DIFFERENTIALS IN MORBIDITY AND IN THE USE AND COST OF HEALTH SERVICES IN WAKE COUNTY, NORTH CAROLINA

by

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A DISSERTATION

Submitted to the School of Graduate Studies of Michigan State College of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology and Anthropology

1954

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There has been a pronounced increase in interest and activities in the field of health and health care in the last few years, both in North Carolina and the country as a whole. The present study was conceived as a result of a need for more information concerning the social and economic factors associated with health and the health care activities of the people of the state.

The investigation was based on a house-to-house canvass of a two percent sample of Wake County, North Carolina. The major objective was to collect and analyze data which could be used in planning more effective health programs for the county and to provide a basis whereby basic principles could be derived so that the health program of the county, the state, and the nation may proceed on a sound basis. The analysis was based on three dependent variables, morbidity, the use of health services and facilities, and the cost of health services and facilities. These variables were analyzed in terms of a set of selected social and economic factors or independent variables. Some of the more important conclusions are summarized below.

In the reporting of illness the informant is not only influenced by the objective presence or absence of some morbid condition, but he is especially influenced by his definition of what constitutes illness. This definition of illness is based largely on standards of health and health care which have been derived from past experience or which have been handed down

from generation to generation. Since the standards of health and health care of medical science are based primarily on objective information and those of the layman on a combination of objective information, customs, habits, attitudes, and superstitions, objective need for medical attention and the felt needs of the individual do not necessarily coincide. Furthermore, since subsequent behavior is based largely on the felt needs of the individual, these felt needs are of primary importance in any consideration of the use of health services and facilities. Of course, the use of health services and the felt needs themselves are also affected by conflicting goals, ability to pay, and attitudes toward the various means available for meeting the needs. On the whole, the higher social and economic groups appear to be more nearly recognizing and meeting their objective health needs than are the lower groups. This is due not only to differences in health standards, but also to ability to pay for the needed services.

Cost of health care, but particularly ability to pay, also influence the use of health services. However, ability to pay is a relative matter which depends not only upon family income or other economic resources, but also on other financial obligations, spending habits, conflicting goals and aspirations, and even the felt needs. Cost, in turn, is affected by the amount and type of service used.

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The writer wishes to express appreciation to the North Carolina Agricultural Experiment Station under whose auspices the data for this study were collected; to Dr. Charles R. Hoffer, who guided the writing of this dissertation and whose insight and encouragement proved to be an invaluable source of aid in the progress of this study; to Dr. Paul A. Miller, who read the manuscript and made many helpful suggestions; to Dr. C. Horace Hamilton, Head of the Department of Rural Sociology at North Carolina State College and director of the research project, for his constant stimulation and encouragement and especially for his guidance in the application of appropriate statistical techniques to the analysis of the data; to the Health Information Foundation for financial assistance in the preparation of the manuscript; to Ida Hodge and Dorothy Thompson who assisted in the tabulation and statistical analysis of the data; and to Mary Joe Singh for typing the original manuscript, for many suggestions on improving the grammatical construction, and for proofreading the final copy. Appreciation is also due Adele Covington for the excellent job of typing the final copy and for many suggestions of an editorial nature. Last, but certainly not least, my deepest appreciation to my wife, Gloria, who proved to be my major source of motivation and encouragement.

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Sheldon Gaylon Lowry

candidate for the degree of

Doctor of Philosophy

Final examination, Fall term, 1954.

Dissertation: Differentials in Morbidity and in the Use and Cost of Health Services in Wake County, North Carolina.

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Experience: Instructor in music, Public School System, Pocatello, Idaho, 1946-1947.

Graduate Assistant, Michigan State College, 1947-1950.

Social Analyst and Field Representative for the National Child Labor Committee, New York City, on their study of Migrant Labor in Colorado, Summer, 1950.

Graduate Assistant, Michigan State College, 1950-1951.

Instructor (Research), Michigan State College, 1951-1952.

Research Associate, Health Information Foundation, New York City, January-July, 1952.

Assistant Professor, North Carolina State College, July, 1952 to present.

Special Items: Graduate Assistantship and Tuition Scholarship four successive years at Michigan State College.

Travel Fellowship from the Institute of International Education for research and study in Costa Rica. (Note: This was awarded but had to be declined due to illness in the family.)

A personal grant from the Health Information Foundation to aid in health research connected with the doctoral dissertation.

Publications: "Continuation Education in Colleges and Universities." Rural Social Systems and Adult Education. East Lansing: Michigan State College Press, Chapter 10, 1953. (Co-authored with Dr. Olen E. Leonard.)

"International Exchange of Persons." Rural Social Systems and Adult Education. East Lansing: Michigan State College Press, Chapter 11, 1953. (Co-authored with Dr. Olen E. Leonard.)

Member of American Sociological Society, Rural Sociological Society, Society for Applied Anthropology, and Alpha Kappa Delta Sociological Fraternity.

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CHAPTER I

INTRODUCTION

Significance of the Study

Due to the prominent place which health matters have had on the national, state, and local scene in recent years, this study is particularly timely. The last few decades have seen greater emphasis on health and health care programs in this country than at any other period of its history. This emphasis has been spearheaded by a strong drive for legislation to provide a national program for the payment of medical costs. This drive has been equalled only by those who have favored complete private operation and control of health programs.[1] Many

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1. There is much literature relating to the background and history of the health controversy in this country. The reader is referred to the following sources as examples:

Odin W. Anderson, "The Health Insurance Movement in the United States: A Case Study of the Role of Conflict in the Development and Solution of a Social Problem," Published Doctoral Dissertation, Publication 959, Ann Arbor: University of Michigan, 1948.

Helen Hershfield Avnet, Voluntary Medical Insurance in the United States: Major Trends and Current Problems, New York: Medical Administrative Service, Inc., 1944.

Oscar R. Ewing, "The Nation's Health--A Ten Year Program," Washington: United States Government Printing Office, September, 1948.

Frederick L. Hoffman, More Facts and Fallacies of Compulsory Health Insurance, New Jersey: Prudential Press, 1920.

Sheldon G. Lowry, "Attitudes of Michigan Residents Toward Government-Sponsored Prepayment Plans for Health Care," Unpublished Master's Thesis, East Lansing: Michigan State College, 1950, Chapter I.

commissions have been appointed, and many studies have been made and are still being made, both local and nation-wide in scope.[2] The state of North Carolina has had a tremendous upswing in interest and efforts in the field of health during the past few years. The establishment of the North Carolina Medical Care Commission, the hospital building program, the costly new and expanded medical school program at the University of North Carolina, increased efforts to make health insurance available to the people of the state, and the establishment of a medical education loan fund are all evidence of this interest.[3] There is

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Harry Alvin Millis, Sickness and Insurance: A Study of the Sickness Problem and Health Insurance, Chicago: The University of Chicago Press, 1937.

A. M. Simons and Nathan Sinai, The Way of Health Insurance, Chicago: The University of Chicago Press, 1932.

Pierce Williams, The Purchase of Medical Care Through Fixed Periodic Payment, New York: National Bureau of Economic Research, Inc., 1932.

2. The most recent federal commission to be appointed was The President's Commission on the Health Needs of the Nation which was created by an Executive Order on December 29, 1951. Dr. Paul B. Magnuson (M.D.) was selected as Chairman of the Committee. The final report entitled, "Building America's Health," Washington: United States Government Printing Office, 1952, was in five volumes as follows: Volume I, Findings and Recommendations; Volume II, America's Health Status, Needs and Resources; Volume III, America's Health Status, Needs and Resources--A Statistical Appendix; Volume IV, Financing a Health Program for America; Volume V, The People Speak--Excerpts from Regional Public Hearings on Health.

3. In 1945 Mayo made a summary review of the existing medical facilities and services in rural areas in North Carolina, as well as the needs and efforts being made to fulfill those needs. See: Selz C. Mayo, "Post War Planning for North Carolina: Rural Health Services and Facilities," Raleigh: North Carolina State College, Department of Rural Sociology, Report No. 12 (Mimeographed), October, 1945. For a brief historical sketch of the development of health programs and activities in North Carolina see: "Hospital Resources and Needs," The Report of the North Carolina Hospital Study, 1951.

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every indication that these measures constitute just a beginning in the development of programs whereby all of the people of this state can have ready access to the best care which modern medicine can provide.

Although some studies have been made, there has been considerable need for a more detailed sociological analysis of the factors associated with health as reflected by living conditions, social contacts, race, education, income, and other social and economic factors. The present study is designed to provide some of this needed information for the various health agencies and groups, as well as for applied sociologists, social workers, and others who are concerned with the health of the people.

Purpose and Scope of the Study

This investigation is part of a larger state-wide study of health conditions and medical services and facilities which was directed by Dr. C. Horace Hamilton, Head of the Department of Rural Sociology at North Carolina State College, during the latter part of 1949. A scientific random sample was drawn from the entire county to yield a sample of 588 households which included 2125 individuals. The study was based on a house-to-house canvass of the entire sample.

For a review of the development of medicine in general and of the efforts of the people of North Carolina in particular see Dr. Frank Graham's address in dedication of the University of North Carolina Medical School. Frank Porter Graham, "A Challenge to the Medical Schools and the Medical Profession," Reprinted from Pediatrics, Vol. 13, No. 1, January, 1954, pp. 92-100.

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The Sample

The sample was drawn on the basis of approximately 2 percent of the entire population of Wake County, North Carolina, exclusive of the student and institutional population. This yielded a sample of 588 households and 2125 individuals.

The sampling unit in the study was a household. The term, household, refers to the entire group of persons who occupy one dwelling unit. It may consist of one or more persons. It may also consist of one or more families depending on the housekeeping facilities and arrangements involved.

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The term, dwelling unit, is defined as the living quarters occupied by, or intended for occupancy by, one household. A dwelling unit may be a detached house; a tenement, flat, or apartment in a larger building or apartment house; an apartment hotel or section of a hotel devoted entirely to apartment rather than transient use; a room in a structure primarily devoted to business or other nonresidential purposes; a superintendent's living quarters in a public building, such as a courthouse or library; a watchman's living quarters in a factory, store, or warehouse; a chauffeur's living quarters in a garage; a tourist cabin, trailer, railroad car, boat, tent, etc., if occupied by persons having no other place of residence.

Some large boarding and rooming houses, those with 5 or more roomers, such as resident hotels and other resident institutions, were sampled. However, this was not carried through systematically and, as a result, 91 of these individuals were not included in the sampling procedure.

The rural sample was selected by the route method.[4] Each interviewer or pair of interviewers was assigned to an area. Using a map, they traveled over every road in the area and counted the houses with the aid of a tally counter. When the sample number was reached an interview was taken. Each house where an interview was taken was identified on the map by a map number shown on the schedule.

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4. The 1940 United States Census definition of residence was used throughout.

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Sample numbers were determined as follows. The first number was a random number between 1 and 50 which was selected from a table of random numbers. In order to get two houses which were not too far apart, the second sample number was determined by adding 8 to the first number. Thereafter, the sample number series continued in groups of two, 8 houses apart, for each 100 houses. For example, if the first number was 41 the others in the series would be 49, 141, 149, 241, 249, and so forth. If two households with separate living quarters were found to be living in the same house, records were taken from each household. However, multiple dwelling units with more than 2 households were treated as a series of single household dwellings. There were few units of this type found in the open country or the small towns.

Sampling in villages and small towns was handled in the same way as in the open country. Care was taken to count every dwelling in the town. In advance of the actual counting of the houses, a random route up and down the village street was prepared by means of a special street map. Houses under construction and abandoned houses were not counted. Vacant houses were counted, and if they turned up as the sample dwelling the fact that they were vacant was recorded on the map. Trailers, tents, and other dwellings of a temporary character were included, but overnight trailer camps and similar dwellings were not counted. Every effort was made to locate houses which were hidden from view either in the woods or other isolated places. Every side road was explored.

Information was obtained from either the female or male head of the household, depending upon the one available. No alternate system of selection was used.

The interviewers were instructed to make as many return visits as were necessary to obtain the interview, until they were relatively certain it could not be obtained. Seventeen households were missed either due to outright refusal or the fact that the informants could not be contacted. Since no information was obtained from these 17 households, they have not been taken into account either in the analysis or the tables of this study.

Definition of Terms

Place of Residence. Residence was divided into the three traditional categories of rural farm, rural nonfarm, and urban as defined by the 1940 Census of Population. Essentially they are classified in the following manner:[5] Urban includes incorporated places having a population of 2500 or more. Rural includes all other areas. Rural farm applies to rural people who live on farms of three or more acres in size or produce as much as $250 worth of agricultural products. Rural nonfarm includes all other people, that is, people who are neither rural farm nor urban.

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5. For a more detailed definition refer to the "1940 Census of Population."

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Color. The race of the informant was designated as either white or nonwhite. There were only two races involved in the study, namely, Negroes and Caucasians.

Tenure. Throughout the study tenure refers to home tenure, that is, whether the family owns their own home or whether they rent.

Age. The age of the individual was determined according to his last birthday and not by his nearest birthday as is sometimes done.

Sex. Sex was considered only beyond the age of 17 years since it was felt that it was of little consequence for this study below that age.

Education. The education of the heads of households was determined by the last grade completed.

Crowding Index. The crowding index was calculated as the number of persons per room, that is, the number of persons in the household divided by the number of rooms in the dwelling unit, exclusive of bathrooms, storage rooms, etc. The term "crowding" in no way implies a subjective evaluation. It is simply a short, convenient term used, as in the Hagerstown Morbidity Studies, to express the number of persons per room.[6]

Health Environment Index. The health environment index is an index of 20 items which were selected by the committee in

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6. Edgar Sydenstricker, "Economic Status and the Incidence of Illness," Hagerstown Morbidity Studies No. X, Public Health Reports, Vol. 44, No. 30, July 26, 1929, p. 1822.

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charge of the research on the basis of two primary assumptions: first, that the presence or absence of the items contained therein provides some indication of the conduciveness to healthful living of the immediate surroundings in which the family lived; second, that these items provide some measure of the awareness of or attitudes toward healthful living. Some argument may possibly be raised about the inclusion or exclusion of certain individual items. However, it should be pointed out that the index is in an exploratory stage, and while further standardization is necessary, it is felt that the group of items as a whole provides a useful index for the purposes of this study.

The index is composed of the following items:

1) The condition of the dwelling unit. Each dwelling was judged by the interviewer as excellent, good, fair, poor, or bad on the basis of certain selected criteria such as the condition of the foundation, floors, internal and external walls, ceilings, roof, doors, porch, etc. Detailed instructions were given to the interviewers to aid them in placing each dwelling unit into one of the above categories. The categories were then weighted from "0" for "bad" through "4" for "excellent."

   The remaining 19 items in the index were simply rated "1" for presence and "0" for absence. Therefore, the total possible score for the index was 23.

2) Entrance not in the alley.
3) Dual egress.
4) Living room.
5) One or more bedrooms per two people.
6) Windows for all rooms.
7) Insect-proof screens.
8) Safe water supply (public system or privately drilled well, covered and properly located).[7]

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7. A well was considered to be properly located if it was on the "up-side" from the family privy and livestock yards, and as much as 50 or more feet away from these facilities.

9) Running water in house.
10) Carry water less than 50 feet.
11) Kitchen sink.
12) Sanitary sewage disposal (public system, septic tank, or approved pit privy).[8]
13) Private bath and toilet.[9]
14) Private kitchen.[9]
15) Running hot water.
16) Central heating system.
17) Electric lights.
18) Mechanical refrigerator.
19) Ice box.
20) Rats and insects under control.[10]

Communication-Participation Index. As the name suggests, this index was composed of two major parts. The section on communication included the following items:

1) Automobile for family use.
2) Radio in operating condition.
3) Telephone.
4) Daily newspaper.
5) Weekly or local newspaper.

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8. An approved privy is one which has been constructed according to the approved plan of the public health department. It is of interest to note that, according to the 1950 U. S. Census, 5.9 percent of the households in Wake County had no toilet facilities at all. This rose to 8.4 for the nonwhite population. See: C. Horace Hamilton, "Statistics on Rural Population and Rural Family Living," Raleigh: The North Carolina Agricultural Extension Service, Compiled in the Department of Rural Sociology, North Carolina State College, November, 1953.

9. The word "private" refers to the fact that this item is not shared by any other family.

10. The informants were asked if they had any rats or insects at all. If the answer was 'no' or if they had taken adequate measures to rid themselves of such pests they were given a positive rating on this item.

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9) Home
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6) Farm magazines.
7) Other magazines.
8) Encyclopedia.
9) Home health guide.[11]
10) Government pamphlets on infant and child care.
11) Other government pamphlets on health.

The section dealing with participation included attendance at or work in the following organizations:

1) Church.
2) Lodges and fraternal orders.
3) Civic and luncheon clubs.
4) Business and professional organizations.
5) Labor unions.
6) Cooperatives.
7) General farm organizations.
8) P.T.A.
9) Home Demonstration clubs.
10) Other educational organizations.
11) Social and recreational organizations.
12) Boards and committees of any organizations.

Each of the communication items was simply rated "1" for presence of one or more of a particular item and "0" for absence, which made 11 possible points. The participation items were each rated "0" for "no" participation, "1" for "some" participation, and "2" for "much" participation. This resulted in 24 possible points. The total possible score for the entire index, therefore, was 35.[12]

This index was based on the assumption that the possession or nonpossession of various means of communication and the participation or lack of participation in various organizations will

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11. "Home health guide" refers to a sort of home health encyclopedia such as that published under the editorship of Morris Fishbien, former Editor of the Journal of the American Medical Association.

12. The highest score received on the index was 25.

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have a differential effect on the kind and amount of health information one is likely to gain. This information, in turn, will have a tendency to influence a person's behavior with regard to health and health care. Some of the items also provide means whereby health care can be obtained.

Illness. Illness was approached from the subjective point of view. Each informant was asked to give a report of each illness of every member of the household which had lasted more than a half day during the six months prior to the study. The half-day limit was used as a means of discarding trivial conditions about which the respondent might be in doubt. Technically, the interviewee could report subjectively only on his own illnesses. However, the study proceeded on the assumption that, due to his peculiar role in the family structure, he would be able to give a fairly accurate report for every household member. Therefore, the illnesses which he reported for other members were actually a combination of his own definition as well as that of the sick person.

Each illness was designated as either chronic or acute, depending upon the nature of the illness and its duration. Those conditions which lasted 60 days or more were classified as chronic. All others were classed as acute. However, certain illnesses are generally agreed upon as being chronic in nature, even though they may not have existed for 60 days at the time of the interview. Such afflictions as high blood pressure, rheumatic heart disease, undulant fever, and arthritis were classed as chronic since the normal course of such sicknesses

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Each illness was further classified as partially disabling, fully disabling, or nondisabling. Those cases in which the person continued with his normal activities were classed as nondisabling. Those cases in which the individual continued with only part of his usual activities, or was considerably handicapped in them, were considered to be partially disabling, while those cases in which the individual was confined to a bed or otherwise unable to carry on with his normal activities were designated as fully disabling. However, the degree of disability is not a main focus of this analysis.

Rate. In this study the term "rate" is used to refer to the number of cases of illness (or use of health services) per hundred population, which is in contrast to the percentage of persons ill. Therefore, the rates may theoretically go above 100, since one individual may report more than one illness. For example, each cell in a given table contains a certain number of individuals. These individuals report varying numbers of cases of illness. Therefore, the rate is based not on the total population but on the population appearing in that given cell. The same thing applies to the rates of use of the various health services and facilities.

A set of population tables appears in the Appendix. Therefore, the population base for any given cell can be found

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in the appropriate table in the Appendix.

Dental Cases. This refers to all dental conditions for which some sort of dental treatment was received, such as cleaning teeth, filling teeth, extractions, and replacing dentures including the acquisition of a complete set of artificial teeth.

Eye Cases. Eye cases refer to eye examinations, fitting glasses, new lenses, and the like. It does not include conditions which may fall into acute or chronic illness classifications.

Diagnostic Cases. This refers to all kinds of examinations or investigations performed by a physician, hospital clinic, or laboratory for the primary purpose of determining the nature of a patient's illness and not directly incident to treatment.

Preventive Cases. This refers to any sort of vaccination, immunization, or educational work carried on particularly by the Public Health Department. It also includes the regular examinations of young children by pediatricians for purposes of illness prevention.

Doctor. This designation is used to refer to M.D.'s, both general practitioners and specialists. It does not include non-M.D.'s. A non-M.D. refers to a professional person who calls himself a doctor but who does not hold the M.D. degree.

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Other Studies in the Field

Many studies have been made on a wide variety of health topics with varying degrees of reliability. To review and analyze them all would constitute a volume in itself. Therefore, some of the more representative ones will be presented here, and reference to their findings will be reserved for comparative purposes in the appropriate sections of the analysis. For a more complete list of studies the reader is referred to the bibliography, especially to the section on reference items.

Among the first studies of consequence to be conducted in the beginning of this century were those by the Metropolitan Life Insurance Company.[13] This company sponsored studies in a number of states including North Carolina.

Soon after the first World War, the United States Public Health Service conducted an extensive study of the incidence of illness in Hagerstown, Maryland.[14] Visits were made in intervals of six to eight months during the years 1921 to 1924. The next major study was made by the Committee on the Costs of Medical Care. This committee conducted a nation-wide survey of sickness and medical care and the cost of such care. The

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13. "Sickness Survey of Principal Cities in Pennsylvania and West Virginia," New York: Metropolitan Life Insurance Company, Sixth Community Sickness Survey, 1917; also Lee K. Frankel and Louis I. Dublin, "A Sickness Survey of North Carolina," Public Health Reports, Vol. 31, No. 41, October 13, 1916, pp. 2820-2844.

14. Edgar Sydenstricker, "A Study of Illness in a General Population Group," Hagerstown Morbidity Studies, No. 1, Public Health Reports, Vol. 41, No. 2, pp. 2069-2088, September 24, 1926.

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Committee made a periodic canvass of 9000 families during the years 1923 to 1931. The tabulation was done under a cooperative arrangement with the U. S. Public Health Service. The Public Health Service dealt primarily with the incidence of illness and the extent and kind of medical care. The reports are under the authorship of Selwyn D. Collins and have been published in the Public Health Reports. Each succeeding report contains a bibliography of those which precede it in addition to references to other publications. The Committee publications are based on the costs of medical care. However, there is some overlapping with incidence of illness and the extent of medical care in order to make the data more meaningful. The Committee reports were published by the University of Chicago Press. The volume entitled The Incidence of Illness and the Receipt and Costs of Medical Care Among Representative Families was published in 1933 and has become known as Publication 26.[15] The title is self-explanatory. The Costs of Medical Care, Publication No. 27, summarizes the important data of the study as well as other material.[16] The other volume, Publication No. 23, was

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15. I. S. Falk, M. C. Klem, and N. Sinai, The Incidence of Illness and the Receipt and Costs of Medical Care Among Representative Families, Publication No. 26 of the Committee on the Costs of Medical Care, Chicago: University of Chicago Press, 1933.

16. I. S. Falk, C. Rufus Rorem, and Martha King, The Costs of Medical Care, Publication No. 27 of the Committee on the Costs of Medical Care, Chicago: University of Chicago Press, 1933.

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entitled Medical Care for the American People.[17] It summarizes the status of medical care at that time, the essentials of a satisfactory medical program, and provides recommendations as to future action in the field. In 1935 the University of Chicago Press released another publication entitled "The Economic Aspects of Medical Care."[18] This is a reprint of two chapters of Publication 27. The first is Chapter XXXIV which is a summary of the findings. The second is Chapter XXXV which briefly reviews the major plans and experiments which had been undertaken at that time to deal with the economic problems of medical care. The chapters are slightly condensed and revised to include new data.[19]

During the winter of 1935 to 1936 the United States Public Health Service made a rather comprehensive survey of the nation's health. It included a health inventory which consisted of a house-to-house canvass of urban and rural areas in 21 states. Other phases of the survey dealt with health and

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17. Medical Care for the American People, Publication No. 28 of the Committee on the Costs of Medical Care, Chicago: University of Chicago Press, 1932.

18. C. Rufus Rorem (Ed.), "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on the Costs of Medical Care, Chicago: University of Chicago Press, 1935.

19. Of further interest is a book by Harry A. Millis which contains a review of the findings and recommendations of the Committee on Costs of Medical Care. See: Harry A. Millis, Sickness and Insurance: A Study of the Sickness Problem and Health Insurance, Chicago: University of Chicago Press, 1937, pp. 121ff.

