85b
Do you/ [Does he/she] have MEDICAID ?

1. Yes
2. No

question 85c
At the present time, do you/ (does he/she) have any other type of government insurance to cover costs of your/ (his/her) medical care, such as PUBLIC ASSISTANCE OR WELFARE ?

1. Yes
2. No

question 85d
Do you/ [Does he/she] have ANY OTHER TYPE OF GOVERNMENT HEALTH INSURANCE ?

1. Yes (SPECIFY)
2. No

(If R doesn't have Medicare skip to q. 86a)

question 85f
Does your/ [(:B)'s] Medicare cover any of the cost of visits you/ (he/she) make(s) to a doctor's office?

1. Yes
2. No

question 86a
At the present time, do you/ [does (:B)] have any type of HEALTH INSURANCE PAID FOR BY YOU/ (HIMSELF/HERSELF) OR A FAMILY MEMBER ?

1. Yes
2. No

(If R not currently employed, skip to q. 86d)

question 86c
Do you/ [Does he/she] have INSURANCE PAID FOR BY AN EMPLOYER ?

1. Yes
2. No

question 86d
Do you/ [Does (:B)] have ANY OTHER KIND OF HEALTH INSURANCE ?

1. Yes (SPECIFY)
2. No

(If R has any type of health insurance, skip to q. 89)

question 87
There are a number of reasons that people do not have some type of health insurance. Is the main reason that you do not/ [(:B) does not] currently have health insurance due to . . .

1. A change of jobs,
2. A change in job benefits,
3. Loss of a job,
4. Loss of insurance coverage through divorce or separation,
5. Lack of money to pay for insurance premiums,
6. Being turned down for medical reasons, or
7. Some other reason ? (SPECIFY)

question 88a
In the past 12 months, was there any time when you WERE/ [(:B) WAS] covered by some form of health insurance?

1. Yes
2. No (skip to q 90)
- d. (skip to q 90)

question 88b
How many months was that ? _____ months

question 88c
Was this . . .

1. Medicare, (skip to q 90)
2. Medicaid, (skip to q 90)
3. Public assistance or insurance paid for by welfare, (skip to q 90)
4. Some form of insurance paid for by you/ [(:B)] or another family member, or (skip to q. 90)
5. Some other kind of insurance? (SPECIFY) (skip to q 90)
- d. (skip to q 90)

question 89
Altogether, how many different health insurance policies are you/ [(:B)] currently covered by ? _____ policies

question 89a
During the past 12 months, was there any time when you were/ [(:B) was] NOT covered by some form of health insurance ?

1. Yes
2. No (skip to q 90)
- d. (skip to q 90)

question 89b
How many months was that ? _____ months

question 89c
Was the main reason you (he/she) did not have health insurance . .

1. A change of jobs,
2. A change in job benefits,
3. Loss of a job,
4. Loss of insurance coverage through divorce or separation,
5. Lack of money to pay for insurance premiums,
6. Being turned down for medical reasons, or
7. Some other reason ? (SPECIFY)

question 90
INTERVIEWER: THIS IS THE LAST QUESTION FOR PERSONS TWO, THREE, or FOUR

question 200a
Was there any time in the last year . . . since (DATE ONE YEAR AGO) 1985, that you felt any member of your household needed medical help but did not get it for some reason ?

1. Yes
2. No

question 203
If "single person household," skip to q. 205a.

question 203a
Is anyone in your household currently receiving AFDC (Aid for Families of Dependent Children)?

1. Yes
2. No (skip to q 204a)
- d. (skip to q 204a)
- r. (skip to q 204a)

question 203b
Are you (is he/she) one of the persons in the household that receives AFDC?

1. Yes
2. No

question 204a
Is anyone in your household currently receiving SSI (Supplementary Security Income)?

1. Yes
2. No (skip to q 205)
- d. (skip to q 205)
- r. (skip to q 205)

question 204b
Are you/ [Is (:B)] one of the persons in the household that receives SSI?