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medical facilities, occupational morbidity and mortality, and communicable diseases. It was carried out with the aid of grants from the Works Progress Administration. It also received the cooperation of the various state and local health authorities and agencies, including medical societies, churches, and other groups. The study was published in three series, namely, the Sickness and Medical Care Series, the Population Series, and the Hearing Study Series.[20]

In recent years a number of State Agricultural Experiment Stations have done considerable research into health and health care. A group at Cornell University has been among those conducting such research. The primary emphasis has been on the availability of health resources and the use of health services and facilities in New York State.[21] Dr. Charles R. Hoffer and

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20. For the scope and method of the study as well as a list of the various publications in these three series see: George St. J. Perrot, et alii, "The National Health Survey: Scope and Method of the Nation-Wide Canvass of Sickness in Relation to Its Social and Economic Setting," Public Health Reports, Vol. 54, No. 37, September 15, 1939, pp. 1663-1687.

21. Donald G. Hay and Olaf F. Larson, "Use of Health Resources by Rural People in Two Western New York Counties, 1950," Ithaca: Cornell University, (U. S. Department of Agriculture cooperating), Department of Rural Sociology Mimeograph Bulletin No. 31, June, 1952.

Margaret L. Bright and Donald G. Hay, "Health Resources and Their Use by Rural People: Ulster County," Ithaca: Cornell University, (U. S. Department of Agriculture cooperating), Department of Rural Sociology Mimeograph Bulletin No. 32, July, 1952.

Donald G. Hay and Margaret L. Bright, "Health Resources and Their Use by Rural People in Clinton County, New York, 1951," Ithaca: Cornell University, (U. S. Department of Agriculture

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others at Michigan State College have done a number of health studies. One of the major areas of concentration of interest there is the studies of health needs, as evidenced by untreated symptoms of illness. Considerable research has also been done on the use of health services, attitudes and opinions regarding various aspects of health, expenditures for health care, and related areas.[22]

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cooperating), Department of Rural Sociology Mimeograph Bulletin No. 33, August, 1952.

Olaf F. Larson and Donald G. Hay, "Hypotheses for Sociological Research in the Field of Rural Health," reprinted from Rural Sociology, Volume 16, No. 3, September, 1951.

Olaf F. Larson and Donald G. Hay, "Differential Use of Health Resources by Rural People," reprinted from the New York State Journal of Medicine, Vol. 52, No. 1, January 1, 1952.

22. Charles R. Hoffer, "Health and Health Services in Three Michigan Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Quarterly Bulletin, Article 31-12, August, 1948.

Charles R. Hoffer, "Health and Health Services for Michigan Farm Families," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 352, September, 1948.

Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950.

Charles R. Hoffer and Clarence Jane, "Health Needs and Health Care in Two Selected Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 377, June, 1952.

Charles R. Hoffer, et alii, "Health in Michigan," East Lansing: Michigan State College, Cooperative Extension Service, Extension Bulletin 319, June, 1953.

Charles R. Hoffer, Edgar A. Schuler, et alii, "Determination of Unmet Need for Medical Attention Among Michigan Farm Families," The Journal of the Michigan Medical Society, Vol. 46, April, 1947, pp. 443-446.

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Mississippi is another state where considerable research has been done in the area of health and health care. This research has been conducted by the Mississippi State College and has been largely concentrated in the area of health practices and use of health services. Four counties have been the primary object of this research.[23] A group at the University of Missouri has been concerned with the rural health facilities of the population of the state, the extent to which they are being used, and the factors which condition the use of such facilities. The

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23. Robert E. Galloway and Harold F. Kaufman, "Health Practices of Rural People in Lee County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series No. 1, December, 1950.

Robert E. Galloway and Harold F. Kaufman, "Health Practices in Choctaw County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series No. 2, December, 1950.

Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural Negroes in Bolivar County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series No. 3, April, 1951.

Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural People in Forrest County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series No. 4, July, 1951.

Robert E. Galloway and Harold F. Kaufman, "Use of Hospitals by Rural People in Four Mississippi Counties," State College: Mississippi State College, Agricultural Experiment Station, Circular 174, July, 1952.

Harold F. Kaufman and Marion T. Loftin, "Differentials in Health Practices Among Socio-Economic Groupings in Rural Mississippi," State College: Mississippi State College, (Mimeographed), No date, 2 pp.

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occurrence of illness was investigated as one of those conditioning factors.[24]

Many aspects of health care have been investigated at North Carolina State College. Of primary interest for the present study is the survey conducted by Dr. Selz C. Mayo during 1945 and 1946 of Greene County, North Carolina.[25] He used the

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24. Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943.

Iola Meier and C. E. Lively, "Family Health Practices in Dallas County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 369, June, 1943.

Harold F. Kaufman, "Extent of Illness and Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Progress Report No. 5, April, 1945.

Harold F. Kaufman and Warren W. Morse, "Illness in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 391, August, 1945.

Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series No. 2, April, 1946.

C. L. Gregory, et alii, "The Health of Low-Income Farm Families in Southeast Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 410, August, 1947.

Robert L. McNamara, "Illness in the Farm Population of Two Homogeneous Areas of Missouri: Its Relation to Social and Economic Factors and Its Susceptibility to Small-Sample Study," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 504, July, 1952.

25. Selz C. Mayo and Kie Sebastian Fullerton, "Medical Care in Greene County," Raleigh: North Carolina State College, Agricultural Experiment Station, Bulletin No. 363, November, 1948. For a report of other health studies at North Carolina State College see: C. Horace Hamilton, "Rural Health and Medical

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symptoms approach to determine unmet needs. He also analyzed the availability and use of medical facilities and personnel and cost of health services. The racial factor, which few studies have analyzed, was also included.

Another study of interest is that of Marie Mason at the University of Kentucky. This study was concerned with a variety of areas; namely, the incidence of illness, nature and use of preventive measures, availability of health and medical services, use of services and its costs, and attitudes toward the availability and use of services.[26]

After reviewing the various studies of health and health care, one is impressed with the lack of consistency in the definition of illness, in the methods of research, and in the results obtained from one study to another.[27] Few studies have employed

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Service in North Carolina: Papers and Preliminary Reports of Surveys, 1944-1949," Raleigh: North Carolina State College, Agricultural Experiment Station, Progress Report RS-9, August, 1950.

26. Marie Mason,"Rural Family Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949.

27. Selwyn D. Collins makes a point of the "multiplicity of measures of illness," and the difficulty in comparing illness rates from one study to another. See: Selwyn D. Collins, "Sickness and Health: Their Measurement, Distribution, and Changes," Philadelphia: Reprinted from Annals of the American Academy of Political and Social Science, January, 1945, p. 152.

McNamara has stated that their research "has shown the futility of obtaining complete and accurate reports of illness unless definitions are simple and clear. Whether persons reported time lost from disabling illness or simply that they worked though not feeling well apparently represents a fine distinction that may be due in part to cultural compulsives or to seasonal farming requirements." See: Robert L. McNamara, "Illness in

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the same method and fewer still have used the same method twice to further verify their results. Sample sizes have varied all the way from less than a hundred cases to several thousand. Statistical tests have been used quite diligently in some, while in others, conclusions have been based on almost minute differences without any mention of statistical significance. Probably the most common shortcoming in practically all of the studies is the failure to analyze the empirical findings in terms of any consistent theory of human behavior in order that the results may be additive from one study to another. Of course, the empirical data alone fulfill many practical objectives.

The present study has several advantages over other studies in the field. This is one of the few studies which left the informant free to define his own illnesses. This method has the advantage of approaching illness from the informant's point of view, since that is the basis on which his subsequent behavior is determined. Lengthy time limitations, the requirement that medical care must have been received, and similar limitations which some studies have placed on the illness which they would count, overlooks a vast number of afflictions which take a daily high toll in human energy and suffering, and in

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time lost from normal activities. By placing the time limit at a half day or more, such illnesses were included while minor irritations of little consequence were excluded.

The health environment index developed in this study is a new technique in the field of health research, and one which has prospects of opening up many new insights. Statistical tests of significance are used throughout the study and are presented in each table where appropriate in order that the reader may see at a glance the important relationships. Although the data were not collected with reference to a theoretical system, the findings of this and other studies suggest an analytical framework which will have considerable merit for future studies of this kind. The major component parts of this analytical framework are set forth in the Methodological Note at the end of the study. These and many others are among the contributions which this study makes to the field of health research.

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CHAPTER II

ACUTE ILLNESS

There are a variety of ways of assessing the health conditions of a population. Many authors have used disability as a measure. However, many of the everyday ills of the people are not sufficiently severe to keep the individual from his usual activities. The common cold, hayfever, asthma, headaches, a variety of infections, and even broken bones, and many other conditions are not always disabling in the sense that one loses time from work or other normal activities. He may not enjoy his work because of them, but they do not necessarily keep him from it. Another method has been to record the number of days of illness or the number of days in bed. Both of these methods have the same quality as disability studies in that they are something of a measure of degree rather than amount. Other studies have defined illness in terms of a specific list of symptoms which have been found to have a high degree of correlation with need for medical care. Still another method of approaching the health status of the population has been through mortality rates. This approach produces data of another kind. While mortality rates may be indicative of certain aspects of health and health care, The Committee on the Costs of Medical Care has made the following observation: "The major causes of death are not the most frequent causes of illness. The

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respiratory diseases are outstanding as causes of illness whether nondisabling or disabling; the degenerative diseases are more important causes of death."[1] Of course, there is no objection to any of these measures of morbidity as long as it is made clear what is being studied.[2]

Illness is largely a subjective phenomenon, as well as objective. It was for this reason that the present study left the definition of illness to the informant, that is, the folk definition of illness was used.[3] It was felt that a measure of this subjectivity could be had by allowing the informant to report those conditions which he considered to be illness and not restricting him to a ready-made definition. By so doing, many afflictions were no doubt included which might otherwise be omitted. On the other hand, perhaps others were excluded

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1. Selwyn D. Collins, "A General View of the Causes of Illness and Death at Specific Ages Based on Records for 9,000 Families in 18 States Visited Periodically for 12 months, 1928-31," Public Health Reports, Washington: Government Printing Office, Vol. 50, No. 8, February 22, 1935, p. 253.

2. As a matter of fact, confusion quite often exists as to just what is being studied. For example, one study expresses illness in terms of the proportion of persons ill, the number of illnesses, the number of days of illness, and the mean number of days of illness. All of these are interchangeably referred to as illness rates which, to say the least, becomes rather confusing. See: Harold F. Kaufman and Warren W. Morse, "Illness in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 391, August, 1945.

3. For a more complete definition of acute illness used in this study see the section entitled "Definition of Terms" in Chapter I.

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The 2125 individuals in the study reported 666 cases of acute illness during the six months previous to the study. This represents a rate of 31.3 cases per hundred sample population. On an annual basis this would amount to 62.6 cases per hundred.

Age and Sex. In considering acute illness, one of the first questions of interest is whether or not there are any age or sex differences in the reporting of such illness. Table 1 shows that the heaviest concentration of acute illness is in the younger age groups, especially the preschool and early school years. Except for the age group 14 to 17 years there is a gradual decrease of acute illness with increasing age. This group reports less acute illness than any other age group.

Table 1. Rates of acute illness of 2125 individuals classified by age in Wake County, North Carolina, 1949.*

		Age						
	Total	Under 6	6-13	14-17	18-44	45-64	65-up	P**
Total	31.3	53.2	42.9	16.0	29.4	19.8	17.9	.001

*The population base for all rates is included in the Appendix.
**All P values in the study are at the value or less than the value shown. A dash (--) indicates that the P value is above .10. See the Appendix for the statistical tests used in the study and the method of reporting the results.

Hoffer has found in a number of different studies that the proportion of people having positive symptoms of illness

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increases with age.[4] Mayo found the same relationship to exist between age and unmet medical need in Greene County, North Carolina.[5] The information from these studies is based upon a highly select list of 27 symptoms which have been shown to have a high degree of relationship with the need for medical attention.[6] The data contained in these studies are not entirely comparable to those in this study. The symptoms approach tends to set the limits and to define illness for the informant. It does not leave him to rely on his own values and his own definitions as much as an approach which simply asks him to report his illnesses, although this factor is not completely eliminated. He may still overlook certain symptoms which he

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4. See Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 17; Charles R. Hoffer, "Health and Health Services for Michigan Farm Families," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 352, September, 1948, p. 18; Charles R. Hoffer, "Health and Health Services in Three Michigan Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Quarterly Bulletin, Article 31-12, August, 1948, p. 99.

5. Selz C. Mayo and Kie Sebastian Fullerton, "Medical Care in Greene County," Raleigh: North Carolina State College, Agricultural Experiment Station, Bulletin 363, November, 1948, p. 26.

6. For a discussion of the "symptoms approach" see: Edgar A. Schuler (Bureau of Agricultural Economics, U. S. Department of Agriculture), Selz C. Mayo (N. C. State College) and Henry B. Makover, M.D. (U. S. Department of Agriculture), "Measuring Needs for Medical Care: An Experiment in Method," Rural Sociology, Vol. XI, No. 2, June, 1946, pp. 152-158. See also Charles R. Hoffer, Edgar A. Schuler, et alii, "Determination of Unmet Need for Medical Attention Among Michigan Farm Families," The Journal of the Michigan Medical Society, Vol. 46, April, 1947, pp. 443-446.

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feels are not of sufficient consequence to report. A further difference is that the data were not tabulated according to chronic and acute illness as were the data of this study. Furthermore, dental and eye cases are treated separately in this study but are included among the symptoms of the other studies. Even so, when chronic and acute illnesses are combined the data reveal that the highest rates are found among the oldest and youngest age groups. The lowest rates are reported for those from 14 to 17 years of age. The other age groups have fairly similar rates. However, rather than knowing the rates for all illnesses, it is of greater value in terms of planning health care programs to know the relative amounts of acute and chronic illness. The two involve planning of a somewhat different kind. It is for this reason that this study has maintained the division.

Kaufman and Morse found in Missouri that illness rates increased with increasing age.[7] However, like the studies above, the rates included both acute and chronic illness in addition to the fact that illness was defined as a "disability which causes a loss of one or more days from usual activity."[8] Defining illness in terms of disability excludes a considerable amount of acute illness and probably biases the rates in favor of illnesses of a chronic nature. As will be shown later, chronic illness is highly associated with increasing age.

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7. Kaufman and Morse, op. cit., p. 24.

8. Ibid., p. 38.

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The Committee on Costs of Medical Care found that there was more sickness in childhood than youth, and beyond these ages there was a moderate increase with age.[9] The Committee reports that illness was more frequent under 5 years of age (1212 cases per 1000 population per year) and least frequent from 15 to 19 years of age (599 per 1000 population). The rates for those from 5 to 9 years and those 65 years and over were practically identical, 978 and 979 respectively. The Committee report, like the above studies, is based on the average number of all illnesses rather than just acute illness. Nevertheless, the results are in substantial agreement with this study. When chronic and acute illnesses are combined it is found that the old and the young report the highest rates of illness. The former is due primarily to higher acute rates while the latter is due mostly to higher chronic illness rates. One difference which stands out is that this study, when based on an annual basis, shows a considerably higher rate for those 65 years of age and over than does the Committee report. This is no doubt due to the fact that, while both studies relied on the informant to report those conditions which they considered of sufficient importance to report, the Committee study added the qualification that the condition be one for which medical service was received or for which drugs costing 50 cents or more were purchased. It is likely that the present study included ailments incident to aging which did not meet these two conditions.

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9. Collins, op. cit., pp. 244-245.

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12. Ib

There is general agreement between the two studies that the healthy ages are between 14 and 19 years (15 to 19 according to the Committee report, and 14 to 17 according to this study). Kaufman and Morse state that the age group with the smallest number of illnesses per 1000 population as well as the lowest percent ill is between 15 and 24 years.[10] The difference in the age span of the three studies is probably due to the difference in age groupings which were used.

A study by Almack in Missouri, although not primarily concerned with illness rates, reports that those under 15 years of age and those over 65 report almost identical rates (62 per 100 persons and 63 per hundred, respectively), and these groups report more illness than any of the other age groups.[11] Illness in this case is defined as "a disability causing loss of time from usual activity."[12]

There are several factors which account for the larger acute illness rates found among children. Children objectively have comparatively high rates of illness associated with a variety of childhood diseases. The parent is more concerned over symptoms in their children since the child is not able adequately to express his ills to the same extent as an adult. Hence, the parent tends to take greater precautions with the

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10. Kaufman and Morse, op. cit., p. 14.

11. Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, p. 19.

12. Ibid.

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children. Furthermore, having a child ill is not as disrupting to the normal flow of events in the family as is having one of the household heads ill. The household head has more of a tendency to ignore illness in himself. Since the whole family is depending on him, he feels he must keep going.

Mayo found that females had a greater proportion of unmet medical needs than did males.[13] This does not necessarily imply that they had more need to begin with, but rather that they had more need which was not treated by a physician. Kaufman and Morse, on the other hand, report "no important differences" between the illness rates of males and females.[14] The Committee on Costs of Medical Care reports that females have consistently higher rates than males beyond the age of 14 years.[15] Almack states that females report slightly less illness than males. The rates are 51 for the former and 56 for the latter. The differences are probably not significant. No statistical tests were reported.[16]

It can be seen in Table 1 that the rates for those between 18 and 44 years of age remain somewhat higher than either of the older groups as well as the next younger group. One

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13. Mayo, op. cit., pp. 25-26.

14. Kaufman and Morse, op. cit., p. 19.

15. Selwyn D. Collins, "Cases and Days of Illness Among Males and Females, With Special Reference to Confinement in Bed, Based on 9000 Families Visited Periodically for 12 Months, 1928-31," Public Health Reports, Vol. 55, No. 2, January 12, 1940, p. 53.

16. Almack, op. cit., p. 19.

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would expect that this is due to a higher rate of illness among women in the childbearing ages. However, Table 2 reveals that the rates for the two sexes in this age group are identical. In fact, there is no significant difference between the sexes in any age group. Nevertheless both men and women in the age group 18 to 44 years have significantly higher rates than those in the older age groups.

Table 2. Rates of acute illness of 658 males and 725 females above the age of 17 years, classified by age, in Wake County, North Carolina, 1949.

		Sex		
Age	Total	Males	Females	P
Total 18-up	25.6	25.5	25.7	--
18-44	29.4	29.3	29.6	--
45-64	19.8	18.8	20.5	--
65-up	17.9	21.1	15.0	--
P	.01	.05	.05	

One would normally expect females to have higher acute illness rates than males. This may be offset by a greater exposure of males to occupational sickness and accidents. However, it should be pointed out that, according to a recent report from the Metropolitan Life Insurance Company, more women between the ages of 15 to 64 years die from accidents than from any other cause except cardiovascular diseases and cancer.[17] Three-fourths of these fatal accidents occur outside of the home. A

17. "Large Accident Toll Among Women," Statistical Bulletin, New York: Metropolitan Life Insurance Company, Vol. 35, No. 3, March, 1954, p. 6.

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detailed analysis of the specific kinds of illness for each sex would have to be made before any definite conclusions could be drawn.

Income. It is a generally accepted point of view that there is greater amount of illness among the lower income groups and that illness decreases with increasing income. Bernard J. Stern, in his book Society and Medical Progress, reviews much of the literature relating income to health.[18] In making the point that sickness is highly associated with low economic standing, he makes reference to Hippocrates, to reports on Egyptian papyrus, to Patin, the noted French surgeon of the seventeenth century, and to others indicating that this relationship of income to health is not a new one but one which has existed over the centuries. Although the results are not entirely conclusive, studies in recent years have pointed up this same relationship. The National Health Survey conducted in 1935 and 1936 reports higher disabling illness rates for low income and relief people than for high income groups.[19]

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18. Bernard J. Stern, Society and Medical Progress, Princeton: Princeton University Press, 1941, Chapter VI.

19. National Health Survey: 1935-1936, "Illness and Medical Care in Relation to Economic Status," Washington: U. S. Public Health Service, Bulletin No. 2, 1938, p. 2. For a definition of illness as used in this study see p. 1; also the National Health Survey: 1935-1936, "Significance, Scope and Method of a Nation-Wide Family Canvass of Sickness in Relation to Its Social and Economic Setting," Washington: U. S. Public Health Service, 1938, pp. 2, 10, and 11.

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Hoffer and Jane indicate, in a study of two Michigan communities, that untreated symptoms increase with a decrease in income.[20] Even so, the highest income group in the one community (Pellston) had more untreated symptoms than the lowest income group in the other community (Tecumseh).[21] Furthermore, it was found that the lowest income group in Tecumseh reported almost identically the same proportion of people with "No symptoms" and "All positive symptoms treated" combined as those in the highest income group in Pellston. The former had 85 percent and the latter 84 percent. The difference between the two communities was explained in part by the fact that Pellston had no doctor and was considered to be "far" from the usual medical services. On the other hand, Tecumseh was "well supplied with doctors and other health facilities" and was considered to be "near" medical services and facilities.[22] However, distance seemed to have little effect. Only 4 individuals gave this as a reason for not seeing a doctor about their positive symptoms.[23] At any rate, it is obvious that some factor or group of factors

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20. Charles R. Hoffer and Clarence Jane, "Health Needs and Health Care in Two Selected Michigan Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 377, June, 1952, p. 20.

21. Ibid.

22. Ibid., pp. 4 and 7.

23. Ibid., p. 19. Had the communities been more alike on a variety of characteristics with the exception of the presence or absence of health facilities one might be able to place more weight on the distance factor. However, Pellston had a population of 1500 and was primarily an agricultural community. Tecumseh,

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is operating in addition to family income. This is further borne out by the fact that even among the highest income group there were some individuals who had untreated positive symptoms. The authors state, "Among these families it seems likely that negative attitudes regarding the need for medical attention, lack of knowledge regarding the possible significance of certain symptoms, availability of medical services, and possibly other factors, as well as cost, were involved."[24]

Hoffer has shown in other reports of studies in Michigan that the proportion of persons with positive symptoms increases as income decreases.[25] In the report of the Michigan State-Wide Health Study he stated that 43.3 percent of the persons with one or more untreated symptoms reported that they felt they should have seen a doctor, but they had not done so.[26] However,

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on the other hand, had 4006 inhabitants with a trade area of 8000 and included both farming and industry. The very fact that Pellston had had a doctor at one time but not for the past five years indicates something of the community health awareness.

In this day of modern roads and rapid means of transportation and communication, it seems that if distance is going to be analyzed with regard to health and health care it must be approached in terms of psychological distance. Physical distance per se has no real meaning. One person may be "farther" from health facilities at three miles distance if he has no automobile nor any bus service than one living 10 or 15 miles away but with access to such transportation.

24. Ibid., pp. 20-21.

25. Hoffer, Bulletin 352, op. cit., p. 19; Bulletin 31-12, op. cit., p. 100; and Bulletin 365, op. cit., p. 19.

26. Hoffer, Bulletin 365, ibid., p. 28.

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the expense was only one of several reasons given for not seeing a doctor.[27]

Kaufman and Morse found that there was a slight but consistent decline in the percent of persons ill as income increased. The proportion dropped from 47 percent for persons with the lowest incomes to 40 percent for those with the highest incomes.[28] The authors indicate that there is even less variation between income groups for acute illness. They state that the percent ill "ranged from 29 percent in income class $250-$499 to 25 percent in the class, $1,500 and over."[29] However, they neglect to point out that the lowest income group (Under $250) had 27 percent. It is doubtful that these differences are statistically significant. The authors do indicate that "the rate of illness for all ages in the group with incomes under $500 is approximately one-third greater than for the group with higher incomes. But almost all of this difference in illness is accounted for by persons over 40 years of age."[30] What they are actually speaking of in this instance is days of illness rather than illness rates.

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27. Ibid., p. 29.

28. Kaufman and Morse, op. cit., p. 21.

29. Ibid.

30. Ibid., p. 25.

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The Committee on Costs of Medical Care, whose definition of illness is fairly comparable to the one used in this study, reported "no great differences among persons in families with various incomes."[31] In fact, like the present study, they report an increase in illnesses as income increases. The Committee makes the following statement: ". . . 805 illnesses are recorded for each 1000 persons in families with from $1,200 to $2,000 income, 880 for those with incomes of $3,000 to $5,000, and 1111 for those with more than $10,000. There is more recognized illness in the higher than in the lower income classes, it is uncertain whether there is really more illness."[32]

Table 3 shows that in the present study the higher income groups report a significantly greater amount of acute illness than do the lower income groups. This relationship is particularly evident among the younger age groups. However, as age increases, this trend becomes less pronounced, while at age 65 and above the lower income groups reports the most acute illness. Sex differences within income groups are of little consequence.