1. Yes
2. No

question 205
Does anyone in your household receive any (other) type of government welfare or public assistance?

1. Yes (skip to q 205c)
2. No (skip to q 205c)
- d. (skip to q 205c)
- r. (skip to q 205c)

question 205a
Do you currently receive SSI (Supplementary Security Income)?

1. Yes
2. No

question 205b
Do you receive any (other) type of government welfare or public assistance?

1. Yes
2. No

question 205c.
(If one adult household, skip to q. 206a)

question 205d
Who is the main wage earner or provider of income for your family ? (IF MORE THAN ONE, ASK ABOUT THE OLDEST)

1. Respondent (skip to q 206a)
2. Other family member (RECORD NAME AND RELATIONSHIP)
- d. (skip to q 206a)

question 205a

What is the highest grade or year in elementary school, high school, or college (205d) has completed?

- 00. None
- 01. Elementary-- 1 yr
- 02. --2 yrs
- 03. --3 yrs
- 04. --4 yrs
- 05. --5 yrs
- 06. --6 yrs
- 07. --7 yrs
- 08. --8 yrs
- 09. High School--9 yrs
- 10. --10yrs
- 11. --11yrs
- 12. High School--12yrs
- 13. College --13yrs
- 14. --14yrs
- 15. --15yrs
- 16. --16yrs
- 17. Some graduate school
- 18. Graduate or professional degree

question 206a

During 1985 was the TOTAL income for your household, including income from ALL members of the household and from all sources, before taxes . . .

- 1. Less than \$20,000, or
- 2. More than \$20,000? (skip to q 206n)
- 3. \$20,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206b

Was it . . .

- 1. Less than \$10,000, or
- 2. More than \$10,000? (skip to q 206l)
- 3. \$10,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206c

Was it . . .

- 1. Less than \$5,000, or (skip to q 213a)
- 2. More than \$5,000?
- 3. \$5,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206d

In order for us to compare the results of this study with other health surveys, we need to know -- Approximately, what was your total household income ?

- (skip to q. 206u)
- d. (skip to q 213a)
- r. (skip to q 213a)

\$-----

question 206l

Was it...

- 1. Less than \$15,000 or
- 2. More than \$15,000?
- 3. \$15,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206m

In order for us to compare the results of this study with other health surveys, we need to know -- Approximately, what was your total household income ?

(skip to q. 213a)

\$_____

d. (skip to q 213a)

r. (skip to q 213a)

question 206n

Was it...

1. Less than \$30,000, or
2. More than \$30,000 ? (skip to q 206q)
3. \$30,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206o

Was it...

1. Less than \$25,000, or
2. More than \$25,000 ?
3. \$25,000 EXACTLY (skip to q 213a)
- d. (skip to q 213a)
- r. (skip to q 213a)

question 206p

In order for us to compare the results of this study with other health surveys, we need to know -- Approximately, what was your total household income ?

(skip to q. 213a)

\$_____

d. (skip to q 213a)

r. (skip to q 213a)

question 206q

Was it more than \$40,000 ?

1. Yes
2. No

question 213a

In a few years, we may wish to contact you for a follow up of your health care needs. In order to do this, I need your name and address please.

INTERVIEWER: PROBE FOR COMPLETE ADDRESS (CITY, STATE, ZIP) AND CORRECT SPELLING.

Name:

Address:

City:

State:

Zip:

question 214a
 Since this study may not take place for some time, many people we interview may change their address before we contact them again. Could you please give me the name and address and phone number of a person who would know how to contact you if you moved within the next year or so.
 INTERVIEWER: PROBE FOR COMPLETE ADDRESS (CITY, STATE, ZIP) AND CORRECT SPELLING.

Name:

Address:

City:

State:

Zip:

Area Code: ()

This is the end of the "first person" interview. If there is more than one person in the household to be interviewed, go to next questionnaire.

question 206x
 Do you have any brothers or sisters (or step brothers or step sisters) who live OUTSIDE your household ?

1. Yes
2. No (skip to q 207)
- d. (skip to q 207)
- r. (skip to q 207)

question 206y
 How many?

01. One brother/sister (skip to q. 207)
- brothers/sisters
- d. (skip to q. 207)
- r. (skip to q. 207)

question 206z
 In how many separate households do your brothers or sisters (or step brothers or step sisters live) ?

-----households

question 207

Do you have any grandparents who live OUTSIDE your household ?

1. Yes
2. No (skip to q 207c)
- d. (skip to q 207c)
- r. (skip to q 207c)

question 207a
 How many?

01. One grandparent (skip to q. 207c)
- grandparents
- d. (skip to q. 207c)
- r. (skip to q. 207c)

question 207b

In how many separate households (do your grandparents live) ?

-----households

question 207c

If currently married or living together as married, skip to q. 207g

question 207d
Do you have any grandchildren under the age of 18 who live OUTSIDE your household ?

- 1. Yes
- 2. No (skip to q 207z)
- d. (skip to q 207z)
- r. (skip to q 207z)
- 01. One grandchild (skip to q. 207z)
- grandchildren
- d. (skip to q. 207z)
- r. (skip to q. 207z)

question 207f
In how many separate households (do your grandchildren under the age of 18 live) ?

- _____ households (skip to q.207z)
- d. (skip to q.207z)
- r. (skip to q.207z)

(If R NOT married, or NOT living together as married, skip to q. 207z)

question 207g
Does your spouse (friend) have any parents or step parents who live OUTSIDE your household ?

- 1. Yes
- 2. No (skip to q 207j)
- d. (skip to q 207j)
- r. (skip to q 207j)

question 207h
How many?

- 01. One parent (skip to q. 207j)
- parents
- d. (skip to q. 207j)
- r. (skip to q. 207j)

question 207i
In how many separate households (do your spouse's (friend's) parents (or step parents) live) ? _____households

question 207j
Does your spouse (friend) have any brothers or sisters (or step brothers or step sisters) who live OUTSIDE your household ?

- 1. Yes
- 2. No (skip to q 207m)
- d. (skip to q 207m)
- r. (skip to q 207m)

question 207k
How many?

- 01. One brother/sister (skip to q. 207m)
- brothers/sisters
- d. (skip to q. 207m)
- r. (skip to q. 207m)

question 207l
In how many separate households (do your spouse's (friend's) brothers or sisters (or step brothers or step sisters live) ?
_____households

question 207m
Does your spouse (friend) have any grandparents who live OUTSIDE your household ?

1. Yes
2. No (skip to q 207p)
- d. (skip to q 207p)
- r. (skip to q 207p)

question 207n
How many?

01. One grandparent (skip to q. 207p)
grandparents
- d. (skip to q. 207p)
- r. (skip to q. 207p)

question 207o
In how many separate households (do your spouse's (friend's) grandparents live) ? _____ households

question 207p
Do you or your spouse (friend) have any grandchildren under the age of 18 who live OUTSIDE your household ?

1. Yes
2. No (skip to q 207z)
- d. (skip to q 207z)
- r. (skip to q 207z)

question 207q
How many grandchildren altogether?

01. One grand child (skip to q. 207z)
grandchildren
- d. (skip to q. 207z)
- r. (skip to q. 207z)

question 207r
In how many separate households do these grandchildren live?
_____ households

question 207z
(If "no" to all relatives q. 206u through q. 207r, skip to q. 213a)

question 208a
Have any of these relatives we've been talking about been a patient OVERNIGHT in a hospital during the past year, that is, since (MONTH ONE YEAR AGO), 1985 ?

1. Yes
2. No

question 208c
Do any of these relatives who live outside your household have asthma or emphysema ?

1. Yes
2. No

question 208e
Do any of them have cancer ?

1. Yes
2. No

question 208g
Do any of them have heart disease or a cardiac condition ?

1. Yes
2. No

question 208i
Have any of them had a stroke in the last year ?

1. Yes
2. No

question 208k
Do any of these relatives have high blood pressure (hyper-tension) ?