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31. I. S. Falk, C. Rufus Rorem, and Martha Ring, "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 6.

32. Ibid., pp. 6-7.

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Table 3. Rates of acute illness by income and age of 2125 individuals in Wake County, North Carolina, 1949.

Age	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Under 6	53.2	33.0	55.5	83.0	45.0	.001
6-13	42.9	33.3	36.1	68.0	65.0	.01
14-17	16.0	11.6	13.3	29.0	10.0	--
18-44	29.4	31.5	27.2	32.0	29.5	--
45-64	19.8	21.4	16.2	25.0	13.8	--
65-up	17.9	27.8	6.8	13.3	25.0*	.02
P	.001	--	.001	.001		

*Rate is based on less than 10 individuals.

Within each income group the greatest amount of acute illness is reported for young children with a gradually diminishing rate with increasing age. This trend is offset by a sharp decline in the age group 14 to 17. It should be pointed out that within the income group under $1,500 the age differences are not large enough to be significant. On the whole, however, there is a greater relationship between age and the reporting of illness than between income and such reporting.

Much of the apparent discrepancy between the results of the various studies is probably due largely to a difference in definition of illness used. The more comparable the methods used the more comparable the results seem to be. It is highly unlikely that low income families have better health than higher income groups. One is inclined to agree with the report of the

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Committee on Costs of Medical Care that there is more "recognized illness" among the higher income groups. Other studies have shown that even disabling illness is not always correlated with decreasing income.[33] Mott and Roemer, in discussing the results of a number of such studies, state that "it may be surprising that, despite the general correlation between illness and low income, the very lowest incidence is not always recorded for the very highest income group, but rather for an income group somewhat short of the top. This may well be because of the likelihood of increased recognition of, and attention toward illness among families in the most comfortable circumstances . . ."[34]

Color. There is common agreement among health experts that the nonwhite population not only has poorer health, but also that they have less access to medical care. Surprisingly enough, few studies have bothered to investigate the relationship of color to health and health care. This can easily be understood in areas where the nonwhite population constitutes a small minority of the total population. However, in states

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33. For example see: Margaret C. Klem, "Medical Care and Costs in California Families in Relation to Economic Status," San Francisco: State Relief Administration, 1935, Processed; and Isabella C. Wilson, "Sickness and Medical Care Among the Rural Population in a Petroleum-Producing Area of Arkansas," Fayetteville, Arkansas: University of Arkansas, Agricultural Experiment Station, June, 1941 quoted in Frederick D. Mott and Milton I. Roemer, Rural Health and Medical Care, New York: McGraw-Hill Book Company, Inc., 1948, p. 84.

34. Mott and Roemer, op. cit., pp. 84-85.

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where a large proportion of the population is nonwhite, it is rather astonishing that more attention has not been devoted to this segment of our society.

Despite the rather common assumption that colored people have more illness, Kaufman and Morse report that the "Rates of illness for Negroes were not significantly different from those of the whites even though the great majority of Negroes lived in households with incomes under $500."[35] Mayo, on the other hand, found that even when using the symptoms approach, the white population of Greene County, North Carolina, reported more unmet medical needs than the Negro population.[36] His explanation was that there is "probably an underrepresentation of positive symptoms im the Negro population. This in part is due to the 'pain endurance' attitude developed by the Negro. The bare necessities of food, clothing, and shelter place such a strain on low incomes that 'grin and bear it' attitudes are developed. Consequently, the answers given by the Negro interviewees tend to reflect those attitudes."[37]

The results of the present study also show that the white people tend to report a higher rate of acute illness than the nonwhite. See Table 4. Among the two lower age groups where acute illness rates are highest, the rates for white people are more than double those of the nonwhite. Although the

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35. Kaufman and Morse, op. cit., p. 37.

36. Mayo, op. cit., p. 26.

37. Ibid., p. 20.

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Table 4. Rates of acute illness of 1498 white and 627 nonwhite residents, classified by age, in Wake County, North Carolina, 1949*.

	Color			
Age	Total	White	Nonwhite	P
Total	31.3	35.7	20.9	.001
Under 6	53.2	65.7	29.4	.001
6-13	42.9	55.1	22.6	.001
14-17	16.0	19.5	10.5	---
18-44	29.4	31.0	25.0	---
45-64	19.8	24.3	6.7	.001
65-up	17.9	16.5	23.1	---
P	.001	.001	.001	

*Since all tables in this study pertain to the same sample population and cover the same period of time, this information will be omitted from the remainder of the tables. The reader is referred to the Appendix for tables which include the population base on which the various rates of this study were based.

It has already been indicated above that there is no difference between the rates of males and females. This holds true for both color groups. See Tables 5 and 6. Among the white group the rates decrease for both sexes as age increases. Except for a sharp increase at age 65 and over, this general trend also exists for the nonwhite group. This increase is no doubt due in part to the small number of individuals in that cell. For both males and females the two upper age groups

Table 5.

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Table 5. Rates of acute illness of white population by sex and age.

Age	Total	Sex: Males	Sex: Females	P
Total 18-up	27.7	28.4	27.1	---
18-44	31.0	32.6	29.5	---
45-64	24.3	22.4	25.9	---
65-up	16.5	18.2	14.9	---
P	.02	.10	--	

Table 6. Rates of acute illness of nonwhite population by sex and age.

Age	Total	Sex: Males	Sex: Females	P
Total 18-up	19.4	16.8	21.6	---
18-44	25.0	19.0	29.8	---
45-64	6.7	8.3	5.3	---**
65-up	23.1	30.8*	15.4*	---**
P	.01	--	.01	

*The small number of individuals in these cells probably accounts for at least part of the higher rates found here. There were only 13 individuals in each cell.

**Due to the small number of cases in the age group 65-up it was combined with the age group 45-64 for computations of association.

combined have lower rates than those 18-44 years of age. It is of interest to note that the rates for white and nonwhite females 18-44 years of age are almost identical, 29.5 and 29.8

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respectively. In fact, the nonwhite rate in this age group is equal to that reported for nonwhite children under 6 years of age, 29.8 and 29.4 respectively. This tendency may be explained, at least in part, by the fact that Negro mothers more frequently use midwives and go to a hospital less frequently for their deliveries and, therefore, are more subject to complications incident to childbirth.[38]

One is inclined to concur with Mayo's statement that there is an underrepresentation of symptoms by the Negro people. However, if one is to accept the "pain endurance" attitude as an explanation it must be attributed either to some other influence or some additional influence than the strain of low incomes. Table 7 shows that the highest rate for nonwhite persons is found in the lowest income group. While the accumulative effect of the income differences of the nonwhite group are sufficient to produce a significant chi square, there is no significant difference between the rate of the highest income group and that of the lowest when they are tested separately. Therefore, if one is to attach an economic significance to the explanation it must be in terms of the past history and culture of these people in this country. That is, this "grin and bear it" attitude of which Mayo speaks would be a carry-over from past generations. Due to the nature of the cultural background of the nonwhite population their standards of health

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38. T. Lynn Smith, The Sociology of Rural Life, New York: Harper and Brothers Publishers, 1953, p. 111.

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Table 7. Rates of acute illness by income and color.

Color	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
White	35.7	32.8	34.6	39.9	31.9	--
Nonwhite	20.9	25.9	13.7	20.0	--*	.01
P	.001	--	.001	--		

*There were no individuals in this cell.

and health care are different from those of the white group. If this is the case, and there is every reason to believe that it is, the difference between the two races with regard to recognition of illness can be expected to change as their education, income, and general standard of living more nearly approaches that of the white group.

The explanation given here is not entirely at variance with that of Mayo, but rather it is a further expansion of it. The thesis presented here is that the nonwhite population tends to define illness differently, especially the more minor ills. They have a tendency to ignore the less severe ailments and to report only those which are more serious and more handicapping. The white population, on the other hand, tend to be more alert for symptoms of illness, especially among their children, and to be more inclined toward preventive measures.[39] This is

39. See the section on preventive care, especially among white and nonwhite children under 6 years of age, Chapter VIII.

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further borne out by the fact that of those who report acute illness, the nonwhite group reports a higher proportion of cases which are fully disabled and a smaller proportion of only partially disabled cases than do the white people. One is inclined to agree with Ensminger and Longmore that "need" for medical care and "demand" are not necessarily the same, that ". . . demand is conditioned largely by the economic resources of the family and its accepted standards of medical care, whereas the real need for medical care is a medical rather than an economic concept."[40]

Home Tenure. Home ownership has been looked upon as an American ideal for many years. Green found in his study of the farmhouse building process that the second most important group of reasons given for building farmhouses was related to the norms of home ownership and single family living.[41]

In the present study owners had higher median family incomes than did renters. See Table 8. This was true for each color and residence group except the nonwhite urban renters who had slightly higher median incomes than the nonwhite urban owners. However, the difference is very small, the median income of the former being $1,625 and the latter $1,591, a difference of only $34. Therefore, if income were the sole factor in determining the amount of acute illness the individuals will

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40. Carl C. Taylor, et alii, Rural Life in the United States, New York: Alfred A. Knopf, p. 161.

41. James W. Green, "The Farmhouse Building Process in North Carolina," unpublished Doctoral Dissertation, University of North Carolina, 1953, p. 153.

Table 8.

Tenure Color	
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Table 8. Median family income by home tenure, color, and place of residence.

Tenure and Color	Total	Residence		
		Rural Farm	Rural Nonfarm	Urban
Total	$2,492	$1,656	$2,406	$3,130
Owners	3,065	2,444	2,800	3,740
Renters	2,130	1,147	2,063	2,762
White owners	3,528	2,833	3,053	4,500
White renters	2,705	1,423	2,300	3,540
Nonwhite owners	1,441	1,250	1,250	1,591
Nonwhite renters	1,245	976	1,000	1,625

report, one would expect, on the basis of the income trends reported above, that the owners would report higher rates than would renters. However, Table 9 reveals that this is not the case. The rates are higher for renters in every income group; however, the differences are not significant.

Table 10 reveals an interesting trend when tenure is compared with age. Among the children under 6 years of age, where acute illness rates are highest, renters have slightly higher rates than do owners. Beyond this age the owners have a slight edge over the renters. However, none of the differences are statistically significant.

Table

Tenure

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Table 9. Rates of acute illness by income and home tenure.

Tenure	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Owners	30.4	24.2	27.6	37.4	29.1	.02
Renters	32.1	30.0	30.5	43.1	35.4	.05
P	--	--	--	--		

Table 10. Rates of acute illness by home tenure and age.

Age	Tenure			
	Total	Owners	Renters	P
Total	31.3	30.4	32.1	---
Under 6	53.2	50.8	54.5	---
6-13	42.9	45.7	41.2	---
14-17	16.0	17.1	14.9	---
18-44	29.4	31.4	27.9	---
45-64	19.8	20.6	18.3	---
65-up	17.9	19.3	14.7	---
P	.001	.001	.001	

There are two conclusions which are evident from the above data. First, there is no significant difference between the rates reported for individuals in owner households and those reported for persons in renter households. Second, while income has some influence on the reporting of acute illness something in addition to income is operating to influence the rates in this manner. Further explanation must be sought

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in the social and cultural composition of the owner and renter groups. For example, the renting group is composed of a wide variety of individuals. They include not only laborers, farmers, office workers, and others, but also public school teachers, college professors, and other professional people whose incomes are not necessarily high but who have rather high standards. There is considerable difference, for example, between a nonwhite rural farm owner and a white urban owner. The whole value-attitude system of these groups influences the priority given to various items on the family budget. Health and health care is one of those items which receives fairly high priority among certain groups. However, such detailed comparisons would necessitate a large number of cases to be statistically meaningful.

Place of Residence. Much has been said concerning the health differences of urban and rural people. In comparing rural and urban health in 1929, Sorokin and Zimmerman report that the results of studies of rural and urban children give a very indefinite and contradictory picture.[42] They indicate that the data do not permit, with certainty, the claim of general superiority of either class of children. Since the majority of diseases and defects of children are not very serious, and are liable to change later on (either to disappear or increase), these authors took the more mature age groups

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42. Pitirim Sorokin and Carle C. Zimmerman, Principles of Rural-Urban Sociology, New York: Henry Holt and Company, 1929, Chapter V.

for the study of rural-urban health. They found that there was a more clear indication as to the comparative health of rural and urban groups when compared at a later age. They indicate that the older group which was studied was between 18-30 years of age, since this group is the one well studied in medical examinations of recruits for armies. They report that the totality of the data which were received seems to show quite clearly that the health of the rural recruits, as a rule, is somewhat better than that of the urban recruits.

The same authors, in comparing longevity and mortality of the rural and urban populations, state that because of the lower mortality rate of the rural population, it may be assumed that the innate health of the rural population is better, at least it is no worse than the urban.[43] They also indicate that urban conditions seem to be less harmful for women than for men.

T. Lynn Smith, who bases much of his discussion on Sorokin and Zimmerman[44] and on Sorokin, Zimmerman, and Galpin,[45] after reviewing the "factual information" on the subject, concludes that, "although the data are far from satisfactory, the health status of the rural population seems rather superior to that of the urban."[46]

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43. Ibid., Chapter VIII.

44. Pitirim Sorokin and Carle C. Zimmerman, Principles of Rural-Urban Sociology, New York: Henry Holt and Company, 1929.

45. Pitirim Sorokin, Carle C. Zimmerman, and C. J. Galpin, A Systematic Source Book in Rural Sociology, Minneapolis: University of Minnesota Press, Vol. III, 1932.

46. T. Lynn Smith, op. cit., p. 102.

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In his study of 100,000 male insurance policy holders, Sydenstricker reports that, "For most conditions, the agricultural group would seem to have rates definitely below the average for all examined, but there are important exceptions, notably for teeth, stomach and abdominal conditions, and the genito-urinary system."[47] Along this same line, Kleinschmidt states that "surveys of the rural health situation indicates a large proportion of farm families have poorer health, that facilities for health service are below normal requirements . . ."[48]

Hoffer found in Michigan that "more unmet need exists in the rural areas of the state than in the cities, although perhaps the difference is not as much as some people have assumed it to be."[49] He based his conclusions on the number of untreated symptoms of illness found in a state-wide health survey.

Various writers have indicated that rural people were more healthy than urban people in the past but that this has changed over the past 40 to 50 years.[50] The explanation given

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47. Edgar Sydenstricker, "Physical Impairments and Occupational Class," United States Health Reports, Vol. XLV, 1930, p. 1959.

48. L. S. Kleinschmidt, "How Can Better Rural Health Be Developed?" Reprinted from Rural Sociology, Vol. 9, No. 1, March, 1944, p. 21.

49. Hoffer, et alii, Special Bulletin 365, op. cit., p. 14.

50. For example see: Kleinschmidt, op. cit., pp. 22-23; Carl C. Taylor, op. cit., p. 158; Elin L. Anderson, "Adequate Medical Care for Rural Families," Reprinted from the Journal of Home Economics, Vol. 36, No. 7, September, 1944, p. 397; Bedford W. Bird and Paul H. Landis, "Planning the Rural Health Center," Pullman: State College of Washington, Agricultural Experiment Station, Popular Bulletin No. 181, August, 1945, p. 4.

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for this change is that, while the healthful physical environment of the country has remained unchanged over the years, the city has experienced a marked decrease in the morbidity and mortality rates giving them a longer, healthier life than their country cousins. The reason for these decreased rates is attributed to the increase in medical knowledge and the expansion of health personnel and facilities which have accompanied urbanization but which have not been carried to the rural areas.

After reviewing some of the reports above, one must conclude, with Sorokin and Zimmerman, that the results are indefinite and contradictory. The discussion which follows is not intended to resolve the dilemma, but rather it presents the situation as it exists in a specific county along with some suggested ways of explaining it, which may be carried over into other situations and other areas.

In view of the relationship which income has to residence and to the reporting of acute illness in this study, one would expect acute illness rates to increase with increasing urbanity.[51] Table 11 shows that this is not the case. It is the rural nonfarm group which reports the highest rates, and there is no significant difference between rural farm and urban rates. On the whole, the relationship between reporting of acute illness and residence is not highly significant. When age is considered, even this small association vanishes in every

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51. See Table 8 above for median family incomes for residence groups.

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Table 11. Rates of acute illness by place of residence and age.

Age	Total	Residence			P
		Rural Farm	Rural Nonfarm	Urban	
Total	31.3	28.8	37.0	30.0	.05
Under 6	53.2	41.0	57.8	60.3	--
6-13	42.9	40.9	55.4	38.4	--
14-17	16.0	8.7	30.0	17.8	.05
18-44	29.4	30.5	32.4	27.0	--
45-64	19.8	17.4	25.8	18.4	--
65-up	17.9	16.3	14.8	21.3	--
P	.001	.001	.001	.001	

age group except one. The only age group where the differences are large enough to be significant is from 14 to 17 years of age. In this group, the rural farm rate (the lowest of any age or residence group) is only half that of the urban, and the urban is a little more than half that of the rural nonfarm.

In considering the causes of illness, Mott and Roemer indicate that "the most striking feature of the comparative rural and urban patterns of illness is their similarity. It is likely that most of the differentials are due less to differences in actual morbidity than to variations in the definition of illness, the manner of collecting the data, and the geographic location of the groups studied."[52] It must be remembered that residence is not simply an isolated factor, but rather it involves a complex of social and economic factors.

52. Mott and Roemer, op. cit., p. 87.

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Table 12.

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With some minor variations, the same general associations exist between acute illness and age for each residence group as was reported for the total age distribution above. That is, the greatest amount of acute illness is reported among the younger children, and the rate declines with increasing age.

Table 12 further verifies the observation that it is the rural nonfarm group which reports the highest rates, regardless of income. The only rate which approaches those for the rural nonfarm is that of the urban in the highest income group. It should also be pointed out that it is only among the urban residents that significant income differences were found. The rates in this area increase with increasing income.

Table 12. Rates of acute illness by income and place of residence.

		Income				
Residence	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Rural Farm	28.8	25.9	29.3	29.7	43.5	--
Rural Nonfarm	37.0	42.6	36.7	41.7	17.5	--
Urban	30.0	20.9	24.8	40.5	39.0	.001
P	.05	.01	.05	--		

In making the point that the health of rural people seems to be superior to that of urban, T. Lynn Smith points out that "The incidence of sickness commonly is greater among Negroes

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than among whites, and Negroes are concentrated in rural areas to a greater extent than whites. Comparisons which fail to adjust for race differences therefore overemphasize the rural disabilities, underemphasize the urban."[53] When residence is considered in relation to color in the present study there are certain trends which become apparent. When the white group is considered by itself, there is no significant difference between the residence groups with the sole exception of those under 6 years of age. See Table 13. Even in this instance, the chi

Table 13. Rates of acute illness of whites by place of residence and age.

Age	Total	Residence			P
		Rural Farm	Rural Nonfarm	Urban	
Total	35.7	32.1	37.2	37.1	--
Under 6	65.7	50.9	60.5	80.8	.10
6-13	55.1	59.7	53.2	52.2	--
14-17	19.5	11.4	33.3	16.0	--
18-44	31.0	28.3	32.4	31.5	--
45-64	24.3	21.4	25.0	25.5	--
65-up	16.5	17.1	14.3	17.1	--
P	.001	.001	.001	.001	

square test indicates that the differences, as large as they appear, are on the borderline of significance. Table 14 reveals that there are significant residence differences among

53. T. Lynn Smith, op. cit., p. 102.

Table

Age	
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Table 14. Rates of acute illness of nonwhites by place of residence and age.

Age	Total	Residence			P
		Rural Farm	Rural Nonfarm	Urban	
Total	20.9	23.6	35.5	14.3	.001
Under 6	29.4	30.8	42.9	23.3	---
6-17	18.4	17.2	50.0	13.5	*
18-44	25.0	34.6	32.3	16.1	.05
45-up	9.9	7.6	26.3	6.8	*
P	.01	.02	--	--	

*There were too few cases in certain of the cells to calculate chi square with any degree of reliability.

the nonwhite population. Since rates have been found to increase with increasing income, and since the urban population has a higher median income than the other residence groups, one would predict, on the basis of income alone, that the urban nonwhite people would report higher rates than either rural farm or the rural nonfarm. This was not found to be the case. The urban group reported the lowest rates and the rural nonfarm reported the highest rates. As a matter of fact, the nonwhite rural nonfarm rates are almost as high as those of the white rural nonfarm. See Table 15. There is no significant difference between color groups among rural nonfarm residents at any age group. In fact, the difference between the white and nonwhite groups in the rural farm area are not great, as is revealed in Table 16. The only residence group where the color differences stand out is the urban. See Table 17. The whites are consistently and significantly higher at all ages.

Table

Age	
Total	
Under	
6-17	
18-44	
45-up	
P	

Table 1

Age	
Total	
Under 6	
6-17	
18-44	
45-up	
P	

Table 15. Rates of acute illness of rural nonfarm residents by color and age.

		Color		
Age	Total	White	Nonwhite	P
Total	37.0	37.2	35.5	---
Under 6	57.8	60.5	42.9	---
6-17	46.5	45.9	50.0	---
18-44	32.4	32.4	32.3	---
45-up	23.3	22.7	26.3	---
P	.001	.001	--	

Table 16. Rates of acute illness of rural farm residents by color and age.

		Color		
Age	Total	White	Nonwhite	P
Total	28.8	32.1	23.6	.05
Under 6	41.0	50.9	30.8	--
6-17	29.6	42.3	17.2	.01
18-44	30.5	28.3	34.6	--
45-up	17.1	20.2	7.6	--
P	.01	.01	.02	

Table

Age	
Total	
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Table 17. Rates of acute illness of urban residents by color and age.

Age	Color			
	Total	White	Nonwhite	P
Total	30.0	37.1	14.3	.001
Under 6	60.3	80.8	23.3	.001
6-17	31.9	42.4	13.5	.01
18-44	27.0	31.5	16.1	.01
45-up	19.0	23.9	6.8	.01
P	.001	.001	--	

The rural nonfarm group of both races needs considerably more study. It is a relatively new phenomenon in the country's history. In North Carolina the rural nonfarm population increased by 53.6 percent from 1940 to 1950.[54] It is apparently composed of people from many walks of life and from varying socio-economic levels. Sufficient information is not available at present to account for their acute illness rates.

Ensminger and Longmore have stated that the traditional opinions of farm people undoubtedly play a part in cutting down the number of the illnesses which people in rural areas report, that farm life is conditioned largely by nature which may at times drive the farmer into the fields despite a physical condition which would keep a city man inside.[55] This is a

54. 1950 United States Census of Population, U. S. Department of Commerce, Bureau of the Census, Washington: United States Government Printing Office, 1952.

55. Carl C. Taylor, op. cit., p. 161.

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rather commonly accepted assumption, and one which needs further exploration. It is not sufficient to proceed on the assumption that traditional opinions are operating in rural areas but not in urban. The health behavior of both rural and urban people is conditioned by "traditional opinions." Future studies would do well to isolate and describe them and show how they operate in terms of influencing health behavior. In the final analysis, as Ensminger and Longmore pointed out, good health will, in large measure, be the result of the observance of the laws of health rather than any unconscious result of rural or urban living.[56]

Health Environment Index. To the knowledge of the author, a health environment index such as this one has not been used in the analysis of health and health care before. The closest thing to it has been various level of living indices. However, it would be inaccurate to assume that this is simply another level of living index. The items of the index were deliberately chosen to reflect, not level of living, but rather some of the provisions that have been made around the home which tend to be conducive to good health. It can be assumed that this, in turn, gives some indication of the underlying values and attitudes which motivate people in the realms of health care.

Table 18 reveals that those whose physical surroundings are most advantageous in terms of promoting good health are actually those who report the highest rates of acute illness.

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56. Ibid., p. 162.

Table

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Table 18. Rates of acute illness by health environment index and age.

		Health Environment Index				
Age	Total	0-10	11-18	19-22	23	P
Total	31.3	27.9	26.4	35.1	42.3	.001
Under 6	53.2	35.4	46.3	64.8	96.8	.001
6-17	33.8	30.3	25.6	46.8	46.7	.02
18-44	29.4	27.3	28.2	29.8	35.2	---
45-up	19.4	14.5	14.4	23.3	26.5	.10
P	.001	.10	.001	.001	.001	

Among those with the highest health environment index, almost all of the children under 6 years of age are reported to have had some kind of acute illness during the 6 months previous to the study. With increasing age the influence of health environment index on acute illness rates is lessened.