1. Yes
2. No

question 208m
Do any of them have chronic nephritis or other serious kidney disease ?

1. Yes
2. No

question 208o
Do any of them have cirrhosis or liver damage ?

1. Yes
2. No

question 208q
Do any of these relatives have diabetes (or sugar in the blood) ?

1. Yes
2. No

question 208s
Do any of them have convulsions or seizures, epilepsy, multiple sclerosis, cerebral palsy, or other neurological or neuromuscular diseases that affect walking, arm movement, or memory?

1. Yes
2. No

question 208u
Do any of them have any type of mental retardation that limits school, work, or daily activities ?

1. Yes
2. No

question 208w
During the past year, have any of these relatives had pneumonia or influenza requiring one or more nights of hospitalization ?

1. Yes
2. No

question 208y
During the past year, have any of them had an accident or injury requiring one or more nights of hospitalization?

1. Yes
2. No

question 209a
During the past year, have any of these relatives had any (other) health problem or condition that prevents them from going to work, going to school, keeping house, or carrying out normal activities ?

1. Yes
2. No (skip to q. 210)
- d. (skip to q. 210)
- r. (skip to q. 210)

question 209b

What is the name of this health problem ? (PROBE: Did the doctor call the health problem by a more technical or specific name ?)

IF RDD R is reluctant to give names, phone numbers etc. for Network questions 210:

Through random digit dialing we may not be able to contact enough households or individuals who've had health or medical problems to complete our study. We need to speak to enough people who have recent experience with the American health care system to get reliable results.

question 210

You mentioned a relative who has had (condition).

INTERVIEWER: FOR EACH CONDITION, ASK:

1. How is this person related to you?
2. What is (PERSON)'s : - Name and Address (City,State,Zip) ?

Name:

Address:

City:

State:

Zip:

3. Area Code and Telephone Number? ()

4. Does any other relative have this condition? Who?

1. How is this person related to you?

2. What is (PERSON)'s : - Name and Address (City,State,Zip) ?

Name:

Address:

City:

State:

Zip:

3. Area Code and Telephone Number? ()

4. Does any other relative have this condition ? Who ?

1. How is this person related to you?

2. What is (PERSON)'s : - Name and Address (City,State,Zip) ?

Name:

Address:

City:

State:

Zip:

3. Area Code and Telephone Number? ()

APPENDIX D

Description of the Pattern of Missing Outcome Data:*
Ambulatory Visits**

	With		Without		Missing Data		Total
	N	%	N	%	N	%	N***
<u>CHRONIC ILLNESS</u>							
Chronic	1015	81	232	19	28	2	1275
Well	2840	59	1982	41	50	1	4872
<u>AGE</u>							
17-34	1507	63	897	37	29	1	2433
35-44	691	61	448	39	17	1	1156
45-54	477	60	316	40	6	1	799
55-64	468	64	264	36	18	2	750
65-74	465	69	206	31	6	1	677
75+	206	74	73	26	2	1	281
<u>GENDER</u>							
Male	1680	57	1257	43	31	1	2968
Female	2175	69	958	31	46	1	3179
<u>ETHNICITY</u>							
Black	356	59	246	41	6	1	608
Hispanic	201	56	155	44	1	0	357
White	3236	65	1742	35	61	1	5039
<u>MARITAL STATUS</u>							
Single	517	62	318	38	6	1	841
Married	2589	63	1519	37	24	1	4132
Divorced	314	64	177	36	3	1	494
Widowed	309	69	136	31	2	0	447
<u>RESIDENCE</u>							
Urban	2760	64	1585	37	49	1	4394
Rural	1080	63	629	37	29	2	1738
<u>EDUCATION</u>							
Some HS or less	638	62	397	38	6	1	1041
HS Grad	1343	62	815	38	11	1	2169
Some Col	870	65	473	35	4	0	1347
Col Grad	871	65	464	35	11	1	1346

APPENDIX D - continued

	With		Without		Missing Data		Total
	N	%	N	%	N	%	N***
<u>INCOME</u>							
Below Pov	649	64	372	36	10	1	1031
Above Pov	2706	64	1526	36	34	1	4266
<u>INSURANCE</u>							
Uninsured	294	54	246	46	4	1	544
Insured	3436	64	1899	36	33	1	5368
<u>EMPLOYMENT</u>							
Unemployed	146	60	95	40	1	0	242
Employed	2268	61	1461	39	18	0	3747
Not in work force	1270	69	570	31	12	1	1852
<u>HEALTH STATUS</u>							
Excel/Good	3187	61	2004	39	20	0	5211
Fair/Poor	632	76	197	24	3	0	832
<u>REGULAR SOURCE OF CARE</u>							
Yes	3269	68	1519	32	13	0	4801
No	583	46	671	54	1	0	1255

- * In addition, six records were dropped due to records being uninterpretable. These six records account for 0.1% of the data.
- ** Missing Data not included in calculations except for the percent missing
- *** Total includes missing data

APPENDIX E

Description of the Pattern of Missing Data:*
Hospitalizations.**

	With		Without		Missing		Total
	N	%	N	%	N	%	N***
<u>CHRONIC ILLNESS</u>							
Chronic	228	18	1046	82	1	0	1275
Well	48	1	4820	99	5	0	4873
<u>AGE</u>							
17-34	58	2	2371	98	3	0	2432
35-44	19	2	1135	98	1	0	1155
45-54	24	3	773	97	1	0	798
55-64	59	8	690	92	0	0	749
65-74	63	9	614	91	0	0	677
75+	44	16	238	84	0	0	282
<u>GENDER</u>							
Male	142	5	28	95	4	0	2968
Female	134	4	30	96	1	0	3179
<u>ETHNICITY</u>							
Black	34	6	572	94	1	0	607
Hispanic	4	1	353	99	0	0	357
White	227	5	4808	95	4	0	5039
<u>MARITAL STATUS</u>							
Single	27	3	810	97	3	0	840
Married	189	5	3943	95	0	0	4132
Divorced	16	3	477	97	1	0	494
Widowed	37	8	411	92	0	0	448
<u>RESIDENCE</u>							
Urban	181	4	4207	96	5	0	4393
Rural	94	5	1643	95	0	0	1737
<u>EDUCATION</u>							
Some HS or less	79	8	963	92	0	0	1042
HS grad	84	4	2085	96	0	0	2169
Some Col	57	4	1285	96	4	0	1346
Col Grad	47	3	1299	97	0	0	1346

APPENDIX E - continued

	With		Without		Missing Data		Total
	N	%	N	%	N	%	N***
<u>INCOME</u>							
Below pov	71	7	961	93	0	0	1032
Above pov	166	4	4095	96	5	0	4266
<u>INSURANCE</u>							
Uninsured	14	3	529	97	0	0	543
Insured	255	5	5109	95	4	0	5368
<u>EMPLOYMENT</u>							
Unemployed	14	6	228	94	0	0	242
Employed	91	2	3654	98	1	0	3746
Not in labor force	160	9	1690	91	3	0	1853
<u>HEALTH STATUS</u>							
Excel/good	136	3	5073	97	1	0	5210
Fair/poor	135	16	694	84	3	0	832
<u>REGULAR SOURCE OF CARE</u>							
Yes	238	5	4560	95	3	0	4801
No	24	2	1229	98	1	0	1254

* In addition, six records were dropped due to records being uninterpretable. These six records account for 0.1% of the data.