Of interest at this point is to compare the health environment index with income. If reporting of acute illness were merely a matter of income one would naturally expect that there would be a closer relationship between them than between acute illness rates and health environment index, even though the latter is associated with income. The results as shown in Table 19 reveal that, while the difference is not great, the reverse of this is true. Acute illness rates increase with increasing index values as well as with increasing income. However, the P value for the former is .001 and for the latter it is .01. High index groups tend to report the highest rates regardless of income. However, the reverse of this is not true.

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Table 19. Rates of acute illness by income and health environment index.

Health Environment Index	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
0-10	27.9	27.7	30.3	12.5	30.0	--
11-18	26.4	25.8	23.9	39.5	38.2	--
19-22	35.1	41.3	32.4	39.2	28.2	--
23	42.3	100.0*	44.4	41.4	25.0*	--
P	.001	--	.02	--		

*Rate is based on less than 10 individuals.

In fact, the lowest rate in the table is found in the highest income group but within the lowest index group.

This is an area which needs considerably more thought and study. The evidence here presented points to the conclusion that reporting of acute illness is highly related to social and cultural phenomenon. It is related to one's basic value-attitude system which influences one's health awareness and his definition of illness. Income is found to be related to the reporting of acute illness because it too is related to these same factors, that is, there is a tendency for the people in a given income group to have similar value-attitude systems. However, this is far from a one to one relationship.

To single out any one factor as being the cause is to overlook the complexity of human behavior. One set of influencing factors involves the actual presence of some morbid

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condition. Another set involves the presence or absence of health facilities and services. Another set is of an economic nature and involves the ability to purchase health care. Still a fourth set involves the value-attitude system and cultural background of the individual which influence what man does in view of the presence or absence of the other three. It should be remembered that even the ability to purchase health service is related to one's value-attitude system, since it is this system which is primarily responsible for the priority placed on the various items in the family budget.

The following instance is illustrative of the above point. In an interview on the Michigan state-wide health survey, one informant indicated that she had accompanied her neighbor to the grocery store on a recent occasion and that her neighbor had been complaining about the high cost of meat.[57] She said she had not been able to buy any meat for her family at all for over a month. The interviewee observed, however, that when they arrived at the store the neighbor purchased a dollar's worth of candy for her children but still not any meat. It seems evident that some motivating factors other than economic were operating in this case.

Communication-Participation Index. A detailed analysis of the individual items of the index has not been made. However, there are certain characteristics which should be pointed out.

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57. This case is one of many which the author experienced on the Michigan study.

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Like the health environment index, the communication-participation index was positively associated with income, i.e., the higher the income the higher the index score. The four most prevalent communication items were the radio, daily newspaper, automobile, and telephone, in decreasing importance. The radio held top place for both races and for all three residence groups. However, even the prevalence of the radio varied from 70.0 percent among the nonwhite rural nonfarm group to 96.1 percent among the urban white. The four least prevalent items in order of decreasing importance were government pamphlets on infant and child care, weekly newspapers, home health guide, and other government pamphlets. The prevalence of these items also varied according to residence and color.

Dr. Norris Smith, Chairman of the Medical Advisory Committee to the Hospital Saving Association (Blue Cross), has indicated that one of the major limitations in putting over the Blue Cross program in North Carolina is the inadequacy of communication facilities and the inaccessibility of towns throughout the state.[58] It would ordinarily be expected that those people who have a high index of community participation and access to modern means of communication would be more likely to have greater contact with the latest health information and, therefore, have less illness than those with a low index. On the other hand, on the basis of the above discussion on

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58. Dr. O. Norris Smith, "Hospital Insurance Discussed," News and Observer, Raleigh, North Carolina, March 15, 1954.

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reporting of acute illness and various socio-economic factors one would expect the higher index groups to report more acute illness than the lower groups. Table 20 reveals that, although the differences in the rates of the various index groups are large enough to produce a significant chi square, there is no consistent trend in relation to communication-participation index and reporting of acute illness. When income is considered,

Table 20. Rates of acute illness by communication-participation index and age.

		Communication-Participation Index				
Age	Total	0-3	4-7	8-13	14-25	P
Total	31.3	30.7	26.7	36.5	29.6	.01
Under 6	53.2	41.3	46.4	68.9	36.4	.05
6-17	33.8	36.5	25.5	36.2	44.8	--
18-44	29.4	30.3	27.0	33.4	22.3	--
45-up	19.4	15.4	14.4	21.8	26.0	--
P	.001	.05	.001	.001	.10	

it was found there is also no significant difference between index groups within any income group. See Table 21.

Table 2

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59. C… and Adult Ed… Press, 1953,

Table 21. Rates of acute illness by income and communication-participation index.

Communication-Participation Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
0-3	30.7	32.1	28.4	35.0	18.2	--
4-7	26.7	24.1	24.9	37.2	35.1	--
8-13	36.5	30.9	34.0	45.9	29.8	.05
14-25	29.6	35.7	25.0	31.0	44.4*	--
P	.01	--	--	--		

*Rate is based on less than 10 individuals.

It must be concluded, therefore, that either the reporting of acute illness shows no consistent relation to indices of communication and participation or that the items making up this particular index need greater standardization. The latter conclusion is more likely to be the case. This is an area which needs considerably more study. Perhaps the index should be split into two separate indexes, a communication index and a participation index. Thought should also be given to weighting certain items, depending upon their connection with health information and health care. It has been found, for example, that in adult education certain organizations and agencies give considerably more time and effort to certain subject matter areas than do others.[59] There is no reason to believe that the same

59. Charles P. Loomis, et alii, Rural Social Systems and Adult Education, East Lansing: The Michigan State College Press, 1953, Chapter 14 especially.

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T. Lynn Smith

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1951, pp. 74

would not be true in the field of health. Moreover, while only 20.0 percent of the rural farm people reported having a telephone, 78.7 urban residents reported having one. This drops to 2.2 percent for nonwhite rural farm residents. On the other hand, farm magazines rank fourth in importance among rural residents and last among urban. Therefore, there is every indication that the items in the index should not be equated, but rather have a system of weights devised depending upon the importance of the item. It is also probable that an index such as this has one of the same pitfalls as the intelligence tests of the past, namely, that they are geared to an urban environment.[60] Any revision of the index would need to take these considerations into account.

Size of Household. The size of household is an important consideration in dealing with health and health care. Clyde Hart, in his recent national survey of medical costs for the Health Information Foundation, found that those families with children under 18 years of age had the highest proportion

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60. For a discussion and analysis of intelligence tests in this regard see: Sorokin, Zimmerman, and Galpin, op. cit., p. 266f. They analyzed 65 of the most important studies up to 1929 in which tests had been used to compare rural and urban intelligence. For a discussion of studies since that time see: C. A. McMahan, "Personality and the Urban Environment," in T. Lynn Smith and C. A. McMahan, The Sociology of Urban Life: A Textbook with Readings, New York: The Dryden Press, Inc., 1951, pp. 748-760.

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of families reporting medical indebtedness of any family type.[61] Statistically speaking each additional member in a family increases the probability that some member of the family will become ill during any given period of time. Thus, one would expect, on the basis of chance alone, that the larger families would report more illness.

Table 22 shows that the highest acute illness rates are reported for children under 14 years of age in households with from 3 to 6 members. The rates for both the larger and the smaller households are significantly lower. This observation

Table 22. Rates of acute illness by size of household and age.

		Size of Household			
Age	Total	1-2	3-6	7-up	P
Total	31.3	24.8	35.3	23.5	.001
Under 6	53.2	0.0*	59.8	36.0	.02
6-13	42.9	25.0*	55.5	22.9	.001
14-17	16.0	20.0*	17.2	13.5	---
18-44	29.4	28.0	30.8	24.1	---
45-64	19.8	20.6	20.4	13.6	---
65-up	17.9	27.9	12.3	11.1*	---
P	.001	--	.001	.05	

*Rate is based on less than 10 individuals.

61. Odin W. Anderson, "Debt Among Families in the United States Due to Costs of Personal Health Services as of July, 1953," National Consumer Survey of Medical Costs and Voluntary Health Insurance, New York: Health Information Foundation, Summary Report No. 4, 1954, Appendix A, Table 6.

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is in line with the above findings. Large families are no longer the norm in this country, but rather they are becoming more and more associated with poverty, disease, and low social status generally. This is confirmed, at least in part, by the fact that 42.4 percent of the individuals in households with 7 or more members were in families whose incomes were below $1,500 as contrasted with 22.4 percent for those with from 3 to 6 members. Therefore, on the basis of the findings which have preceded, it is to be expected that the largest households will report less acute illness than the next largest households, even though the probability of some member of the family actually becoming ill is greater.

In those households with only 1 or 2 members there are few children below 18 years of age and a large proportion of older people, especially those who are widowed, retired, and unable to work. This group also has a fairly high proportion, 34.0 percent, with incomes below $1,500. These factors account, at least in part, for the lower rate reported for this group.

Beyond the age of 14 years the rates are quite similar for the different household sizes. One would suspect, from an objective point of view, that women in the childbearing ages in the largest households would report much more acute illness than those in the smaller households. Actually there is no significant difference between these women and those in the the smaller households. Although the women in the largest households have higher rates than the men (the P value is .10),

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they are identical with the rates of the men in the next smaller households. However, the data are actually obscured by the fact that the analysis is based on all women in the childbearing ages and not just the mothers or even the female household heads.

Table 23 reveals that middle-sized households tend to report the highest rates in each income group. In this same group those with the highest incomes report significantly higher rates than those in the lower income groups. However, within both the larger and the smaller households there are no significant income differences. Here again, if economic status were the major determining factor, one would expect it to have the same influence regardless of the size of the family. The data do not support such a conclusion. It must be concluded that, in addition to the actual physical presence of illness, the reporting of acute illness is highly related to one's sociocultural background, which is related to household size.

Table 23. Rates of acute illness by income and size of household.

		Income				
Size of Household	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
1-2	24.8	25.9	19.9	30.3	30.0	--
3-6	35.3	32.6	33.7	43.6	26.8	.05
7-up	23.5	22.8	19.7	23.4	59.1	--
P	.001	--	.001	.05		

Crowding Index. A measure similar to the size of household is the crowding index. It is not only related to the number of members in the household but also to the size of the dwelling which, in turn, is related to income and other socio-economic factors. In general, excessive crowding is related to low socio-economic status. Therefore, one would expect to find the behavior of the individuals in such households to approximate that of low status people generally.

Table 24 reveals that the highest rate is reported in the index groups 1.50-1.99. The lowest rate is in the index group 2.00 and up. When age is considered, there are also certain tendencies which become manifest. Among the two lowest age groups, where acute illness rates are highest, there is a rather clear-cut distinction between the rates of those in households with 2 or more persons per room and those under 2, the latter having much higher rates. The age group under 6 years in homes with less than 1 person per room has a rate almost three times as high as those in homes with 2 or more persons per room. In the next age group, 6 to 13 years, the rates are over four times as high for the less crowded group. This is in line with the statement above that the persons in more crowded conditions are more likely to be low status people and, consequently, to report lower rates.

Table 24. Rates of acute illness by crowding index and age.

Age	Total	Crowding Index: Under 1.00	1.00-1.49	1.50-1.99	2.00-up	P
Total	31.3	32.2	29.8	41.9	21.8	.001
Under 6	53.2	75.5	50.6	50.8	26.4	.001
6-13	42.9	60.5	33.7	64.0	14.3	.001
14-17	16.0	12.7	25.6	5.0	15.4	---
18-44	29.4	29.2	27.7	35.7	29.3	---
45-up	19.4	21.2	15.3	18.8	7.7	---
P	.001	.001	.001	.01	--	

There is no consistent trend with regard to crowding index beyond the age of 13 years. However, there is a clear line of demarcation between the rates of those persons above and those below this age level. Those individuals 13 years of age or less have considerably higher rates than those above this age. This trend shows up for each crowding index except those with 2 or more persons per room, where the age differences are not significant.

There are no statistically significant differences between the sexes in any age group nor within any of the crowding index groups. In the age group 18 to 44 years the women in households with 1.50 or more persons per room report a slightly higher rate than do the men, but the reverse of this is true among those below 1.50 persons per room. However, in neither instance are the differences large enough to be significant, as can be seen in Table 25.

Table 25. Rates of acute illness of males and females 18 to 44 years old by crowding index.

Sex	Total	Crowding Index: Under 1.00	1.00-1.49	1.50-1.99	2.00-up	P
Total	29.4	29.2	27.7	35.7	29.3	---
Male	29.3	30.9	30.4	25.0	21.1	---
Female	29.6	27.6	25.2	45.5	36.4	---
P	--	--	--	--	--	

Of further interest is to compare the crowding index with income. These rates are shown in Table 26. It is only among those persons with a crowding index of .50 to .99 that the income differences are significant. The trend is toward higher

Table 26. Rates of acute illness by income and crowding index.

Crowding Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Under .50	24.4	26.4	20.7	27.7	17.6	---
.50-.99	34.6	23.0	31.1	46.7	25.0	.001
1.00-1.49	29.8	35.0	27.0	27.5	38.7	---
1.50-1.99	41.9	37.4	41.6	0.0*	84.6	---
2.00-up	21.8	19.1	22.6	38.9	20.0	---
P	.001	.05	.05	.02		

*Rate is based on less than 10 individuals.

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rates with increasing income. The same trend exists for those with 2 or more persons per room but it is not statistically significant. Within income groups there does not seem to be any consistent relationship between crowding and reporting of acute illness.

When the total rates for crowding groups are considered without reference to income, it can be seen that it is the smallest and the largest index groups which report the lowest acute illness rates.[62] These two groups probably correspond rather closely with the smallest and the largest households, both of which have a comparatively low socio-economic standing.

Education of Household Heads. Education is not simply a reflection of the amount of information one has gained, it is also related to social and economic status. However, those with the highest educational attainment do not necessarily have the highest incomes, nor do they necessarily have the highest social standing, but there is a high degree of correlation.

This study proceeded on the assumption that household heads would be sufficiently aware of the illnesses of all members of the household that they could report for each member in addition to themselves. It was also assumed that, because of the role household heads play in the family structure, the norms and standards by which they direct their behavior would

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62. This trend did not show up as well in Table 24 since the two smallest index groups had to be combined in order to provide sufficient cases for statistical computations.

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be reflected in the behavior of the other members of the household. It would be expected, therefore, that if education is related to health and health care this will be reflected not only in the illness rates of the household heads but in those of the other members of the household as well. One would certainly expect that the more highly educated would, of all people, be most likely to have access to the latest health information. Also, since education is so closely related to socio-economic status one would expect the acute illness rates to correspond with those of other socio-economic indices.

Table 27 shows that acute illness rates, as reported in this study, rise with increasing education of both the male and female household heads. The relationship is more consistent for male heads than for female, but the major difference for both is between those with less than 9 years of schooling and those with 9 years or more. There is a rather clear point of demarcation at the high school level.[63]

When age is taken into account, it is the younger age groups whose household heads have the highest educations which report by far the highest rates. See Tables 28 and 29. It is also interesting to note that in those instances where the education of the household heads is under 4 years, the age

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63. Using the symptoms approach, Hoffer found that the proportion of people with "all positive symptoms untreated" was significantly greater for those below the ninth grade than for those with nine or more years of schooling. See: Hoffer, op. cit., Bulletin 365, p. 20; and Hoffer, op. cit., Bulletin 352, pp. 18 and 20.

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Table 27.

House-hold Head	Tot
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Table 28.

Age	Total
Total	31.3
Under 6	
6-13	53.2
14-17	42.9
18-44	16.0
45-64	29.4
65-up	19.8
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P	.001

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differences are not large enough to be significant. This is primarily a reflection of the lower rates among children than is found among the higher educated classes.

Table 27. Rates of acute illness by education of male and female household heads.

Household Head	Total	Education of Household Heads: Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Male	31.3	29.8	26.3	39.6	38.2	45.5	21.3	.001
Female	31.3	15.5	26.0	37.6	41.3	36.2	21.3	.001

*This category includes no answer, no male (or female) head, and male (or female) head not living.

Table 28. Rates of acute illness by education of male household head and age.

Age	Total	Education of Male Head: Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Total	31.3	29.8	26.3	39.6	38.2	45.5	21.3	.001
Under 6	53.2	31.8	47.4	68.1	80.8	85.0	15.0	.05
6-13	42.9	39.4	34.5	59.3	66.7	82.6	17.8	.02
14-17	16.0	23.5	12.7	23.1	0.0**	14.3	15.2	--
18-44	29.4	33.8	21.9	31.4	29.7	39.7	30.2	.10
45-64	19.8	10.3	18.0	26.8	27.3	23.8	15.5	--***
65-up	17.9	25.0	14.8	18.8	23.1	0.0**	15.4	--***
P	.001	--	.001	.001	.01	.01		

*This category includes no answer, no male head, and male head not living.
**Rate is based on less than 10 individuals.
***Age group 45-64 and 65-up were combined for computations of chi square due to a small number of individuals in certain of the cells.

Table 29. Rates of acute illness by education of female household head and age.

Age	Total	Education of Female Head: Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Total	31.3	15.5	26.0	37.6	41.3	36.2	21.3	.001
Under 6	53.2	20.0	36.1	68.3	83.3	57.9	0.0**	.001
6-13	42.9	12.5	30.3	57.0	66.7	83.3	15.4	.001
14-17	16.0	25.0**	16.0	10.0	10.0	50.0**	33.3**	--
18-44	29.4	14.6	29.3	28.3	41.9	25.4	32.8	.10
45-64	19.8	12.9	14.9	27.1	24.6	28.6	7.1	--***
65-up	17.9	16.7	13.8	21.2	9.1	33.3**	20.0	--***
P	.001	--	.01	.001	.001	.01		

*This category includes no answer, no female head, and female head not living.
**Rate is based on less than 10 individuals.
***Age groups 45-64 and 65-up were combined for computations of chi square due to a small number of individuals in certain of the cells.

Tables 30 and 31 reveal quite clearly that it is the people whose household heads have the highest education, especially above the eighth grade, and who have the highest family incomes that report the most acute illness. Even though education and income are quite highly correlated, education is shown to be more highly associated with reporting of acute illness than is income.

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Table 30. Rates of acute illness by income and by education of male household head.

Education of Male Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Under 4	29.8	29.9	28.6	75.0*	22.7	--
4-8	26.3	25.5	26.3	29.6	15.8	--
9-12	39.6	36.2	35.7	44.7	46.9	--
1-3 college	38.2	25.0*	43.9	33.8	20.0*	--
4 college-up	45.5	0.0*	41.2	48.8	12.5*	--
Others**	21.3	28.0	17.2	10.3	23.1	
P	.001	--	.10	--		

*Rate is based on less than 10 individuals.
**This category includes no answer, no male head, and male head not living.

Table 31. Rates of acute illness by income and by education of female household head.

Education of Female Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	31.3	28.4	29.2	39.1	31.9	.01
Under 4	15.5	18.8	4.8	28.6*	27.3	--
4-8	26.0	27.2	22.3	29.2	38.6	--
9-12	37.6	36.8	36.4	40.5	38.1	--
1-3 college	41.3	33.3	38.0	46.8	0.0*	--
4 college-up	36.2	42.9*	33.3	37.3	33.3*	--
Others**	21.3	27.4	21.8	12.5*	5.6	
P	.001	--	.001	--		

*Rate is based on less than 10 individuals.
**This category includes no answer, no female head, and female head not living.

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Summary and Conclusions. It was found that the 2125 individuals in the sample population reported 666 cases of acute illness of one kind or another for the six months prior to the study. This figure represents a rate of 31.3 cases per hundred population. On an annual basis this would constitute a rate of 62.6 cases per hundred.

The major trends revealed in the study can be summarized as follows. Age was found to be a highly influential factor in the reporting of acute illness. By far the greatest amount was reported among the youngest ages, especially the preschool and early school years. The lowest rate was for those persons from 14 to 17 years of age, but it was not much smaller than the rates for those persons above 44 years. There were no differences of any consequence between the sexes, nor between the tenure groups. There was also no consistent relationship between acute illness rates and the communication-participation index. On the whole, family income was positively associated with the reporting of acute illness, but the association was not as great as that for the health environment index or education of household heads. White groups reported considerably higher rates than the nonwhite. However, this tendency showed up more in the urban areas than the rural farm or the rural nonfarm. On the whole, there was not much difference between the residence groups. The rural nonfarm group showed a tendency to report higher rates than the others, but the differences were not extremely large. The households with from 3 to 6

members reported more illness than either the larger or the smaller households. This trend is undoubtedly due to the fact that they have a greater tendency to be higher on the socio-economic scale than do either of the other two household sizes. With regard to the crowding index groups, the least crowded and the most crowded groups reported the lowest rates. This tendency appears to be another reflection of the trends reported for the largest and smallest households.

The evidence of this chapter suggests that the amount of acute illness which the various socio-economic groups report is not determined solely by the objective presence or absence of such illness. The definitions of illness and the standards of health and health care vary considerably from one group to another. This tendency is reflected in the fact that, on the whole, the higher social and economic groups reported higher rates of acute illness than did the lower groups. Illness is not simply an objective phenomenon which involves the presence or absence of some morbid physical condition. It is also a subjective phenomenon which depends not only upon the actual presence of some affliction but also upon one's attitudes towards such conditions. The attitudes of the various individuals are a reflection of the norms or standards of health and health care of the groups to which they belong. These standards, in turn, are culturally conditioned.

On the whole, the higher socio-economic groups tend to be more aware of and concerned over conditions which may affect

the health status of their family members. As a consequence, they report more acute illnesses, especially the minor cases. On the other hand, the lower groups tend to accept illness as part of the nature of things, and, consequently, they have a tendency to overlook many of the relatively less serious illnesses and to report the more serious ailments. It is not simply that they cannot afford medical care, and, therefore, tend to accept their condition. Such groups do not have the same standards of sickness and health as do those in the higher socio-economic levels.

CHAPTER III

CHRONIC ILLNESS

> "So long as the population was youthful, and communicable disease uncontrolled, it tended to monopolize medical interest and effort. The epidemics were spectacular and devastating; and not too many persons lived long enough to contract chronic ailments. But now as we see communicable disease yielding to control, and half of the population ranging in age from more than 30 to 100 we are brought face to face with the tremendous volume of prolonged illness which renders so many people partially or totally disabled. And, as a society, we are not yet prepared to cope with the problem."[1]

This statement by Lively is indicative of the trend of much of the literature on chronic illness. The Metropolitan Life Insurance Company indicates that "in 1950 the average lifetime of the American people reached a new high of 68.4 years."[2] This is a gain of 21 years since 1900. These gains are attributed to advances in the medical and allied sciences, broadening of the number and scope of activities of the public health agencies both official and voluntary, and a rapid rise in the standard of living.[3] The Committee on Aging and Geriatrics of the Federal Security Agency has stated that "the big increase in the relative

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1. Charles E. Lively, "Some Problems Warrant Study for Continuing Health Improvement," The Journal of Osteopathy, November, 1953, p. 13.

2. "Record High Longevity at the Mid-Century," Statistical Bulletin, New York: Metropolitan Life Insurance Company, Vol. 34, No. 7, July, 1953, p. 1.

3. Ibid.

number of older persons is the result largely of gains in the control of infectious diseases, other advances in the fields of prevention and medical care and of the general rise in the standard of living. Fewer people die in childhood or their early adult years; more live to reach their 60's and 70's."[4]

Age and Sex. Despite some differences in definition of chronic illness, the findings of various studies with regard to chronic illness and age are in essential agreement. The National Health Survey, for example, showed a marked trend of increasing chronic illness with increasing age.[5] Kaufman and Morse not only show that chronic illness increases with increasing age, but also that most of the illnesses of older persons are of a chronic nature, while those of children and youth are of a relatively short duration.[6] McNamara found essentially the same relationship to exist among the rural farm people of Missouri.[7] The Baltimore health study also

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4. Committee on Aging and Geriatrics, Fact Book on Aging, Washington: Federal Security Agency, No date, p. 4.

5. National Health Survey: 1935-1936, "The Magnitude of the Chronic Illness Problem in the United States," Washington: U. S. Public Health Service, Bulletin No. 6, 1938, p. 8.

6. Harold F. Kaufman and Warren W. Morse, "Illness in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 391, August, 1945, p. 16.