** Missing data not included in calculations except for the percent missing.

*** Total includes missing data

APPENDIX F

Description of the Pattern of Missing Data:*
Emergency Visits.**

	With		Without		Missing		Total
	N	%	N	%	N	%	N***
<u>CHRONIC ILLNESS</u>							
Chronic	286	23	958	77	30	2	1274
Well	679	14	4168	86	26	1	4873
<u>AGE</u>							
17-34	439	18	1982	82	11	0	2432
35-44	186	16	959	84	11	1	1156
45-54	97	12	692	88	10	1	799
55-64	101	14	638	86	10	1	749
64-74	82	12	586	88	10	1	678
75+	46	17	231	83	5	2	282
<u>GENDER</u>							
Male	489	17	2449	83	31	1	2969
Female	476	15	2678	85	26	1	3180
<u>ETHNICITY</u>							
Black	96	16	505	84	7	1	608
Hispanic	74	21	282	79	1	0	357
White	782	16	4210	84	47	1	5039
<u>MARITAL STATUS</u>							
Single	137	16	693	84	10	1	840
Married	631	15	3463	85	38	1	4132
Divorced	91	19	399	81	4	1	494
Widowed	65	15	378	85	5	1	448
<u>RESIDENCE</u>							
Urban	689	16	3668	84	36	1	4393
Rural	270	16	1447	84	20	1	1737
<u>EDUCATION</u>							
Some HS or less	173	17	854	83	14	1	1041
HS Grad	322	15	1820	85	27	1	2169
Some Col	223	17	1117	83	7	1	1347
Col Grad	203	15	1134	85	9	1	1346

APPENDIX F - continued

	With		Without		Missing		Total
	N	%	N	%	Data N	%	N***
<u>INCOME</u>							
Below pov	186	18	833	82	12	1	1031
Above pov	670	16	3571	84	25	1	4266
<u>INSURANCE</u>							
Uninsured	98	18	443	82	2	0	543
Insured	825	16	4489	84	54	1	5368
<u>EMPLOYMENT</u>							
Unemployed	40	17	199	83	3	1	242
Employed	611	16	3111	84	25	1	3747
Not in labor force	258	14	1566	86	28	2	1852
<u>HEALTH STATUS</u>							
Excel/good	727	14	4448	86	35	1	5210
Fair/poor	227	28	587	72	18	2	832
<u>REGULAR SOURCE OF CARE</u>							
Yes	782	16	3968	84	50	1	4800
No	182	15	1066	85	6	0	1254

* In addition, six records were dropped due to records being uninterpretable. These six records account for 0.1% of the data.

** Missing data not included in calculations except for the percent missing.

*** Total includes missing data.

APPENDIX G

Logistic Regression Model for Ambulatory Visits:
Estimated Parameters¹

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>INTERCEPT</u>					
	1	0.224004	.117106	3.66	0.0558
<u>CHRONIC ILLNESS</u>					
	2	0.541489	.0497342	117.59	0.0001
<u>AGE</u>					
	3	0.174799	.0731293	5.71	0.0168
	4	-0.045441	.0790491	0.33	0.5654
	5	-0.143379	.0860859	2.77	0.0958
	6	-0.106596	.0868175	1.51	0.2195
	7	0.0208879	.103876	0.04	0.8406
<u>GENDER</u>					
	8	-0.256709	.0338836	57.40	0.0001
<u>ETHNICITY</u>					
	9	-0.177389	.0795448	4.97	0.0257
	10	-0.0198	.0920522	0.05	0.8297
<u>MARITAL STATUS</u>					
	11	-0.033337	.085154	0.15	0.6954
	12	-0.020442	.0588697	0.12	0.7284
	13	0.143728	.0935035	2.36	0.1243
<u>RESIDENCE</u>					
	14	0.0667331	.0355741	3.52	0.0607
<u>EDUCATION</u>					
	15	0.156913	.0340215	21.27	0.0001
<u>INCOME</u>					
	16	-0.038277	.0455261	0.71	0.4005
<u>INSURANCE</u>					
	17	0.0938092	.0571555	2.69	0.1007

Appendix G - continued

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>EMPLOYMENT</u>					
	18	-0.063223	.106005	0.36	0.5509
	19	0.0412592	.0644183	0.41	0.5219
<u>HEALTH STATUS</u>					
	20	-0.261156	.0562261	21.57	0.0001
<u>REGULAR SOURCE OF CARE</u>					
	21	0.330153	.0380323	75.36	0.0001

¹ Order of variables entered was identical to the listing in Table 12.

APPENDIX H

Logistic Regression Model for Hospitalization¹: Estimated Parameters.^{2,3}

Effect	Para- meter Estimate	Standard Error	Chi- Square	Prob
<u>INTERCEPT</u>				
1	-3.58118	.322577	123.25	0.0001
<u>CHRONIC ILLNESS</u>				
2	1.35416	.105729	164.04	0.0001
<u>AGE</u>				
3	0.291858	.196071	2.22	0.1366
4	-0.414369	.247229	2.81	0.0937
5	0.248535	.231598	1.15	0.2832
6	-0.004322	.172671	0.00	0.9800
7	-0.063752	.186421	0.12	0.7324
<u>GENDER</u>				
8	0.0829705	.0852431	0.95	0.3304
<u>ETHNICITY</u>				
9	0.50842	.228413	4.95	0.0260
10	-0.851085	.355292	5.74	0.0166
<u>MARITAL STATUS</u>				
11	0.0925045	.220502	0.18	0.6748
12	0.193164	.139477	1.92	0.1661
13	-0.314617	.2579	1.49	0.2225
<u>RESIDENCE</u>				
14	-0.040829	.0847347	0.23	0.6299
<u>EDUCATION</u>				
15	0.152576	.0826777	3.41	0.0650
<u>INCOME</u>				
16	-0.053392	.101654	0.28	0.5994
<u>INSURANCE</u>				
17	-3.3E-04	.177355	0.00	0.9985
<u>EMPLOYMENT</u>				
18	0.333641	.261029	1.63	0.2012
19	-0.405021	.165635	5.98	0.0145

Appendix H - continued

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>HEALTH STATUS</u>					
	20	-0.574446	.0885176	42.12	0.0001
<u>REGULAR SOURCE OF CARE</u>					
	21	0.0229145	.13064	0.03	0.8608

¹ Interaction terms not included.

² Hispanics included.

³ Order of variables entered was identical to the listing in Table 13.

APPENDIX I

Logistic Regression Model with Interaction of Gender and Chronic Illness for Hospitalization: Estimated Parameters.^{1, 2}

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>INTERCEPT</u>					
	1	-3.61942	.324869	124.13	0.0001
<u>CHRONIC ILLNESS</u>					
	2	1.38272	.109683	158.92	0.0001
<u>GENDER*CHRONIC</u>					
	3	0.220265	.101007	4.76	0.0292
<u>AGE</u>					
	4	0.289381	.196003	2.18	0.1398
	5	-0.427834	.246958	3.00	0.0832
	6	-0.250016	.231556	1.17	0.2803
	7	6.6E-04	.172779	0.00	0.9970
	8	-0.053906	.186514	0.08	0.7726
<u>GENDER</u>					
	9	-0.939316	.104388	0.14	0.7064
<u>ETHNICITY</u>					
	10	0.514407	.229014	5.05	0.0247
	11	-0.869372	.356748	5.94	0.0148
<u>MARITAL STATUS</u>					
	12	0.102405	.220926	0.21	0.6430
	13	0.16307	.140111	1.35	0.2445
	14	-0.336212	.258061	1.70	0.1926
<u>RESIDENCE</u>					
	15	-0.037958	.0848216	0.20	0.6545
<u>EDUCATION</u>					
	16	0.155876	.0828968	3.67	0.0555
<u>INCOME</u>					
	17	-0.058741	.101875	0.33	0.5642

Appendix I - continued

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>INSURANCE</u>					
	18	0.0098678	.177729	0.00	0.9557
<u>EMPLOYMENT</u>					
	19	0.333529	.260153	1.64	0.1998
	20	-0.393789	.165027	5.69	0.0170
<u>HEALTH STATUS</u>					
	21	-0.577512	.0886309	42.46	0.0001
<u>REGULAR SOURCE OF INCOME</u>					
	22	0.0023968	.130996	0.00	0.9854

¹ Hispanics included.

² Order of variables entered was identical to the listing in Table 13.