7. Robert L. McNamara, "Illness in the Farm Population of Two Homogeneous Areas of Missouri: Its Relation to Social and Economic Factors and Its Susceptibility to Small-Sample Study," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 504, July, 1952, p. 25.

reported a sharp increase in the rates of chronic illness with increasing age.[8]

The results of this study are in agreement with the studies reported above. Table 32 shows that there is a pronounced association between age and the reporting of chronic illness. The rates rise from 2.2 for children under 6 years of age to 59.0 for people 65 years of age and over. As with acute illness, the individuals between 14 and 17 years of age have a lower rate than the age groups immediately above and below them.

Table 32. Rates of chronic illness by age.

		Age						
	Total	Under 6	6-13	14-17	18-44	45-64	65-up	P
Total	15.8	2.2	8.2	5.6	11.2	32.4	59.0	.001

It should not be assumed, as was pointed out by the National Health Survey report, that chronic illness is limited to the older people.[9] While the chances of becoming chronically

8. Elizabeth H. Jackson, "Morbidity Among Males and Females at Specific Ages--Eastern Health District of Baltimore," The Milbank Memorial Fund Quarterly, Vol. XXVIII, No. 4, October, 1950, p. 445.

9. National Health Survey, Bulletin No. 6, op. cit., p. 13.

ill are greater as one grows older, there is a certain amount of chronic illness at all ages. A considerable amount of such illness is found below the age of 50 years.[10]

Above 17 years of age the trend is for women to report a higher rate of chronic illness than men, except in the highest age group. See Table 33. It will be recalled that there was no significant difference between the sexes with regard to acute illness rates.

Table 33. Rates of chronic illness by sex and age.

		Sex		
Age	Total	Males	Females	P
Total 18-up	21.5	17.5	25.2	.01
18-44	11.2	8.3	13.9	.02
45-64	32.4	24.1	39.7	.01
65-up	59.0	61.4	56.7	--
P	.001	.001	.001	

McNamara states that relatively fewer men than women report chronic illness in the two rural farm areas which he studied in Missouri.[11] Kaufman and Morse also report higher rates for females than for males, although the difference is not statistically significant.[12] They state, however, that

10. This same viewpoint is expressed in McNamara, op. cit.

11. Ibid.

12. Kaufman and Morse, op. cit., p. 19.

if deliveries and complications of pregnancy are excluded, females have slightly fewer illnesses. Although not necessarily speaking of chronic illness, the Committee on Costs of Medical Care reports that there was a peak of severe bed cases of illness in the age group 20 to 40 years, reflecting illnesses associated with childbearing.[13] However, the data were not broken down by sex groups, so the conclusion is only presumptive.

In the light of the data collected to date it seems quite conclusive that women tend to have higher rates of chronic illness than men, at least in the middle ages. The evidence points to several ways in which this difference can be explained. In the first place, women have a wide variety of illnesses incident to childbearing, many of which show up not only during the childbearing ages but in later life as well. This tendency, in turn, may reflect inadequate medical care of acute illnesses, especially those related to the bearing of children. Furthermore, conditions connnected with the menopause seem to be more pronounced in women than in men and often last over a period of months or even several years. However, it cannot be concluded that the difference is due entirely to genital and puerperal conditions. The Baltimore study reports that the rate for females was below that for males up to the

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13. Selwyn D. Collins, "A General View of the Causes of Illness and Death at Specific Ages Based on Records for 9,000 Families in 18 States Visited Periodically for 12 Months, 1928-31," Public Health Reports, Washington: Government Printing Office, Vol. 50, No. 8, February 32, 1935, pp. 244 and 254.

age of 15 years, but it was above the male rate in the older ages even when these conditions were excluded.[14] A detailed analysis of the kinds of illness common to males and females is needed before definite conclusions can be reached.

Income. Previous studies have shown that chronic illness decreases with increasing income, and that the burden of such illness falls heavily on the lower socio-economic groups. Kaufman and Morse report the highest chronic illness rates among the lower income classes.[15] However, there was not a uniform decrease with increasing income, but rather, after a moderate rise from the middle incomes, the rates leveled off.[16] The major difference was that the low income groups had the greatest amount of chronic illness. Even this trend was not consistent in all five of the counties studied. In two counties the lowest income groups did not uniformly have the highest "rates," but rather the highest "rates" were in the highest income levels and the lowest "rates" were in the intermediate groups.[17] The authors indicate that it is possible that persons in the higher economic levels had "a more liberal notion of sickness and were more conscious of illness than those of

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14. Jackson, op. cit.

15. Kaufman and Morse, op. cit., p. 22.

16. Ibid.

17. Ibid., pp. 23-24.

lower status."[18] It should be pointed out, however, that the Negro part of the sample was entirely located in one of these two counties, and Negroes are not generally noted for their liberal attitudes toward sickness. Furthermore, the data were not held constant by age, a fact which may account for many of the differences observed. The authors do compare the mean days of illness by income class for the various age groups. They make the point that it is the older persons in the lower income groups which have the greatest amount of chronic illness.[19]

The National Health Survey reports that the frequency of chronic disabling illness was greater among the relief and low income groups than among "the more comfortable groups."[20]

The results of the present study also show that there is a negative correlation between income and the reporting of chronic illness. Table 34 reveals that although the rates decrease with increasing income, there is a leveling off at $1,500. The major difference is between those with incomes of $1,500 and above and those below $1,500. While the trend toward decreasing rates with increasing income is visible in every age group except under 18 years of age, the differences are statistically significant only in the age group 18 to 44 years. It should also be pointed out that within every income group

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18. Ibid., p. 24.

19. Ibid., p. 26.

20. National Health Survey, Bulletin No. 6, op. cit.

there is a pronounced increase in rates as age increases, with by far the highest rates being in the age group 65 and over.

Table 34. Rates of chronic illness by income and age.

Age	Total	Income				P
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	
Total	15.8	20.5	15.2	12.7	11.8	.01
Under 18	5.1	5.4	5.4	5.2	2.0	--
18-44	11.2	15.8	12.6	5.8	6.6	.02
45-64	32.4	37.8	31.1	28.4	37.9	--
65-up	59.0	68.5	52.3	53.3	25.0*	--
P	.001	.001	.001	.001		

*Rate is based on less than 10 individuals.

It appears that the greater emphasis of high income groups on illness, especially in the beginning stages, may have the effect of lessening the amount of chronic afflictions which they will have. In effect, the greater concern over illness becomes a preventive measure as far as chronic illness is concerned. Also, greater ability to finance medical care undoubtedly is influential in lessening the susceptibility to long-term illness. Furthermore, it is likely that in reporting illnesses which persist over a period of two or more months one is governed less by cultural compulsives and more by the objective presence or absence of a morbid condition. The result, therefore, would be less underreporting by the lower economic groups as well as less reporting of minor ailments

by the higher groups.

Color. Few studies have treated chronic illness among the colored people. Kaufman and Morse report that the chronic illness rates (mean days of illness) of Negroes are slightly higher than those of white, but that difference between them is not significant even though the majority of Negroes have incomes under $500.[21] However, the authors do not make it clear whether they are comparing white rates with Negro rates or simply the rates of the one county, which included all of the Negro portion of the sample, with the other counties.[22] The Negroes interviewed constituted one-sixth of the individuals surveyed in that particular county.

Table 35 reveals that there is no significant difference between the chronic illness rates of the two color groups as a whole nor in any age group. There is also no significant difference between white and colored males or females. However, both white and nonwhite females report higher rates than the respective males. This trend shows up particularly in the age groups 18 to 44 and 45 to 64 years for the white group and in the age group 45 to 64 for the nonwhite. As was mentioned above, one factor which may tend to account for this rather unexpected lack of difference between color groups is that in reporting illnesses which persist over a period of time it is less likely that there will be underreporting among nonwhite

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21. Kaufman and Morse, op. cit., p. 37.

22. Ibid.

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persons. Likewise, the tendency to report minor afflictions on the part of the white people is probably reduced to a minimum since such afflictions are not so likely to persist over a long period of time.

Table 35. Rates of chronic illness by color and age.

	Color			
Age	Total	White	Nonwhite	P
Total	15.8	16.2	15.0	---
Under 18	5.1	4.9	5.5	---
18-44	11.2	10.9	12.1	---
45-64	32.4	32.1	33.3	---
65-up	59.0	57.1	65.4	---
P	.001	.001	.001	

Due to the small number of nonwhite persons in the income bracket $4,000 and up, it was difficult to get an accurate picture of color differences among the higher income groups. Nevertheless, Table 36 reveals a trend toward decreasing rates as income of both the white and nonwhite groups increases. When the two upper income groups are combined there is no difference between the color groups, but among the low income families the white individuals report significantly higher rates than the nonwhite. As with acute illness, this latter trend may reflect cultural differences in definition and recognition of illness, although this tendency is probably not as pronounced for chronic illness, as was mentioned above. It may also indicate, as Hamilton has pointed out, a tendency to

report an illness only if some medical service is obtained.[23] Since Negroes generally receive less medical service than whites, they would report lower rates. Another factor which should be considered is that the life expectancy for nonwhite persons is appreciably below that for white persons.[24] The nonwhite chronic illness rate is probably not quite as great as it would be if the nonwhite people had an older population.

Table 36. Rates of chronic illness by income and color.

Color	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	15.8	20.5	15.2	12.7	11.8	.01
White	16.2	26.9	16.0	13.1	11.8	.001
Nonwhite	15.0	17.0	12.9	5.0	--*	**
P	--	.02	--	**		

*There were no individuals in this cell.
**Chi square was omitted due to the small expected frequency in the nonwhite, high income cell.

23. C. Horace Hamilton, "Many Family Incomes in Wake County Too Low For Good Health Care," News and Observer, Raleigh, North Carolina, February 15, 1950. See also C. Horace Hamilton, "Rural Health and Medical Service in North Carolina: Papers and Preliminary Reports of Surveys, 1944-1949," Raleigh: North Carolina State College, Agricultural Experiment Station, Progress Report RS-9, August, 1950, pp. 20-21.

24. The Metropolitan Life Insurance Company indicates that "Among nonwhites the expectation of life at birth in 1950 was 59.2 years for males and 63.2 years for females." On the other hand, the life expectancy for white females was 72.4 years and for white males it was 66.6 years. See: "Record High Longevity at the Mid-Century," op. cit., pp. 1 and 3.

Home Tenure. Table 37 reveals that, when tenure is considered as a whole, there is no significant difference between the chronic illness rates of owners and renters. However, within the age groups 18 to 44 and 65 and up the renters report significantly higher rates. The P values are .05 and .10 respectively, indicating that the differences are not highly significant. The data are not sufficient to explain these differences.

Table 37. Rates of chronic illness by home tenure and age.

		Tenure		
Age	Total	Owners	Renters	P
Total	15.8	16.7	15.0	--
Under 18	5.1	5.5	4.9	--
18-44	11.2	8.3	13.4	.05
45-64	32.4	30.7	35.3	--
65-up	59.0	50.6	79.4	.10
P	.001	.001	.001	

Females have higher rates than males among both the owners and renters, except for those 65 years of age and over where there is no significant difference between the sexes.

Table 38 shows that, while there is a significant decrease in the reporting of chronic illness with increasing income among owners, there are practically no income differences among renters. Renters in the two lowest income groups report lower rates than owners, but there is no difference between

them in the highest income group.

Table 38. Rates of chronic illness by income and home tenure.

Tenure	Total	Income				P
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	
Total	15.8	20.5	15.2	12.7	11.8	.01
Owners	16.7	28.0	17.5	11.7	11.4	.001
Renters	15.0	17.6	13.2	15.3	12.3	--
P	--	.02	.10	--		

Sufficient information is not available concerning the social-psychological and cultural backgrounds of owners and renters to account for the differences observed here. Perhaps neither group is sufficiently homogeneous within itself to be treated as separate and distinct from the other. On the other hand, as has been pointed out previously, tenure would probably be more meaningful if it were broken down by residence and color.

Place of Residence. Rural areas generally have a disproportionate share of both the young and old. Therefore, one would expect such areas to have higher chronic illness rates, although the rates may not necessarily be different within given age groups. The National Health Survey reports that the towns (2500 to 5000 population) and urban areas report fewer cases per 1000 population of chronic illness disabling

for 7 days or more than the villages under 2000 population and the open country.[25]

Table 39 reveals no significant difference between residence groups in the rates of chronic illness at any age. There are also no significant residence differences among either the white or nonwhite populations, with the sole exception of nonwhite persons 18 to 44 years of age. The rural farm rate in this category is somewhat higher than either of the other places of residence, but the difference is not highly significant.

Table 39. Rates of chronic illness by place of residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	15.8	15.2	15.7	16.4	--
Under 18	5.1	3.3	6.2	6.4	--
18-44	11.2	13.7	8.8	11.2	--
45-64	32.4	29.6	37.1	32.0	--
65-up	59.0	67.4	66.7	46.8	--
P	.001	.001	.001	.001	

In contrast to acute illness rates, there is no difference in chronic illness rates between the color groups in any of the places of residence. The only exception to this trend is the urban nonwhite group from 45 to 64 years of age, which

25. Reported in Carl C. Taylor, et alii, Rural Life in the United States, New York: Alfred A. Knopf, 1949, p. 162.

has a higher rate than the white. However, even this difference is on the borderline of significance and could possibly be due to sampling variations.

There is a tendency for the females of the age group 18 to 44 years to report more chronic illness than the males in the rural farm and rural nonfarm areas, but this tendency is not found in the urban areas. In the age group 45 to 64 years females report higher rates than the males in all three residence groups, but the differences are significant only in the rural nonfarm and the urban areas. The P value is only .10 in both instances. There are no sex differences in the age group 65 and up in any place of residence. These trends point up the advisability of giving greater emphasis to the sex factor in chronic illness. It appears to be an influencing factor for both races among both rural and urban residents. Perhaps further study will isolate more definitely the factors involved, whether they be of an objective nature actually involving more chronic illness, or of a subjective nature involving social and cultural motives.

Table 40 reveals that chronic illness rates decrease with increasing income in each residence group. The differences are not statistically significant in the rural farm group. There are no significant differences between residence groups within any income group.

On the basis of the preceding discussion, it appears that residence, as such, has little if any influence on the rates

Table 40. Rates of chronic illness by income and place of residence.

Residence	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	15.8	20.5	15.2	12.7	11.8	.01
Rural Farm	15.2	18.4	14.1	13.5	2.2	--
Rural Nonfarm	15.7	23.8	14.5	10.7	12.3	.05
Urban	16.4	22.5	16.2	13.3	22.0	.10
P	--	--	--	--		

of chronic illness reported in this study. As was mentioned above, one would expect rural areas generally to have more chronic illness per hundred population because they tend to have more old people. However, this tendency is not revealed in this study. The factor of underreporting should not be overlooked, but additional research would be needed to confirm such an explanation.

Health Environment Index. Table 41 shows that, although there is no significant association between chronic illness rates and the total health environment index, there are certain differences within age groups which should receive attention. Under 18 years of age the general trend is for the rates to increase as health environment index increases. For those 18 years of age and above, the trend is reversed. This trend is probably more significant than it appears on the surface, since

it is the older age groups which, on the whole, tend to have the highest rates of chronic illness. It would appear that those in the higher index groups are giving more attention to the care of chronic as well as acute illness in the younger ages and by this means are cutting down the tendency toward chronic illness in the older age groups. The trend may also reflect a greater indulgence on the part of higher index groups toward their children. However, due to the low level of significance these trends are only suggestive.

Table 41. Rates of chronic illness by health environment index and age.

	Health Environment Index				
Age	Total	0-10	11-18	19-22	23	P
Total	15.8	16.3	16.4	16.1	12.0	--
Under 18	5.1	4.6	3.0	7.5	8.2	.10
18-44	11.2	17.4	11.3	9.0	7.6	.05
45-64	32.4	31.3	38.4	32.5	18.3	--
65-up	59.0	95.2	62.2	43.1	50.0*	.10
P	.001	.001	.001	.001	.02	

*Rate is based on less than 10 individuals.

Table 42 reveals that there are no significant differences between health environment index groups within any income level. On the other hand, chronic illness rates tend to decrease with increasing income in all but the highest index group, although the differences are not large. In certain index groups the differences are not significant. Income appears

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Table 42. Rates of chronic illness by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	15.8	20.5	15.2	12.7	11.8	.01
0-10	16.3	18.8	10.9	12.5	10.0	.10
11-18	16.4	21.5	14.9	14.0	10.9	--
19-22	16.1	28.3	18.2	12.7	11.3	.05
23	12.0	0.0*	9.7	12.5	25.0*	--
P	--	--	--	--		

*Rate is based on less than 10 individuals.

Communication-Participation Index. There is a small, though significant, trend toward decreasing chronic illness as the communication-participation index rises. As can be seen in Table 43, this trend is evident only in the total and in age groups 18 to 44 and 65 years and up. As was the case with the health environment index, those individuals 65 years of age and over in the lower index groups report by far the highest rates of chronic illness. Those in the lowest index category report a rate of 82.6 cases per hundred population as contrasted with 25.0 for those in the upper index group. However, the trend is only on the borderline of statistical significance and needs more study.

Table 43. Rates of chronic illness by communication-participation index and age.

	Communication-Participation Index					
Age	Total	0-3	4-7	8-13	14-25	P
Total	15.8	17.9	19.4	13.0	11.9	.01
Under 18	5.1	4.8	5.4	3.9	8.8	--
18-44	11.2	15.6	15.4	7.9	3.2	.01
45-64	32.4	28.6	40.8	31.6	22.5	--
65-up	59.0	82.6	67.4	48.6	25.0	.10
P	.001	.001	.001	.001	.001	

It cannot be concluded that a low communication-participation index is the "cause" of greater chronic illness rates, nor that a high index prevents such illness. It is possible, however, that prolonged illness has prevented participation in various community activities. Further study is needed to prove or disprove this assumption.

When income is considered, it is found that there are no consistent differences between index groups within the income groups. There is a significant increase in chronic illness with increasing income in the index groups 0-3 and 8-13, but income differences are not significant in the other index groups.

Table 44. Rates of chronic illness by income and communication-participation index.

Communication-Participation Index	Total	Income				P
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	
Total	15.8	20.5	15.2	12.7	11.8	.01
0-3	17.9	23.0	10.5	10.0	9.1	.02
4-7	19.4	18.5	21.3	19.2	12.3	--
8-13	13.0	22.7	12.1	9.6	13.4	.01
14-25	11.9	7.1	9.8	14.2	0.0*	--
P	.01	--	.01	--		

*Rate is based on less than 10 individuals.

Size of Household. Table 45 reveals that the rates of chronic illness decrease as size of household increases. This tendency is to be expected since the proportion of older people is greater in the smaller households. Within any given age group, individuals in one size of household are as likely to report chronic illness as those in another size. The one single exception to this is that individuals under 18 years of age in households with from 3 to 6 members have higher rates than the other household groups. However, the difference is only on the borderline of significance. As in the case of acute illness, this relationship may represent a greater concern over illness for children in these households which have a little higher economic standing. It may also indicate an overindulgence of the parent toward the child, with the result that his ailments may be extended as a means of gaining attention. However, the trend is not marked and needs further exploration.

Table 45. Rates of chronic illness by size of household and age.

		Size of Household			
Age	Total	1-2	3-6	7-up	P
Total	15.8	27.1	14.6	10.1	.001
Under 18	5.1	0.0	6.3	2.9	.10*
18-44	11.2	13.4	10.2	13.9	---
45-64	32.4	30.5	34.2	29.5	---
65-up	59.0	72.1	49.2	66.7**	---
P	.001	.001	.001	.001	

*Due to the low expected frequency, the cell for the smallest household size was omitted from this computation of chi square.
**Rate is based on less than 10 individuals.

Table 46 shows that chronic illness decreases with increasing income for each size of household. However, the trend is not statistically significant for the largest households and is of doubtful significance for those individuals in households with 3 to 6 members. Nevertheless, there is a rather consistent decrease in chronic illness rates with increasing size of household within each income group. The individuals who report the highest rates are those in the smallest households with the lowest family incomes. These households have the highest proportion of older people and, consequently, higher rates of chronic illness. They are also in the poorest economic circumstances, a condition which makes it difficult to receive adequate medical care. Of course, the illnesses of these individuals no doubt contributes to their inability to earn larger incomes. The

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people with the lowest rates, on the other hand, are in the largest households with the highest incomes. These households have proportionately fewer old people and, being in better financial circumstances, have been better able to give more adequate attention to their ills.

Table 46. Rates of chronic illness by income and size of household.

		Income				
Size of Household	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	15.8	20.5	15.2	12.7	11.8	.01
1-2	27.1	34.5	27.2	20.2	0.0	.001
3-6	14.6	18.8	14.2	11.6	15.2	.10
7-up	10.1	13.6	9.2	6.4	0.0	--
P	.001	.001	.001	.10		

Crowding Index. Table 47 reveals that chronic illness rates decrease as the crowding index increases. The trend is similar to that for size of households noted above, and is largely due to a greater concentration of older people in the less crowded households. This observation is further supported by the fact that within any given age group there is no significant difference between crowding index groups.

Within the various income groups, chronic illness rates

Table 47. Rates of chronic illness by crowding index and age.

Age	Total	Crowding Index: Under .50	.50-.99	1.00-1.49	1.50-1.99	2.00-up	P
Total	15.8	30.2	14.9	14.4	11.4	11.4	.001
Under 18	5.1	17.6	5.4	4.5	6.2	3.2	---
18-44	11.2	7.4	9.8	12.1	17.9	12.2	---
45-64	32.4	38.5	28.4	29.6	8.3	54.5	---
65-up	59.0	57.9	50.0	74.1	50.0*	75.0*	---
P	.001	.001	.001	.001	.01	.001	

*Rate is based on less than 10 individuals.

increase as crowding decreases. See Table 48. This trend is due, in large measure, to the larger proportion of older people in the low index groups and a large proportion of children in

Table 48. Rates of chronic illness by income and crowding index.

Crowding Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	15.8	20.5	15.2	12.7	11.8	.01
Under .50	30.2	45.3	33.3	22.8	11.8	.10
.50-.99	14.9	20.4	15.0	12.1	16.2	--
1.00-1.49	14.4	21.7	14.5	2.5	9.7	.01
1.50-1.99	11.4	16.5	6.9	--*	0.0	.05
2.00-up	11.4	13.2	9.7	11.1	6.7	--
P	.001	.001	.001	.001		

*There were no individuals in this cell.

the high index groups. The highest rates are among low income persons in households under .50 persons per room. The lowest rates tend to be among individuals in the high index categories, especially those where the family income is also high.

Education of Household Heads. Without reference to age, education of the male household head does not show any consistent relationship to the reporting of chronic illness. See Table 49. When age is considered, however, it is found that among individuals under 18 years of age chronic illness rates rise very slightly with increasing education. This trend corresponds to a similar increase in this age group for health environment index groups.[26] It is also only of borderline

Table 49. Rates of chronic illness by education of male household head and age.

		Education of Male Head						
Age	Total	Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Total	15.8	18.7	14.2	12.5	21.8	12.0	19.9	.05
Under 18	5.1	4.3	3.4	5.1	9.1	10.0	5.9	.10
18-44	11.2	12.2	14.5	9.0	14.1	2.7	12.3	.10
45-64	32.4	30.8	27.0	31.0	36.4	26.2	40.8	--
65-up	59.0	85.0	63.0	68.8	53.8	100.0**	38.5	--
P	.001	.001	.001	.001	.001	.001		

*This category includes no answer, no male head, and male head not living.
**Rate is based on less than 10 individuals.

26. It is interesting that there was not a similar increase among income groups.

significance. However, beyond age 17 there are no consistent differences between education groups. The major influencing factor is age rather than education. In every education group, without exception, chronic illness rates increase with increasing age.

Table 50 shows that, on the whole, there is a very slight decrease in reporting of chronic illness as education of the female head increases. However, within the various age groups there are no consistent trends.

Table 50. Rates of chronic illness by education of female household head and age.

		Education of Female Head						
Age	Total	Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Total	15.8	21.7	17.7	12.1	14.1	14.9	23.2	.05
Under 18	5.1	5.1	4.8	5.1	5.5	9.1	3.4	--
18-44	11.2	7.3	15.1	10.9	8.1	7.5	7.8	--
45-64	32.4	25.8	41.8	22.4	27.9	28.6	42.9	.10
65-up	59.0	83.3	69.0	48.5	27.3	50.0**	60.0	--
P	.001	.001	.001	.001	.001	.01		

*This category includes no answer, no female head, and female head not living.
**Rate is based on less than 10 individuals.

When education of male head is considered along with income, it is found that there are no consistent education trends within income groups. Within education groups there is a slight

tendency for the persons with higher incomes to report less chronic illness. However, this trend is not entirely consistent. Furthermore, when the rates are compared by education of female head and income, it is readily seen that there are no significant differences between education groups within the various income groups nor between income groups within education groups.

The reporting of chronic illness seems to be a little more highly associated with family income than with education of either household head. However, the difference is not large. Age is more influential than either income or education.

Summary and Conclusions. The rate of chronic illness reported for the entire sample of this study was 15.8 cases per hundred population for the six months prior to the study. Age was found to be the most influential factor in the rates of chronic illness of all factors studied. There was a pronounced increase from a rate of 2.2 for those individuals under 6 years of age to a rate of 59.0 for those persons 65 years old and above. While it is true there was considerable chronic illness in those ages below 45, most of the illness in the ages 45 years and above was of a long-term nature. On the other hand, most of the illnesses in the younger ages were acute, as has been shown in Chapter II. In view of the aging population in the nation, coupled with the declining productivity and earning power as people grow older, the implications of these trends are obvious.

Sex was also influential in the rates of chronic illness. As would be expected, the rates were higher for females than for males. This tendency was manifest primarily in the age groups 18 to 44 and 45 to 64.

Family income was another factor which was found to have a rather consistent relationship to chronic illness rates. The tendency was for the rates to decrease with increasing income. The major difference was between those individuals with family incomes under $1,500 and $1,500 and up. This trend reflects a greater concern of the higher income people over illness, especially in the beginning stages; this attention tends to lessen the disposition toward long-term illness. The greater financial ability of such groups to finance adequate medical care is also influential in lessening such illnesses. Another factor is that among the lower income groups there would be less underreporting of ailments which persist over a long period of time. However, age was somewhat more influential in the rates of chronic illness than was income.

There were no significant differences between the color groups as a whole nor within any age group. However, among the lower income groups the highest rate was reported for the white individuals.

The tenure differences were not consistent. There was no significant difference between owners and renters without reference to age or income. However, there was a slight tendency for individuals in renter households to report higher

rates than individuals in owner households in the age groups 18 to 44 years and 65 and up. However, owners reported the highest rates in the lower income groups. There were no significant residence differences within any age or income group.

There was some tendency for chronic illness rates to increase with increasing health environment index among those individuals under 18 years of age, but to decrease with increasing index beyond this age. These trends were only suggestive and need more study. With income constant there were no significant trends for the health environment index.

There was a slight tendency for chronic illness rates to decrease with increasing communication-participation index. However, this trend showed up only for the total and for the age groups 18 to 44 and 65 and up. The trend for the latter age group was only on the borderline of significance. Within income groups there were no significant index trends.

There was a general decline in the rates as size of household increased. This trend was obviously due to the inverse proportion of older people as size of household increases, because with age held constant there were no significant differences. Individuals under 18 years of age in households with 3 to 6 members reported higher rates than individuals in the other household sizes. However, the trend was only of borderline significance.

The trend for the crowding index was very similar to that for size of household. There was a general decrease in chronic

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illness rates as the crowding increased. However, within age groups there were no significant differences. This relationship reflects the older average age for the lower index groups and the younger average age for the higher groups.

There was no consistent relationship between chronic illness rates and education of male household heads. In the age group under 18 years the rates increased with increasing education; however, the P value for the chi square test was only .10. On the other hand, chronic illness rates decreased slightly with increasing education of female household heads, but with age constant there were no consistent trends. Family income seemed to be a little more closely associated with chronic illness rates than was education of household heads, but even the income trends were not consistent throughout all education levels.

In the reporting of chronic illness, variations due to differences in definitions of illness and in the awareness of and concern over such illness are reduced to a minimum. There is less tendency for the lower social and economic groups to ignore illnesses which persist over a long period of time. Furthermore, since minor afflictions usually do not persist, the difference between the various groups in the reporting of such cases would be negligible. These factors tend to account, at least in part, for the rather inconsequential differences found between the socio-economic groups in the reporting of chronic illness. Age stood out as the primary influencing factor in the chronic illness rates, with sex also being important in the age groups 18 to 44 years.

CHAPTER IV

USE OF A DOCTOR

The development of scientific medicine is relatively recent. Maes has pointed out that only "60 years ago practically all operations were of an emergency nature, undertaken with little hope of success and only because death was inevitable under any circumstances."[1] Bernard J. Stern, in his book, Society and Medical Progress, has written a very interesting summary of medical progress from the magico-religious practices of the primitive societies to the "scientific foundations" of Twentieth Century medicine.[2] Full appreciation of many of the present-day superstitions, customs, attitudes, and values concerning health and health care cannot be had without understanding the long road over which medical science has traveled. The scientific approach is relatively young in the history of medicine. It would be folly to assume that it has completely erased the vestiges of the past even among the medical profession, not to mention the medically uneducated masses.

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1. Urban Maes, "Aseptic Surgical Techniques," Hagerstown, Maryland: Practice of Surgery, (Edited by Dean D. Lewis, et alii), Vol. 1, 1937, Chapter 7, quoted in Selwyn D. Collins, "Frequency of Surgical Procedures Among 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 53, No. 16, April 22, 1938, pp. 587-588.

2. Bernard J. Stern, Society and Medical Progress, Princeton: Princeton University Press, 1941, especially Chapters I and II.

Although great advances have been made, home remedies, magic, and ritual have been embedded in the beliefs and customs of the people and passed on from generation to generation.[3] A vivid example of such reliance on tradition and at times actual distrust for medical science is found in the recent experiences of Dr. George F. Bond when he first began to establish his medical practice in a small rural community in western North Carolina.[4] Dr. Bond not only met with indifference and suspicion, but on occasion even with open resistance, before he was able to establish his practice on a sound basis.

Hoffer has pointed out the lack of agreement among the people as to when one should seek medical attention.[5] He has indicated that for some the criterion is the amount of pain which they have or whether they are unable to work. In some instances it is a matter of time or reluctance to spend money for the services. On the other hand, there are those people who feel they can "get the best" of their ailments if they have enough determination. In a similar vein, Lively has stated that, among certain groups if a doctor is difficult to obtain,

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3. For an interesting discussion of home care of the sick see: Iola Meier and C. E. Lively, "Family Health Practices in Dallas County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Bulletin 369, June, 1943, pp. 17ff. For a detailed list of home remedies used see the Appendices of that study.

4. Joseph Phillips, "The Revolution of Hickory Nut Gorge," Readers Digest, November, 1952, pp. 117-121.

5. Charles R. Hoffer, "Health and Health Services for Michigan Farm Families," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 352, September, 1948, p. 27.

the people simply resolve to "try harder not to get sick."[6] It is not known how widespread such attitudes and practices are. To the extent that they prevail, the use of health services will be affected by them.

The use of a doctor has received considerable attention from various research workers over the past few years. Such studies have been approached from many points of view. Some researchers have investigated the total number of office calls or home calls per family, per individual, or per sickness. Some have studied the percentage of individuals reporting a given number of doctor's calls. Still others have been concerned with the percentage of illnesses for which a doctor's care was received. Combinations and modifications of the above approaches have also been used. The present study is concerned primarily with the rate of use of a doctor for all purposes. Although any given condition may have required a series of doctor's calls, the rates which are reported here include a maximum of one call per condition. For this reason, the rates which are analyzed here are not entirely comparable to the percentage of individuals reporting one or more doctor's calls, since any given individual may report a series of conditions, each of which requires the services of a doctor. Nor are the rates comparable to the percentage of illnesses for which a doctor's services were used. In many instances a doctor is

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6. Charles E. Lively, "Some Problems Warrant Study for Continuing Health Improvement," Reprinted from The Journal of Osteopathy, November, 1953, p. 19.

used for reasons other than the treatment of sickness as such. The present method has the advantage of including each separate condition for which a doctor was used, but it avoids having one or two severe cases of illness weight a given socio-economic group with an excessive number of doctor's calls. The merit of these various methods is not in question. Each type has its value for the particular purpose at hand. The trends suggested by the various methods will be used for comparative purposes in order to further elucidate the findings of the present study.

Of the various medical attendants available to the people, those which were used most frequently by the people of this study were M.D.'s, M.D. specialists, and dentists. The distribution is shown in Table 51. The M.D.'s received about twice as many calls as either of the other two. There were only 24 cases for which a non-M.D.[7] was used and only one case for which a midwife was used.[8]

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7. In the Michigan state-wide study it was found that one or more members of almost half of the families had used "a doctor who was not an M.D." See Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 49.

8. Contrary to what would be expected, the person using a midwife was a white person. Grisette has shown that in 1952, of the 1277 registered nonwhite births in Wake County 298 were attended by a midwife. This ratio is in contrast to 8 out of 2340 white births. See: Felix A. Grisette (Editor), "North Carolina Facts," Raleigh: North Carolina Research Institute, Vol. II, No. 14, April 3, 1954, p. 3.

Table 51. Percent distribution of cases of use of medical attendants by type of attendant.

Type of Medical Attendant	Number	Percent
Total	1503	100.0
M.D.	685	45.5
M.D. Specialist	311	20.7
Dentist	342	22.8
Nurse	137	9.1
Non-M.D.	24	1.6
Midwife	1	.1
All others	3	.2

The present chapter will be limited to a discussion of the use of M.D.'s and M.D. specialists. These two categories will be combined and referred to under the common designation of "doctor" or "physician." The use of dentists is treated in another chapter. Since the nurses reported in the study were almost exclusively public health nurses, they will not be treated separately, but will be included in the chapter on preventive care. All other medical attendants were used so infrequently that meaningful comparisons cannot be made. For this reason, these attendants are excluded from the analysis.

Age and Sex. The rate of use of a doctor for the 2125 individuals during the six months prior to the present study was 46.9 per hundred. Table 52 shows that the rates are highest for the youngest and the oldest age groups. The lowest rate is for the age group 14 to 17 years. Further examination

of the data reveals that both acute illness and the use of a doctor for such illness were greatest among the younger age groups. On the other hand, chronic illness and the use of a doctor for such illness were greatest among the older age groups. The trend is also influenced by slightly higher diagnostic rates in the lower ages and the higher rates of eye care in the older ages.

Table 52. Rates of use of a doctor by age.

	Age							
	Total	Under 6	6-13	14-17	18-44	45-64	65-up	P
Total	46.9	62.3	41.5	22.9	43.9	50.5	56.4	.001

Kaufman reports that, although children under five years of age had about the same proportion of illnesses treated as older people, the total number of doctor's calls increased with increasing age.[9] He attributes this trend to the relatively short duration of children's illnesses as contrasted with the long duration of the chronic illnesses of the older people which, he says, require more doctor's calls.

In the age groups 18 to 44 and 45 to 64 years, females reported significantly higher rates of use of a doctor than did males. However, the findings of other studies are not in agreement as to the relative influence of sex on the use of a doctor.

9. Harold F. Kaufman, "Extent of Illness and Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Progress Report No. 5, April, 1945, p. 8.

For example, the Committee on the Costs of Medical Care stated that the rates for adult women were above those for adult men even when female genital and puerperal diagnoses were excluded.[10] The Committee states that this excess is due to more illness rather than to more calls per case.[11] Kaufman, on the other hand, reports just the opposite of this finding. He states that the use of a practitioner by females was greater "even though the illness rates for men and women were very similar."[12] The same general conclusion was reached by Galloway, except for his Negro study in which more women were reported to have used a doctor and to have had more calls as well.[13]

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10. Selwyn D. Collins, "Frequency and Volume of Doctors' Calls Among Males and Females in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 55, No. 44, November 1, 1940, pp. 1990-1991.

11. Ibid., p. 2011.

12. Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series No. 2, April, 1946, pp. 32-33.

13. Robert E. Galloway and Harold F. Kaufman, "Health Practices of Rural People in Lee County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 1, December, 1950, p. 3; Robert E. Galloway and Harold F. Kaufman, "Health Practices in Choctaw County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 2, December, 1950, p. 3; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural Negroes in Bolivar County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 3, April, 1951, p. 4; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural People in Forrest County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 4, July, 1951, p. 3.

Income. With very few exceptions, the reports of the various studies indicate a rather marked decrease in the use of a doctor as income increases, regardless of the method of measuring the volume of use. Hoffer has also shown that the proportion of individuals with unmet medical need declines with increasing income.[14] Three studies reported no consistent relationship between income and doctor's calls per attended illness.[15] A fourth study found that the major difference was not whether the illness was treated but rather the number of office calls made for the treatment.[16] The latter increased as income increased.

Table 53 shows that the rate of use of a doctor in the present study increases with increasing income. The association is highly significant. This trend is especially prevalent in the younger age groups. In the highest income group a rate of 113.2 doctor's calls per hundred population was reported for children under 6 years of age. It will be remembered that

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14. Hoffer, et alii, op. cit., p. 19.

15. Marie Mason, "Rural Family Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949, p. 22; Ruth M. Connor and William G. Mather, "The Use of Health Services in Two Northern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 517, July, 1949, p. 17; W. G. Mather, "The Use of Health Services in Two Southern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 504, July, 1948, p. 13.

16. Kaufman, Research Bulletin 400, op. cit., pp. 20, 22, and 28.

these calls were each for a separate condition, and that any given condition may have involved more than one doctor's call. The second highest rate was reported for children between the ages of 6 and 13 years in households with the highest family income. The rate in this instance is 100.0, compared with a rate of 18.3 in the lowest income group. It should be pointed out, however, that as age increases income becomes less important in the use of a doctor. In the age group 14 to 17 years the income differences are only of borderline statistical significance. Beyond the age of 17 years there are no significant differences between the income groups.

Table 53. Rates of use of a doctor by income and age.

		Income				
Age	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
Under 6	62.3	22.7	69.0	113.2	50.0	.001
6-13	41.5	18.3	32.8	100.0	55.0	.001
14-17	22.9	14.0	20.0	38.7	30.0	.10
18-44	43.4	40.8	43.5	47.6	44.3	---
45-64	50.5	48.0	45.5	60.3	48.3	---
65-up	56.4	68.5	45.5	33.3	100.0*	---
P	.001	.001	.001	.001		

*Rate is based on less than 10 individuals.

Kaufman states that "less demand among the low-income groups is to be explained by the lack of feeling of need for

certain services as well as by an absence of purchasing power."[17] He further states that this lack of feeling of need implies that a health education program should go hand in hand with plans for financing adequate medical and health care.

These trends point up the relatively greater concern of the high income people over the health status of their children. Such children have a large number of relatively less serious conditions for which a doctor is used, but the number of doctor's calls per case is comparatively low. On the other hand, among the older age groups where the relatively more serious and chronic conditions prevail, the difference between the income groups no longer exists.

Color. The North Carolina Sickness Survey conducted in 1916 showed that the percentage of cases of illness which were attended by a physician was higher for the white group than for the colored.[18] The respective percentages were 63.3 and 57.4. In 1945 Mayo found that in Greene County, North Carolina, "white persons made about two and a half times as many visits to a doctor as Negro persons."[19] The Mississippi reports also

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17. Ibid., p. 29.

18. Lee K. Frankel and Louis I. Dublin, "A Sickness Survey of North Carolina," Reprinted from Public Health Reports, Vol. 31, No. 41, October 13, 1916, p. 23.

19. Selz C. Mayo and Kie Sebastian Fullerton, "Medical Care in Greene County," Raleigh: North Carolina State College, Agricultural Experiment Station, Bulletin 363, November, 1948, p. 21.

tend to show a slightly higher percentage of white people using a doctor than Negroes.[20] However, one of the reports shows a higher average number of doctor's calls for Negroes than for white people.[21] No explanation was given for this difference.

Table 54 reveals that the rate of use of a doctor among the white people in the present survey was more than double that of the nonwhite group. The tendency for the white people to make greater use of a doctor than nonwhite people is especially evident in the younger age groups. As age increases

Table 54. Rates of use of a doctor by color and age.

		Color		
Age	Total	White	Nonwhite	P
Total	46.9	55.5	26.2	.001
Under 6	62.3	83.6	22.0	.001
6-13	41.5	59.7	11.3	.001
14-17	22.9	28.8	14.0	.10
18-44	43.9	47.5	33.9	.01
45-64	50.5	58.7	26.7	.001
65-up	56.4	54.9	61.5	---
P	.001	.001	.001	

the difference between the color groups diminishes. At age 65 and up there is no significant difference between them. This

20. Compare Galloway, Sociology and Rural Life Series, op. cit., No. 3, p. 2 with No. 1, p. 2; No. 2, p. 2; and No. 4, p. 15.

21. Galloway, Sociology and Rural Life Series, No. 1, ibid., pp. 2 and 11.

table reveals that the tendency to show considerable concern over the illnesses of the younger children is concentrated primarily in the white group. The highest rates of use of a doctor among the nonwhite people were reported in the oldest age group.

The white rate is considerably higher than the nonwhite rate in both the rural farm and the urban areas, but there is no significant difference between them in the rural nonfarm area. The nonwhite people in this area report a much higher rate of use of a doctor than do the nonwhite people in either of the other two places of residence. Among white people the rates increase with increasing urbanity. However, as pointed out above, among the nonwhite people the rural nonfarm residents report the highest rate, while the other two residence groups have practically identical rates.

When income is considered it is seen that the rate of use of a doctor among white people is about double the rate among the nonwhite people in every income group. See Table 55. In fact, in the two highest income groups the white rates are more than double the nonwhite rates. Furthermore, while the white rates increase slightly with increasing income, there is no significant difference between the income groups of the nonwhite people. The only conclusion that can be drawn is that the use of a doctor is not determined by need alone nor by income alone. Social and cultural factors are also highly influential.

Table 55. Rates of use of a doctor by income and color.

Color	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
White	55.5	51.2	52.7	64.3	47.9	.02
Nonwhite	26.2	27.6	24.2	25.0	0.0*	---
P	.001	.001	.001	.05		

*There were no individuals in this cell.

Home Tenure. Table 56 shows that owner households report a slightly higher use of doctors among their members than

Table 56. Rates of use of a doctor by home tenure and age.

Age	Total	Tenure: Owners	Renters	P
Total	46.9	50.3	43.8	.05
Under 6	62.3	65.3	60.6	---
6-13	41.5	61.9	29.4	.001
14-17	22.9	28.6	17.6	---
18-44	43.9	45.2	43.0	---
45-64	50.5	51.4	49.0	---
65-up	56.4	53.0	64.7	---
P	.001	.01	.001	

do renter households. However, the only age group where the difference is significant is between 6 and 13 years of age. Among both owner and renter households the highest rates were reported for the youngest and the oldest age groups.

Table 57 reveals that high income renters report a significantly higher rate of use of a doctor than do high income owners. However, the rates in the other income groups are practically the same. It should also be pointed out that it is only among the renters that the rates increase significantly with increasing income.

Table 57. Rates of use of a doctor by income and home tenure.

		Income				
Tenure	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
Owners	50.3	40.8	49.4	54.8	55.7	---
Renters	43.8	34.2	41.7	81.8	38.5	.001
P	.05	--	.10	.001		

Place of Residence. The various studies are not in agreement as to the differences in the use of doctors by rural and urban people. Whether the lack of consistency is due to differences in the section of the country surveyed, differences in the type of sample, or differences in method is not known. In reporting the number of calls per case, Wilson states that "town people employed a doctor more often than country people, and country people more often than village."[22] The author

22. Isabella C. Wilson, "Sickness and Medical Care Among a Rural Bituminous Coal-Mining Population of Arkansas," Fayetteville, Arkansas: University of Arkansas, Agricultural Experiment Station, Bulletin No. 394, June, 1940, p. 31.

states that "financial ability was a strong controlling factor in this situation."[23] However, the differences to which she is referring amount to only two-tenths of one percent.[24] Hoffer reports only minor residence variations in the average number of home and office calls.[25] Mather, on the other hand, reports more borough disabilities treated by a doctor than rural disabilities.[26] The Committee on the Costs of Medical Care also reports more doctor's calls per thousand population in the cities than in the small towns and rural areas.[27] The general finding of the Mississippi studies was that the nonfarm people used doctors to a greater extent than did the farm people.[28] The only exception to this was in Choctaw County where no difference was found.[29]

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23. Ibid.

24. Compare ibid., p. 31 with Table 20, p. 32.

25. Hoffer, et alii, op. cit., pp. 25-26.

26. Mather, op. cit., p. 3.

27. Selwyn D. Collins, "Frequency and Volume of Doctors' Calls Among Males and Females in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," op. cit., p. 2011.

28. Galloway, Sociology and Rural Life Series, op. cit., No. 1, p. 3; No. 3, p. 3; No. 4, p. 3.

29. Galloway, Sociology and Rural Life Series, op. cit., No. 2, p. 2.

It is readily seen in Table 58 that the rural farm people report the lowest rate of use of a doctor in the present study. The other two residence groups have almost identical rates. This tendency is manifest only in the younger age groups. Beyond the age of 17 years there are no residence differences that are significant. By far the highest rates were reported for urban children under the age of six years.

Table 58. Rates of use of a doctor by place of residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	46.9	38.0	53.0	50.1	.001
Under 6	62.3	40.0	65.6	79.3	.001
6-13	41.5	29.1	44.6	55.6	.01
14-17	22.9	13.0	40.0	26.7	.05
18-44	43.9	42.1	47.9	42.6	--
45-64	50.5	43.5	59.6	50.5	--
65-up	56.4	62.8	66.7	44.7	--
P	.001	.001	--	.001	

When income is considered, as shown in Table 59, it is seen that the differences between the residence groups in the highest income level are not significant. However, in the lower income groups the distribution is significant with the rural nonfarm residents reporting the highest rates of use of a doctor. There is little difference between the rates of the rural farm and the urban residence in those income categories. Furthermore,

it is only in the rural nonfarm group that the rates do not increase with increasing income. The rates for the various income groups among rural nonfarm residents are practically identical.

Table 59. Rates of use of a doctor by income and place of residence.

		Income				
Residence	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
Rural Farm	38.0	32.4	39.5	56.8	37.0	.01
Rural Nonfarm	53.0	52.5	56.9	54.4	35.1	---
Urban	50.1	29.5	42.1	67.0	78.0	.001
P	.001	.01	.01	--		

In discussing some of the attitudes of the people with regard to the use of a doctor, Hoffer has pointed out the desirability of educational programs which will cause the rural people to ". . . realize the advisability of taking care of their health according to approved standards of medical science."[30] The present study is in agreement with this

30. Hoffer, Special Bulletin 352, op. cit., p. 27.

statement by Hoffer, not only as it applies to rural people but also to all groups whose standards are at variance with those of modern medical science.

Health Environment Index. Table 60 shows that the relationship between the use of a doctor and the health environment index is positive and highly significant. The highest rates were reported for children in the highest index groups. In this category children under 6 years of age have a rate of 161.3 compared with 21.2 in the lowest index group. However, as age increases the health environment index becomes less important. In fact, in the oldest age group the trend begins to be reversed, although it is not significant.

Table 60. Rates of use of a doctor by health environment index and age.

		Health Environment Index				
Age	Total	0-10	11-18	19-22	23	P
Total	46.9	28.1	39.9	56.9	74.8	.001
Under 6	62.3	21.2	53.7	82.4	161.3	.001
6-13	41.5	16.5	30.1	64.9	114.3	.001
14-17	22.9	7.1	26.7	25.0	33.3*	---
18-44	43.9	38.5	36.8	48.2	60.0	.01
45-64	50.5	22.9	46.4	60.9	56.7	.01
65-up	56.4	71.4	54.1	58.8	12.5*	---
P	.001	.001	.02	.001	.001	

*Rate is based on less than 10 individuals.

Table 61 shows that there is a consistent and significant increase in the use of a doctor as both income and health environment index increase. However, income differences are

not significant within any health environment index group. On the other hand, within every income group there is a significant increase in the use of a doctor as health environment index increases. This same trend also shows up for the use of a doctor for acute illness alone, but for chronic illness neither the income nor the health environment index differences were significant. These trends point up the tendency for the high socio-economic groups to be more concerned over the less serious illnesses, especially among their children, than are the lower groups. The concern among the lower groups tends to be centered on the more serious and chronic conditions. This tends to account, at least in part, for the lack of difference between these groups in the use of doctors for chronic illness, most of which is found in the older ages.

Table 61. Rates of use of a doctor by income and health environment index.