APPENDIX J

Logistic Regression Model with Interaction of Ethnicity
and Chronic Illness for Hospitalization: Estimated
Parameters.^{1,2}

Effect	Para- meter Estimate	Standard Error	Chi- Square	Prob
<u>INTERCEPT</u>				
1	-3.05068	.300848	102.83	0.0001
<u>CHRONIC ILLNESS</u>				
2	1.12846	.103192	73.17	0.0001
<u>ETHNICITY*CHRONIC</u>				
3	-0.303986	.122597	6.15	0.0132
<u>AGE</u>				
4	0.278328	.198857	1.96	0.1616
5	-0.552436	.259733	4.52	0.0334
6	-0.234562	.232692	1.02	0.3134
7	0.0196718	.174621	0.01	0.9103
8	-0.019415	.18961	0.01	0.9184
<u>GENDER</u>				
9	0.0850436	.0862281	0.97	0.3240
<u>ETHNICITY</u>				
10	0.225396	.126535	3.17	0.0749
<u>MARITAL STATUS</u>				
11	0.0905225	.223361	0.16	0.6853
12	0.225297	.141652	2.53	0.1117
13	-0.346109	.263739	1.72	0.1894
<u>RESIDENCE</u>				
14	-0.051821	.859332	0.36	0.5465
<u>EDUCATION</u>				
15	0.164121	.0841622	3.80	0.0512
<u>INCOME</u>				
16	-0.026817	.102212	0.07	0.7930
<u>INSURANCE</u>				
17	-0.033309	.179181	0.03	0.8525

Appendix J - continued

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>EMPLOYMENT</u>					
	18	0.41229	.261923	2.48	0.1155
	19	-0.387901	.166293	5.44	0.0197
<u>HEALTH STATUS</u>					
	20	-0.582458	.0895896	42.27	0.0001
<u>REGULAR SOURCE OF CARE</u>					
	21	0.057062	.135568	0.18	0.6738

¹ Hispanics omitted.

² Order of variables entered was identical to the listing in Table 13.

APPENDIX K

Logistic Regression Model for Emergency Visits: Estimated Parameters¹.

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>INTERCEPT</u>					
	1	-1.38581	.142728	94.27	0.0001
<u>CHRONIC ILLNESS</u>					
	2	0.379818	.0519548	53.44	0.0001
<u>AGE</u>					
	3	0.48222	.0936257	26.53	0.0001
	4	0.265795	.102572	6.71	0.0096
	5	-0.218789	.12059	3.29	0.0696
	6	-0.196272	.11401	2.96	0.0852
	7	-0.306421	.13583	5.09	0.0241
<u>GENDER</u>					
	8	0.0138668	.0429252	0.10	0.7467
<u>ETHNICITY</u>					
	9	-0.147371	.0999027	2.18	0.1402
	10	0.226283	.109373	4.28	0.0386
<u>MARITAL STATUS</u>					
	11	-0.175791	.106796	2.71	0.0998
	12	0.0135971	.0732504	0.03	0.8527
	13	0.0739-61	.114536	0.42	0.5188
<u>RESIDENCE</u>					
	14	0.0145276	.0457222	0.10	0.7507
<u>EDUCATION</u>					
	15	0.0339231	.0433241	0.61	0.4336
<u>INCOME</u>					
	16	0.0272367	.0563938	0.23	0.6291
<u>INSURANCE</u>					
	17	-0.033186	.0730204	0.21	0.6495

Appendix K - continued

Effect	Para- meter	Estimate	Standard Error	Chi- Square	Prob
<u>EMPLOYMENT</u>					
	18	0.0610309	.132887	0.21	0.6460
	19	0.122522	.0820174	2.23	0.1352
<u>HEALTH STATUS</u>					
	20	-0.449327	.0573291	61.43	0.0001
<u>REGULAR SOURCE OF INCOME</u>					
	21	0.0812502	.0528084	2.37	0.1239

¹ Order of variables entered was identical to the listing in Table 14.