Health Environment Index	Total	Income				P
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	
Total	46.9	36.1	45.3	62.6	47.9	.001
0-10	28.1	30.0	25.2	25.0	10.0	---
11-18	39.9	40.2	37.7	55.8	43.6	---
19-22	56.9	54.3	54.9	60.4	54.9	---
23	74.8	100.0*	80.6	72.4	62.5*	---
P	.001	.01	.001	.10		

*Rate is based on less than 10 individuals.

It has been shown in an earlier chapter that the higher income groups reported the highest rates of acute illness. Hamilton's explanation of such reporting was that ". . . upper income groups are more likely to be able to recognize illness, and that there is a tendency to report illness only when some medical service is obtained. The upper income parent, having the money to pay and not having so many children, will take a child to the doctor at the slightest indication of illness; whereas, a low income parent will not pay much attention to minor illnesses, particularly since they are unable to seek medical service."[31] The results of this study are in agreement with the statement that the upper income groups are more likely to be able to recognize illness, and they seem to have a greater concern for and awareness of illness, especially the minor ills. However, the data do not entirely support the explanation that illness is reported only when some medical service is obtained. There were 22.5 percent of the cases of acute and chronic illness for which no medical attendant of any kind was used. While only 13.9 percent of the cases in the highest income group were reported to have had no medical attendant, 32.1 percent of the cases in the lowest income group were unattended. The percentages for the highest and the lowest health environment index

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31. C. Horace Hamilton, "Rural Health and Medical Service in North Carolina: Papers and Preliminary Reports of Surveys, 1944-1949," Raleigh: North Carolina State College, Agricultural Experiment Station, Progress Report RS-9, August, 1950, pp. 20-21.

groups were 14.2 and 38.4, respectively. A similar trend was found for the communication-participation index and the education of household heads. While there was no significant difference between residence groups, the white group reported 18.8 percent of the cases unattended, as contrasted with 35.1 percent for the nonwhite group. Therefore, if there is a tendency to report only those illnesses for which medical care was received, it seems to be limited primarily to the higher socioeconomic levels rather than the lower groups. It seems more likely that the higher groups recognize more illness and, consequently, report more, as Hamilton pointed out. However, along with their greater recognition of illness is also a greater recognition of the values of prompt medical attention, and a greater financial ability to pay for such service. The lower groups tend to report less illness, but what they do report is of a relatively more serious nature. This tendency is further evidenced by the fact that of the illnesses which they report there tends to be a higher proportion which are fully disabling than are those of the higher groups. The reasons for not seeking medical attention are partly financial and partly social-psychological. Larson and Hay have pointed out that it would be a mistake to infer that to increase the income of the low income group or to provide health services without cost or at a reduced cost would bring the utilization level and pattern of this group up to that of the higher income groups.[32] Loomis

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32. Olaf F. Larson and Donald G. Hay, "Hypotheses for Sociological Research in the Field of Rural Health," Rural Sociology, Vol. 16, No. 3, September, 1951, p. 234.

has aptly stated that "the standards of living--i.e., those goods and services which people desire--and the levels of living--i.e., those goods and services which people have and use--are not determined entirely by money income."[33] He states further that "health conditions are a part of the entire cultural setting and hence, are affected by it. Money income is important but not determinant."[34]

In the report of the Michigan State-Wide Health Study, Hoffer stated that 43.3 percent of the persons with one or more untreated symptoms reported that they felt they should have seen a doctor, but they had not done so.[35] While the single reason most frequently given for not seeing a doctor was "too expensive," this constituted only 26.2 percent of the reasons given. There were 73.8 percent who gave some reason other than the expense involved. Such reasons as "lack of time," "neglect," "symptoms not thought serious," "believe doctor unable to help" indicate something of the lack of concern over symptoms which from a medical point of view needed attention, and which they themselves admitted should have been treated. Hoffer states that the findings "might indicate a rather widespread need for the dissemination of health and hygiene education."[36]

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33. Charles P. Loomis, Foreword in Charles R. Hoffer and Clarence Jane, "Health Needs and Health Care in Two Selected Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 377, June, 1952, p. 2.

34. Ibid.

35. Hoffer, et alii, op. cit., p. 28.

36. Ibid., p. 29.

Communication-Participation Index. The use of a doctor showed a general increase with increasing communication-participation index up to the two top index groups where the rates were practically the same. See Table 62. This trend exists primarily in the lower ages.

Table 62. Rates of use of a doctor by communication-participation index and age.

	Communication-Participation Index					
Age	Total	0-3	4-7	8-13	14-25	P
Total	46.9	31.6	42.2	55.1	53.0	.001
Under 6	62.3	20.6	55.4	91.6	59.1	.001
6-13	41.5	18.4	20.2	53.4	94.4	.001
14-17	22.9	35.7	19.6	19.3	31.8	---
18-44	43.9	39.3	44.7	46.8	37.2	---
45-64	50.5	16.7	45.4	59.5	58.8	.01
65-up	56.4	73.9	55.8	51.4	43.8	---
P	.001	.001	.001	.001	.01	

Within income groups the index trends are not consistent. See Table 63. Those persons in the low index group have the lowest rate, but there is not a consistent increase with increasing index within income groups. On the other hand, the rates do increase with increasing income within index groups. The communication-participation index appears to have some influence in the use of a doctor, but family income is obviously more influential.

Table 63. Rates of use of a doctor by income and communication-participation index.

Communication-Participation Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
0-3	31.6	32.6	28.4	45.0	18.2	---
4-7	42.2	35.3	42.0	65.4	42.1	.01
8-13	55.1	42.7	52.2	67.0	53.7	.02
14-25	53.0	42.9	44.6	57.4	77.8*	---
P	.001	--	.02	--		

*Rate is based on less than 10 individuals.

Size of Household. As shown in Table 64 there is an inverse relationship between the use of a doctor and size of household. The major difference is between those with 7 or more members and those with less than 7 members. The latter reported less than half the amount of use of either of the other two. As would be expected, individuals in households with 1 to 2 members reported a greater amount of use of a doctor for chronic illness than the other two. This tendency is accounted for by the greater proportion of older people in these households. On the other hand, individuals in households with 3 to 6 members reported a higher rate of use of a doctor for acute illness than did either of the others. This trend is a reflection of the higher socio-economic status of this group.

Table 64. Rates of use of a doctor by size of household and age.

		Size of Household			
Age	Total	1-2	3-6	7-up	P
Total	46.9	56.1	50.9	25.0	.001
Under 6	62.3	0.0*	75.5	27.9	.001**
6-13	41.5	50.0*	59.0	12.4	.001**
14-17	22.9	40.0*	27.6	13.5	.10**
18-44	43.9	54.8	42.6	35.2	.05
45-64	50.5	54.6	50.7	36.4	---
65-up	56.4	69.8	50.8	33.3*	---
P	.001	--	.001	.01	

*Rate is based on less than 10 individuals.
**Households with 1 to 2 members and those with 3 to 6 members were combined for this computation of chi square.

Table 65 reveals that members of the largest households report the lowest use of a doctor in every income group. Individuals in households with 3 to 6 members are the only ones whose use of a doctor increases with increasing family income. There is no significant difference in the income groups of the other household sizes.

Table 65. Rates of use of a doctor by income and size of household.

		Income				
Size of Household	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
1-2	56.1	49.1	55.9	68.5	30.0	---
3-6	50.9	37.6	49.5	65.7	49.1	.001
7-up	25.0	24.1	21.4	29.8	50.0	---
P	.001	.01	.001	.02		

Education of Household Heads. Two Pennsylvania studies considered the influence of the education of the family head upon the percentage of illness attended by a doctor.[37]

Tables 66 and 67 reveal a pronounced increase in the use of a doctor by household members as education of both the male and the female head increases. The rates are distributed into three rather distinct levels, namely, the college, high school, and public school level. It is obvious that the education of household heads has an influence on the use which the various members of the family make of a doctor, at least

Table 66. Rates of use of a doctor by education of male head and age.

		Education of Male Head					
Age	Total	Under 4	4-8	9-12	1 college-up	Others*	P
Total	46.9	37.8	35.4	55.2	76.5	35.3	.001
Under 6	62.3	31.0	37.1	84.6	134.8	22.5	.001
6-13	41.5	21.2	24.5	57.6	128.5	8.9	.001
14-17	22.9	23.5	14.5	34.6	30.8	24.2	---
18-44	43.9	44.6	37.7	45.1	55.5	40.7	---
45-64	50.5	30.8	45.9	57.7	65.1	45.6	.10
65-up	56.4	80.0	51.9	62.5	73.3	38.5	---
P	.001	.02	.01	.001	.001		

*This category includes no answer, no male head, and male head not living.

37. Connor and Mather, op. cit., p. 16; Mather, op. cit., pp. 12 and 32.

Table 67. Rates of use of a doctor by education of female head and age.

Age	Total	Education of Female Head: Under 4	4-8	9-12	1 college-up	Others*	P
Total	46.9	27.1	35.8	52.1	68.6	40.6	.001
Under 6	62.3	13.3	32.8	79.4	114.3	0.0**	.001
6-13	41.5	12.5	16.8	58.9	107.4	23.1	.001
14-17	22.9	25.0**	24.0	20.0	25.0	22.2**	---
18-44	43.9	22.0	40.5	43.4	58.2	40.6	.01
45-64	50.5	22.6	50.0	49.5	62.5	47.6	.10
65-up	56.4	72.2	48.3	63.6	35.3	60.0	---
P	.001	.01	.001	.001	.001		

*This category includes no answer, no female head, and female head not living.
**Rate is based on less than 10 individuals.

in the sample under study here. This tendency is especially pronounced in the younger age groups. Among children whose household heads have one or more years of college the rates are well over 100. However, as age increases the influence of education decreases. One would assume this difference is due to a generally higher economic level of the more highly educated people which would lessen the economic barrier. However, when income is held constant, as shown in Tables 68 and 69, the rates increase significantly as education of household head increases in every income group except the lowest. However, when education is held constant, income differences are of little consequence.

Table 68. Rates of use of a doctor by income and by education of male household head.

Education of Male Head	Total	Income Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
Under 4	37.8	38.9	35.7	75.0*	27.3	---
4-8	35.4	33.5	34.7	44.9	15.8	---
9-12	55.2	46.8	55.3	58.9	53.1	---
1 college-up	76.5	50.0*	75.9	78.4	61.5	---
Others**	35.3	32.9	33.5	31.0	69.2	
P	.001	--	.001	.01		

*Rate is based on less than 10 individuals.
**This category includes no answer, no male head, and male head not living.

Table 69. Rates of use of a doctor by income and by education of female household head.

Education of Female head	Total	Income Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	46.9	36.1	45.3	62.6	47.9	.001
Under 4	27.1	36.2	16.7	28.6*	9.1	.10
4-8	35.8	31.7	34.2	44.4	61.4	--
9-12	52.1	38.7	52.7	58.4	52.4	.10
1 college-up	68.6	60.0	60.6	75.8	50.0*	--
Others**	40.6	45.1	42.3	37.5	22.2	
P	.001	--	.001	.01		

*Rate is based on less than 10 individuals.
**This category includes no answer, no female head, and female head not living.

Kaufman has pointed out that "the advances of medical science have far outdistanced the utilization of this knowledge in the improvement of the health and well-being of the average person."[38] It appears quite evident, as would be expected, that this lack of utilization of knowledge is concentrated among persons whose household heads have the lowest education, as well as those situated in the lowest social and economic levels generally. In addition to the fact that these people are less likely to have access to such information, this tendency is due to the lack of internalization of the standards of health and health care which have accompanied the advance in medical knowledge.

Summary and Conclusions. It has been pointed out in this chapter that the development of scientific medicine is relatively recent. Furthermore, while considerable advances have been made, the standards of health and health care which have accompanied the rise of modern medicine have not been accepted without reservation by all of the people.

The findings of this study have shown that the medical doctor (both the specialist and the general practitioner) and to a lesser extent the dentist were the medical attendants most often used by the sample population. This chapter has been devoted to the use of the doctor. The number of calls per illness was not of primary concern in the analysis. The relationship of the use of a doctor to the various socio-economic indices used in the study is summarized below.

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38. Kaufman, Research Bulletin 400, op. cit., p. 5.

The rate of use of a doctor was 46.9 cases per hundred population during the six months prior to the survey. On the whole, the young and the old had the highest rates of use of a doctor, because there is a tendency to use a doctor for acute illness in the younger ages and for chronic illness in the older ages. Of course, these trends were also influenced by the use of a doctor for purposes other than acute or chronic illness, such as eye care and diagnostic care. An examination of the data from the standpoint of color showed that the rates of the white people were considerably higher than those of the nonwhite people in every income category. However, the difference diminished with increasing age.

Individuals in owner households reported slightly more use of a doctor than did members of renter households, but this tendency was significant only in the age group 6 to 13 years. On the other hand, renters with the highest family incomes reported significantly more use than did owners in the same income category. Within the other income groups, the rates were about the same. For all places of residence the rural farm people reported the lowest rate of use. However, this tendency was manifest only in the younger ages. Beyond the age of 17 years, there were no significant residence differences. There was an inverse relationship between the use of a doctor and size of household. The primary difference was between those persons with 7 or more members per household and those with less than 7 members per household.

There were definite increases in the rate of use of a doctor with increasing income, health environment index, communication-participation index, and education of household heads. However, this tendency, like those noted above, was found only in the younger ages. In every instance, it became less pronounced as age increased. This trend seems to be a reflection of the greater concern of the higher socio-economic groups over the illnesses of their children than is found among the lower groups. It also appears to be a reflection of the tendency for the lower groups to overlook many of the less serious illnesses and to be more concerned over the more serious and chronic conditions. Since such conditions are more likely to be found among adults, the rates of use of a doctor by the lower groups tend to more nearly approach those of the higher groups.

The data of this study tend to illustrate the statement by Sargent that ". . . one does not respond to a situation per se, but to the situation as he perceives, defines, experiences, and interprets it. One behaves in a way that seems to him appropriate according to how he 'sizes up' the situation."[39] Whether a person seeks the services of a physician is not determined solely by the presence or absence of illness from a medical point of view. The individual's decision and his consequent action are determined on the basis of how he perceives

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39. S. Stansfeld Sargent, Social Psychology: An Integrative Interpretation, New York: The Ronald Press Company, 1950, p. 279.

the situation. From his point of view, he may not even be sick. Furthermore, even if he does define the situation as one in which he is ill, for him, a doctor may not be a possible means to the end of relieving or curing that illness. In addition to economic factors involving the relative cost of the service and the priority of other goods and services in his mind, there are other factors which are also influential in his decision. These factors are based on the social-psychological and cultural backgrounds of the individual concerned. These factors not only include the attitudes, fears, and customs which prohibit the use of a doctor in a given situation, but also the lack of knowledge and understanding as to when and for what a doctor should be used. The indication is that many people, especially those in the lower socio-economic levels, do not have access to such information. At least, it appears that they have not internalized the health standards which such information implies.

CHAPTER V

USE OF A HOSPITAL

For many years hospitals were dreary places which offered little more than custodial care and routine treatment to the poor.[1] They were used almost exclusively for surgical cases or severe accidents. Due to a comparatively high rate of mortality of such cases, many considered the hospital as a place to go to die. Hospitalization was sought only as a last resort.

With the advancement of scientific medical knowledge, many improvements have been made in the field of hospital care. The hospital, which was once little more than an auxiliary to medical practice, is becoming the center of medical service.[2] It not only has been gaining more and more respect as a place for relief of pain and the cure of illness, but also as a medium for diagnosis of illness and for education and training. However, the full potential of the hospital remains to be realized, especially in the area of preventive medicine.[3]

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1. Committee on Medicine and the Changing Order of The New York Academy of Medicine, Medicine in the Changing Order, New York: The Commonwealth Fund, 1947, p. 163.

2. Ibid., p. 164.

3. Ibid.

The use of a hospital has been variously reported in terms of the average number of days in a hospital per person hospitalized, per hundred population, or per illness; the percentage of families with one or more persons hospitalized; the proportion of individuals using a hospital one or more times; the rate of hospital admissions per hundred population; and the percentage of illnesses hospitalized during a given time.

The present analysis deals primarily with the rate of hospital admissions per hundred population. However, with the exception of two cases, this rate corresponds with the percentage of cases of acute and chronic illnesses which were hospitalized.

The results of studies of the percentage of people using a hospital during the course of a year have ranged from 3 percent in rural Missouri to 6.6 percent (3.3 percent for 6 months) in Michigan.[4] Other reports show the percentage of cases of

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4. Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 30; Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series No. 2, April, 1946, p. 13; C. Rufus Rorem, "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on the Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 9; Robert E. Galloway and Harold F. Kaufman, "Use of Hospitals by Rural People in Four Mississippi Counties," State College: Mississippi State College, Agricultural Experiment Station, Circular 174, July, 1952, p. 5; Selz C. Mayo and Kie Sebastian Fullerton, "Medical Care in Greene County," Raleigh: North Carolina State College, Agricultural Experiment Station, Bulletin 363, November, 1948, p. 12.

illness which were hospitalized to be slightly higher, ranging from 7.5 percent in one study to 14 percent in another study.[5] Some of the differences in the results of these studies may be due to how recently the studies were made, as well as to differences in location.

The national study of the Committee on the Costs of Medical Care from 1928 to 1931 reported a rate of 61.6 hospital cases per 1000 population (6.2 per hundred) per year.[6] The nation-wide survey conducted by the National Opinion Research Center for the Health Information Foundation in 1953 showed an admission rate of 12 cases per hundred persons.[7] If these surveys can be assumed to be representative of the national picture for those years, as apparently they are, the rate of hospitalization has doubled in the last 22 years.

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5. Selwyn D. Collins, "Frequency and Volume of Hospital Care for Specific Diseases in Relation to All Illnesses Among 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Reprint No. 2405 from the Public Health Reports, Vol. 57, No. 38 and No. 39, September, 1942, p. 48; Marie Mason, "Rural Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949, p. 22; Ruth M. Connor and William G. Mather, "The Use of Health Services in Two Northern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 517, July, 1949, p. 6.

6. Collins, Reprint No. 2405, ibid.

7. Odin W. Anderson, "Voluntary Health Insurance and Utilization of Personal Health Services in the United States, July 1952 through June 1953," National Consumer Survey of Medical Costs and Voluntary Health Insurance, New York: Health Information Foundation, Summary Report No. 3, 1954, p. 5.

The results of the present study show a hospital admission rate of 5.5 during the six-month period. The yearly rate would be 11 cases per hundred population, which is almost identical with the rate reported in the N.O.R.C. study. Most of the hospitalization was for acute illness. The rate for acute illness was 4.1, contrasted with 1.2 for chronic illness.

Age and Sex. The studies are not in agreement concerning the relative influence of age upon hospitalization rates. This discrepancy seems to be due in part to the differences in the methods of determining use, and in part to differences in the locality of the study. There seems to be general agreement that the average number of days in a hospital increases with age.[8] In terms of the percentage of persons using a hospital, Kaufman reports that 2 percent of the persons under 15 years of age used a hospital during the year, contrasted with 3 to 4 percent of the individuals above 15 years.[9] However, no tests of significance were reported. It is doubtful that the differences are significant. Mayo reported that the highest percentage of people using a hospital was between 30 and 44 years of age.[10] The Committee on the Costs of Medical Care found relatively little age variation in the hospital admission rates.[11]

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8. Kaufman, op. cit., p. 29; Collins, Reprint No. 2405, op. cit., p. 8; Galloway and Kaufman, op. cit., p. 8.

9. Kaufman, ibid., p. 30.

10. Mayo, op. cit., p. 13.

11. Collins, Reprint No. 2405, op. cit.

The results of the Wake County study are shown in Table 70. Although some variations in the rates of hospitalization appear, the differences as a whole are not significant. The distribution of hospitalization rates for acute illness is only on the borderline of significance. The highest rates are reported for children under 6 years of age and for adults 18 to 64 years of age. There is no significant difference between the hospitalization rates for chronic illness.

Table 70. Rates of hospitalization by type of illness and age.

		Type of Illness	
Age	Total	Acute	Chronic
Total*	5.5	4.1	1.2
Under 6	5.7	5.4	0.3
6-13	2.5	2.1	0.4
14-17	4.2	2.1	2.1
18-44	6.2	5.3	0.7
45-64	6.8	3.7	3.2
65-up	3.4	1.7	1.7
P	--	.10	**

*There were two cases of hospitalization which were classed neither as cute nor chronic illness.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Females report a significantly higher rate of hospitalization than do males. As shown in Table 71, this tendency is found only in the age group 18 to 44 years. There is no difference between the sexes at other ages. Further observation of the data reveals that this higher rate shows up only

Table 71. Rates of hospitalization by sex and age.

Age	Total	Sex: Male	Sex: Female	P
Total 18-up	6.1	4.6	7.6	.05
18-44	6.2	3.4	8.7	.01
45-64	6.8	7.3	6.4	--
65-up	3.4	3.5	3.3	--
P	--	.10	--	

for acute illness. The hospitalization rates for chronic illness are practically identical. Although the specific causes of hospitalization were not analyzed, this higher rate for women for acute illness is undoubtedly due to illness associated with childbearing. The studies which have treated the sex factor seem to agree that females in the childbearing ages make greater use of a hospital than do males.[12] Both the Committee on the Costs of Medical Care and the Eastern Baltimore study showed that there is relatively little difference between male and female hospital admission rates when the comparison excludes female genital and puerperal diagnoses.[13]

Income. Studies which have been made on the relationship of income to the use of hospitals have shown conflicting

12. Ibid.; Galloway and Kaufman, op. cit.; Mayo, op. cit.

13. Collins, ibid., p. 14; Jean Downes, "Causes of Illness Among Males and Females," The Milbank Memorial Fund Quarterly, Vol. XXVIII, No. 4, October, 1950, pp. 412 and 415.

results. For example, Meier and Lively report that the influence of income on the proportion of families with one or more members using a hospital was not obvious.[14] Marie Mason also reports no consistent income differences in the use of a hospital.[15] The nation-wide study conducted by N.O.R.C. reports an admission rate of 12 cases per hundred persons in every income group, except one in which the rate was 11.[16] However, those studies which have found income differences report from two to three times as much use by the high income groups as by the low income groups.[17] Galloway and Kaufman found a decided increase in the use of a hospital as level of living increased.[18] They attribute this difference to a recognition of the value of such care as well as to financial ability to pay.

Table 72 shows that, for the present study, the major difference in rates of hospitalization where income is concerned is between those under $1,500 and those with $1,500 or more.

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14. Iola Meier and C. E. Lively, "Family Health Practices in Dallas County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Bulletin 369, June, 1943, p. 14.

15. Mason, op. cit., p. 27.

16. Anderson, op. cit., Table 1.

17. Harold F. Kaufman, "Extent of Illness and Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Progress Report No. 5, April, 1945, p. 9; Kaufman, Research Bulletin 400, op. cit., p. 24; Rorem, op. cit., pp. 8-9.

18. Galloway and Kaufman, op. cit., p. 7.

Table 72. Rates of hospitalization by type of illness and income.

Income	Total	Type of Illness: Acute	Chronic
Total*	5.5	4.1	1.2
Under $1,500	4.1	2.7	1.2
$1,500-3,999	6.0	4.8	1.1
$4,000-up	6.2	4.5	1.7
Unknown	4.9	4.2	0.7
P	--**	--***	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.
**When the two upper income groups are combined the P value is .10.
***When the two upper income groups are combined the P value is .05.

This same trend shows up for acute illness, but there is no significant difference in the rates of hospitalization for chronic illness. This relatively low association between income and rates of hospitalization can be explained, at least in part, in the following way. An affliction serious enough (from a medical point of view) to require hospitalization is not as readily overlooked as a minor illness. Therefore, the individual is more likely to consult a physician for such cases. On the other hand, the decision to go to a hospital is influenced largely by the attending physician. This view has been clearly expressed by Galloway and Kaufman in the following statement: "The attitude and practices of physicians have long been regarded as a key factor in hospital use. This is true as a person

seldom goes to a hospital direct but rather enters on the advice and introduction of his physician."[19] Furthermore, Hoffer pointed out in the Michigan study that only a small proportion of those who were advised by their doctor to go to the hospital did not go.[20] On the other hand, the proportion who themselves felt that they should see a doctor but did not do so was considerably larger.[21] Of course, the doctor's decision to recommend hospitalization is influenced to some extent by the economic circumstances of the patient and his family, in addition to other factors which may cause undue hardship or inconvenience.

Color. Galloway and Kaufman report that in Mississippi the percentage of Negroes entering a hospital during the year was smaller than the percentage of white people; however, the average length of stay for Negroes was longer.[22] The authors state that the longer stay of the Negroes indicates that this group enters the hospital only for the more serious kinds of illness. The feeling was also expressed that more frequent hospitalization might raise the level of health without necessarily increasing the amount of hospitalization.[23]

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19. Galloway and Kaufman, op. cit., p. 10.

20. Hoffer indicated that 17.5 percent of the sample population with positive symptoms were advised by a doctor to go to the hospital and that 14.6 actually went. Hoffer, op. cit., p. 29.

21. Ibid., p. 28.

22. Galloway and Kaufman, op. cit.

23. Ibid.

Mayo also found a higher use of hospitals by the white people than by the Negroes.[24] He indicates that, even though the Negroes had larger families, the percentage of white families with one or more members hospitalized during the year was over twice as high as the percentage of Negro families.[25] However, the author reports that, while a greater proportion of females was hospitalized than males, the percentage of females hospitalized was the same for the white and Negro groups.[26]

Table 73 shows that the white people report a slightly higher rate of hospitalization than the nonwhite. The difference is only on the borderline of significance. This tendency is evident for acute but not for chronic illness. When residence was considered, it was found that the only area in which the white group has higher rates than the nonwhite is in the rural farm area. Even there the P value is only .10. However, the median length of stay in the rural farm areas is 8.1 days for the white group compared with 14.5 for the nonwhite group. The ratio in the urban area is 6.9 to 11.0, and in the rural nonfarm it is 6.7 to 12.2, respectively. The median length of confinement in a hospital is 7.0 days for the total white group and 12.1 days for the nonwhite group.

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24. Mayo, op. cit., p. 11.

25. Ibid.

26. Ibid., p. 13.

Table 73. Rates of hospitalization by type of illness and color.

Color	Total	Type of Illness	
		Acute	Chronic
Total*	5.5	4.1	1.2
White	6.1	4.7	1.3
Nonwhite	4.0	2.7	1.1
P	.10	.05	---

*There were two cases of hospitalization which were classed neither as cute nor chronic illness.

It has been stated earlier that the nonwhite people tend to report only the more serious ailments and to ignore the minor ills. Even when an illness is recognized, the nonwhite people tend to put off seeking medical attention to a greater degree than the white people. No medical attendant was sought in 35.1 percent of the acute and chronic cases of illness among the nonwhite group compared with 18.8 percent of the cases among the white group. The doctor, in turn, tends to avoid hospitalization if possible, when it would work a financial hardship on the patient. These delays tend to increase the length of time necessary for complete cure.

Home Tenure. Table 74 reveals no difference in the rates of hospitalization for the individuals in owner households and renter households. The rates for both chronic and acute illness are practically identical. There is also no significant difference between the tenure groups in any place of residence.

Table 74. Rates of hospitalization by type of illness and home tenure.

Tenure	Total	Type of Illness: Acute	Chronic
Total*	5.5	4.1	1.2
Owners	5.7	4.1	1.6
Renters	5.3	4.2	0.9
P	--	--	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.

Place of Residence. In the Michigan study, Hoffer found that the proportion of families with one or more members hospitalized within "the last year or two" was greater in the rural than the urban areas.[27] On the other hand, studies in Pennsylvania report that the percentage of cases of illness which were hospitalized was higher in the boroughs than in the rural areas.[28] The Mississippi report shows that a smaller percentage of farm people were hospitalized than nonfarm, but that the average number of days hospitalized was greater for the farm people.[29] The authors explain this smaller use by farm people in terms of their lower levels of education and

27. Hoffer, op. cit., p. 52.

28. Connor and Mather, op. cit.; W. G. Mather, "The Use of Health Services in Two Southern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 504, July, 1948, p. 4.

29. Galloway and Kaufman, op. cit., p. 8.

socio-economic status, and the relative value which they place on hospital and home treatment.[30]

Table 75 shows that the rates of hospitalization of the rural nonfarm and urban residents are more than double those of the rural farm people. This higher usage shows up for the total hospitalization rates and hospitalization for acute, but not for chronic illness. However, the median number of days in the hospital was slightly higher for the rural farm residents than for the rural nonfarm or urban people. The respective medians were 9.7 for the rural farm, 7.5 for the rural nonfarm, and 7.7 for the urban people.

Table 75. Rates of hospitalization by type of illness and place of residence.

		Type of Illness	
Residence	Total	Acute	Chronic
Total*	5.5	4.1	1.2
Rural Farm	3.0	2.0	1.0
Rural Nonfarm	7.2	5.5	1.3
Urban	6.3	5.0	1.3
P	.01	.01	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.

Several factors help to explain this difference. In the first place, the rural farm residents have lower incomes

30. Ibid.

than either of the other two groups. They are also less likely to carry any kind of health insurance. The economic barrier, therefore, is a factor which tends to delay their going to a hospital. Rural persons tend to be more highly regulated by the seasons of the year than the urban or rural nonfarm. Hence, they will often put off going to the hospital during especially busy seasons. Furthermore, going to a hospital does not seem to be as much a part of the traditions of rural people as it is of urban people. Another factor, and one which has been suggested by Hoffer, is that "there may be more resistance among rural people to the use of a hospital until the ailment becomes serious."[31] These explanations and others need to be studied specifically and in detail to determine the relative influence and importance of each.

Health Environment Index. It is shown in Table 76 that hospitalization rates increase with increasing health environment index. The rates increase from 2.0 in the lowest index group to 9.4 in the highest. The two middle groups have about equal rates. This same trend was found for acute illness, but there is no significant difference in the rates for chronic illness.

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31. Hoffer, op. cit., p. 30.

Table 76. Rates of hospitalization by type of illness and health environment index.

Health Environment Index	Total	Type of Illness: Acute	Type of Illness: Chronic
Total*	5.5	4.1	1.2
0-10	2.0	1.3	0.7
11-18	6.3	4.6	1.6
19-22	5.4	4.4	1.0
23	9.4	7.3	1.7
P	.001	.01	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.

The influence of cultural factors is brought out in Table 77 even more clearly. When health environment index was held constant, there was no significant difference between the income groups. However, the rates tend to increase with increasing health environment index within the income groups, especially the highest income group. Thus, it would seem, at least for the group under study here, that both cultural and economic factors have an influence in the rates of hospitalization.

Table 77. Rates of hospitalization by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.5	4.1	6.0	6.2	4.9	---
0-10	2.0	2.3	1.7	0.0	0.0	**
11-18	6.3	6.7	6.0	4.7	9.1	---
19-22	5.4	4.3	6.8	4.6	2.8	---
23	9.4	0.0*	9.7	9.9	0.0*	**
P	.001	***	.10	.05		

*Rate is based on less than 10 individuals.
**The expected frequency was not large enough in the lowest income cell to warrant computing chi square.
***The expected frequencies were not large enough in certain cells to warrant computing chi square. However, when all index groups above 10 are combined the resulting rate is significantly higher than the rate for the lowest index group. The P value is .05.

Various studies have illustrated the influence of cultural tradition in the use of hospitals. For example, many of the Hopi Indians of Arizona have refused to be hospitalized for childbirth because the hospital staff does not observe the customary taboos of the people.[32] But such beliefs and practices are not limited to the so-called primitive peoples. In comparing the use of medical services (including hospitals) in Missouri with the Lee and Jones professional standards of medical care, Kaufman concluded that to bring the rates of the Missouri

32. Sheldon G. Lowry, "The Major Rites of Passage of the Hopi Indians," An unpublished paper based on secondary sources, 1948, p. 1.

population up to these standards "would require a revolutionary change in current habits and practices with respect to medical service."[33] He stated further that the people must not only have the purchasing power, but they must also realize the need for such services.[34] Meier and Lively have indicated that some people express marked fear of hospitals and indicate that they "would rather die at home than go to one."[35]

It should be indicated that the trends spoken of here were found for all illnesses combined and for acute illness, but not for chronic illness. Some chronic illnesses are of such a serious nature that they demand hospitalization even in the face of financial handicap or other hardships. In such cases, some families must rely on public welfare or other forms of charity in order to overcome the economic barrier.

Communication-Participation Index. Table 78 reveals that, although the rates appear to be slightly higher in the higher index groups, there is no significant relationship between rates of hospitalization and communication-participation index. There is no significant difference in the rates for either acute or chronic illness.

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33. Kaufman, op. cit., p. 46.

34. Ibid., p. 47.

35. For a discussion of the basis for such fears see: Meier and Lively, op. cit., p. 14.

Table 78. Rates of hospitalization by type of illness and communication-participation index.

Communication-Participation Index	Total	Type of Illness: Acute	Type of Illness: Chronic
Total*	5.5	4.1	1.2
0-3	3.5	2.2	1.3
4-7	4.7	3.6	0.9
8-13	6.7	5.1	1.5
14-25	5.9	4.8	1.1
P	--	--	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.

Size of Household. It is seen in Table 79 that the households with less than 7 members report more hospitalization than those with 7 or more members. However, the trend is not highly significant. This trend is visible for hospitalization for all causes as well as for acute illness. The slight difference shown for chronic illness is not significant.

Table 79. Rates of hospitalization by type of illness and size of household.

Size of Household	Total	Type of Illness: Acute	Type of Illness: Chronic
Total*	5.5	4.1	1.2
1-2	6.8	4.8	1.7
3-6	5.8	4.5	1.2
7-up	3.2	2.5	0.7
P	.10**	--***	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.
**When the two smaller household groups, which have nearly the same rates, are combined the P value is .05.
***When the two smaller household groups, which have almost identical rates, are combined the P value is .10.

Education of Household Heads. Mason reports no significant education differences in terms of the percentage of persons hospitalized.[36] However, the Mississippi study found a high positive association between the use of a hospital for childbirth and the education of the mother.[37]

Tables 80 and 81 reveal a tendency for hospitalization rates to increase with increasing education of the household heads, especially for acute illness. The relationship is not expecially pronounced. The major difference is between those with less than a high school education and those with high school or more.

36. Mason, op. cit., p. 26.

37. Galloway and Kaufman, op. cit.

Table 80. Rates of hospitalization by type of illness and education of male household head.

Education of Male Head	Total	Type of Illness: Acute	Type of Illness: Chronic
Total*	5.5	4.1	1.2
Under 4	4.4	2.7	1.3
4-8	3.5	2.7	0.8
9-12	7.5	6.4	1.2
1-3 college	6.7	5.5	1.2
4 college-up	6.6	4.2	1.8
Others**	5.4	3.8	1.7
P	.05	.05	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.
**This category includes no answer, no male head, and male head not living.

Table 81. Rates of hospitalization by type of illness and education of female household head.

Education of Female Head	Total	Type of Illness: Acute	Type of Illness: Chronic
Total*	5.5	4.1	1.2
Under 4	3.9	2.3	1.6
4-8	4.2	2.6	1.5
9-12	6.6	5.7	0.9
1-3 college	4.7	4.2	0.5
4 college-up	7.8	6.4	0.7
Others**	5.8	3.2	2.6
P	--	.05	--

*There were two cases of hospitalization which were classed neither as acute nor chronic illness.
**This category includes no answer, no female head, and female head not living.

Summary and Conclusions. This chapter has shown that the rate of hospitalization for the sample population of Wake County during the six-month period was 5.5 cases per hundred population. Although age differences were not significant, females reported a significantly higher rate of hospitalization than did males. This tendency, however, was found only in the age group 18 to 44 years. White people reported slightly higher rates than did nonwhite people. On the other hand, the nonwhite group reported a higher median days of confinement to a hospital. The rural farm residents reported a rate of hospitalization which was less than half the rates of the rural nonfarm and urban people. However, the median length of stay for the rural nonfarm people was considerably above that for the other two residence groups. The largest households reported the lowest rates of hospitalization. On the other hand, there was no difference between the rates of owners and renters. It should also be pointed out that there were no significant differences in the rates of hospitalization for chronic illness for any of the socio-economic groups tested.

There was some evidence of income differences in the rates of hospitalization, but this showed up primarily for acute illness cases. The major break was at the $1,500 level. There was a positive relationship between hospitalization rates and health environment index. The association was highly significant. There was also a tendency for the rates to be higher in those households whose heads had the highest education.

However, the communication-participation index showed no significant relationship to rates of hospital admission.

The results of this study, along with the findings of other studies, indicate that several factors influence the use of hospitals. Among those factors are: medical need, the proportion of cases attended by a physician, ability to pay for such service, and a group of socio-cultural factors such as fears, superstitions, attitudes, and traditions. The data suggest the probability that greater emphasis upon health education and public relations may induce more effective use of hospitals.

The findings of the study, especially those on color and residence, indicate that a more accurate picture of the use of hospitals may be had by the combined approach of rates of admission and the average length of confinement.

CHAPTER VI

DENTAL CARE

E. C. Kirk has stated that "modern dentistry is a recent development. Extraction was practically the only cure for toothache until the latter part of the eighteenth century. The entire development of modern dentistry occurred in the nineteenth century, and mainly in the latter half of that period."[1] During this time the standards of good dental care changed considerably. The new norms include professional care of the teeth twice each year, and involve daily home habits such as cleaning the teeth after each meal and massaging the gums daily. The norms are also directed toward certain dietary measures to insure sound development of the teeth.[2] Along with a well-balanced diet, an adequate intake of calcium and the avoidance of excessive amounts of sweets are two items particularly stressed. The former is especially aimed at prospective mothers whose calcium supply must be shared with the developing fetus.

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1. E. C. Kirk, "Dentistry," Encyclopaedia Britannica, 13th Edition, Vol. 8, pp. 50-54 in Selwyn D. Collins, "Frequency of Dental Services Among 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 54, No. 16, April 21, 1939, p. 629.

2. The relationship of diet to dental health is briefly discussed in the following article: "Basic Rules Apply to Dental Health for All Ages," Skilled Techniques in Building Group Action, New York: The Education Service of J. Walter Thompson Co., Vol. 4, No. 1, May, 1953, p. 2.

Studies in recent years have shown that extractions still hold a high place among the various kinds of dental care used by the people. For example, Almack has demonstrated in a study in Missouri that "more persons visited a dentist for the purpose of having teeth extracted than for any other type of service."[3] Meier and Lively, in another Missouri study, have pointed out that most of the dental care received consisted of extractions.[4] Hoffer has indicated that in Michigan some individuals went to a dentist regularly every year, but that there were others who would not go to a dentist except to have a tooth extracted.[5] The National Health Survey report on dental care in Detroit, Michigan, indicates that the dental care received was largely for extractions and fillings.[6] It also indicates that there was a slightly higher percentage of extractions in the lower socio-economic groups, but that the reverse was true for all other dental treatments.

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3. Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, p. 30.

4. Iola Meier and C. E. Lively, "Family Health Practices in Dallas County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Bulletin 369, June, 1943, p. 13.

5. Charles R. Hoffer, "Health and Health Services for Michigan Farm Families," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 352, September, 1948, p. 35.

6. Rollo H. Britten, "A Study of Dental Care in Detroit," National Health Survey, Public Health Reports, Vol. 53, No. 12, March 25, 1938, p. 455.

Table 82 reveals that extractions also hold a high place among the residents of Wake County, North Carolina, in relation to other kinds of dental care. In fact, other kinds of dental care received by the nonwhite people were almost nonexistent. Even the rate of extractions was less than half that of the white group. Among white persons, fillings ranked first in importance, and extractions and "teeth cleaned" were tied for second. None of the nonwhite population reported having had their teeth cleaned during the six months prior to the survey, and only three-tenths of one percent reported having received fillings.

Table 82. Rates of dental care by color and type of care.

		Color	
Type of Care	Total	White	Nonwhite
Total	16.2	21.5	3.5
Teeth filled	6.6	8.3	.3
Extractions	3.3	4.7	2.1
Teeth Cleaned	3.3	4.6	.0
Dentures	1.2	1.5	.5
Orthodontic	.8	1.0	.3
Diseased teeth	.4	.4	.3
Check-up	.3	.5	.0
Other dental	.3	.5	.0

The Committee on the Costs of Medical Care states that the annual rate for dental services among the 9000 families

which it studied was 269 per 1000 population (26.9 per hundred).[7] The nation-wide survey conducted by the National Opinion Research Center in 1953 for the Health Information Foundation indicated that 34 percent of the people saw a dentist during the preceding year. The corresponding percentages for two Pennsylvania studies were 29 percent and 28 percent.[8] The Michigan study reported that 22.6 percent saw a dentist during a six-month period, a figure which would amount to 45.2 percent for a year.[9] The proportion recorded in the Michigan study is by far the highest of any reported. Even during the depression years the National Health Survey found that 33 percent of the people of Detroit had seen a dentist for purposes other than cleaning during the past year.[10]

In the present study the rate of dental services received during the six-month period prior to the survey was 16.2, or a yearly rate of 32.4. It should be remembered that rates

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7. Collins, op. cit., p. 655.

8. W. G. Mather, "The Use of Health Services in Two Southern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 504, July, 1948, p. 22; Ruth M. Connor and William G. Mather, "The Use of Health Services in Two Northern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 517, July, 1949, p. 8.

9. Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 26.

10. Britten, op. cit.

will generally run somewhat higher than the percentage of people receiving service, because certain individuals receive care more than once during a given period of time.

Although the populations studied are not entirely equivalent, the various studies show a rather close agreement in the amount of dental care received in different areas of the country. Even so, there is some evidence of sectional differences which national surveys would do well to consider.

Age and Sex. The National Health Survey indicates rather marked age differences in dental care. Excluding visits for extractions only, it found that the persons receiving dental care varied from 7 percent in the age group 3-5 years to 31 percent in the age group 15-19 and back down to 6 percent in the age group 65-up.[11] These percentages would be higher, especially in the middle age groups, if extractions were included.

The rates for the present study show the same general trend for age as did those in the Detroit survey; that is, the lowest rates are found among the youngest and the oldest age groups. See Table 83.

The association between dental care and age is highly significant. Examination of the table, and further tests of association reveal that those individuals below 6 years of age have significantly lower rates than those 65 years and above. Each of these rates is significantly lower than the rates of

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11. Ibid.

Table 83. Rates of dental care by age.

	Total	Age						P
		Under 6	6-13	14-17	18-44	45-64	65-up	
Total	16.2	2.8	19.1	16.0	19.4	20.2	7.7	.001

all the other age groups, that is, those from age 6 to 64 years. There is no significant difference between the age groups from 6 to 64 years. Clearly, the bulk of dental care is provided to those between these ages. This trend is due largely to the fact that beyond 64 years of age the individual is more likely to have his own teeth replaced with bridgework, or perhaps removed and not replaced at all. Below 6 years of age the child is too young to have had much dental trouble develop.

The Committee on the Costs of Medical Care reports a greater frequency of dental services of all kinds for females than for males.[12] This finding was true especially for those from 20 to 55 years of age. Below 20 years of age and above 55 the rates were about the same. Studies in Mississippi also indicate a greater rate of dental care for women than for men among both white and colored people.[13]

12. Collins, op. cit., p. 655.

13. Robert E. Galloway and Harold F. Kaufman, "Health Practices of Rural People in Lee County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 1, December, 1950, p. 5;

In the present study women also tend to report more dental care than men. The rates are 21.2 and 15.8, respectively. The P value is .02.[14] Two factors, among others, must be taken into account in explaining the higher dental rates for women. In the first place, childbearing has considerable influence in the decaying of the expectant mother's teeth. In the second place, women are traditionally more concerned with regard to the appearance of their teeth than are men.

Income. Many studies have shown a positive relationship between rates of dental care and family income. The income intervals used and the resulting rates have varied rather widely, depending on the time the survey was made and the population under study. Nevertheless, there is general agreement that dental rates increase with increasing income. A report of the Health Information Foundation nation-wide survey states that

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Robert E. Galloway and Harold F. Kaufman, "Health Practices in Choctaw County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 2, December, 1950, p. 5; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural Negroes in Bolivar County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 3, April, 1951, p. 6; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural People in Forrest County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series,No. 4, July, 1951, p. 5.

14. It will be remembered that sex was not compared below 18 years of age. However, it has been shown that, among elementary school children, girls have a higher caries experience than boys of the same age. This tendency is due to the fact that girls' teeth erupt earlier and are exposed longer to the risk of attack, although girls show no greater susceptibility to caries than boys. See Henry Klein and Carroll E. Palmer, "Studies on Dental Caries VII. Sex Differences in Dental Caries

"no personal health service appears to be so closely correlated with income as dental service."[15] It indicates that the percentage of persons seeing a dentist in one year varies from 17 percent for those with incomes below $2,000 to 56 percent for those with incomes of $7,500 and over. The Committee on the Costs of Medical Care reports that dental rates during the year ranged from 10 percent for individuals with family incomes under $1,200 to 60 percent for those with incomes of $10,000 or more.[16] Studies in Arkansas,[17] Missouri,[18] and Mississippi[19]

Experience of Elementary School Children," Public Health Reports, Vol. 53, No. 38, September 23, 1938, p. 1689. This study covered virtually the entire elementary school population of Hagerstown, Maryland.

15. "Health Information Foundation Survey of Medical Costs and Voluntary Health Insurance," (Highlights from a National Survey), New York: Health Information Foundation, January 24, 1954.

16. C. Rufus Rorem (Editor), "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on the Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 9.

17. Isabella C. Wilson, "Sickness and Medical Care Among a Rural Bituminous Coal-Mining Population of Arkansas," Fayetteville, Arkansas: University of Arkansas, Agricultural Experiment Station, Bulletin 394, June, 1940, p. 26.

18. Harold F. Kaufman, "Extent of Illness and Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Progress Report No. 5, April, 1945, pp. 7 and 11; Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series No. 2, April, 1946, pp. 25 and 50.

19. The Mississippi studies used "level of living" rather than income, but the resulting trend is undoubtedly much the same. See Galloway, Sociology and Rural Life Series, Numbers 1, 2, 3, and 4, op. cit.

also indicate a positive association between dental rates and family income. Furthermore, some studies have shown unmet dental needs to be inversely correlated with income.[20]

The findings of the present study are in accord with the results of the studies presented above. Table 84 reveals a significant increase in dental rates as income increases. Those in the highest income group report rates which are over five times as great as the lowest income group. The rates increase with increasing income in every age group except the age group 65 and above.

Table 84. Rates of dental care by income and age.

		Income				
Age	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
Under 6	2.8	0.0	2.6	7.5	5.0	*
6-13	19.1	5.4	20.2	42.0	20.0	.001
14-17	16.0	9.3	16.7	29.0	0.0	---**
18-44	19.4	6.5	15.6	34.5	32.8	.001
45-64	20.2	9.2	17.4	35.3	13.8	.001
65-up	7.7	7.4	6.8	6.7	25.0*	*
P	.001	.10	.001	.02		

*The expected frequencies were not large enough in certain cells to warrant computing chi square.
**The P value lacked .5 of reaching the .10 level.

Despite such a close association between dental rates and income, it would be erroneous to assume that the only

20. Kaufman, Research Bulletin 400, op. cit., p. 25; Meier and Lively, op. cit.

barrier to adequate dental care is an economic one. It can probably be demonstrated that brushing and general care of the teeth in the home are also positively correlated with economic status. However, it would certainly not be concluded that the cost of a tooth brush deterred people from brushing their teeth. The Mississippi studies reported that the reasons most frequently given for not seeing a dentist for needed dental care were "neglect," "couldn't afford it," and "fear of dental treatment," in order of importance.[21] In their study, Meier and Lively indicated that the explanation usually given was that "there was not enough money to cover all needs and dental service was one of the things that the family could do without."[22] This explanation does not necessarily imply that the people could not "afford" dental care, but rather that their norms were such as to place other goods and services in higher priority. Such items range all of the way from cigarettes to television sets and other articles. Other reasons given in this same study for not seeing a dentist were such things as "afraid to go to the dentist," "just neglected to go," and "it was difficult to get to a dentist when the tooth hurt; when it did not ache there was no need to go."[23] These examples are clear indications of some of the norms and values which influence the behavior of people with regard to dental care.

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21. Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 6, and No. 2, op. cit., pp. 5-6.

22. Meier and Lively, op. cit.

23. Ibid.

Kaufman has indicated that the percentage of people in rural Missouri using services other than extractions increases decidedly with income.[24] He goes on to say that "a more extensive use of remedial dental care in the higher income groups probably indicates not only that these persons are better able to purchase such service but also that they regard its value more highly."[25]

Regardless of income, the rates of dental care found in the present study, as well as those in the studies which were reviewed, fall considerably short of the norm of a dental examination every six months, or even one every year.

Color. As is the case with other types of medical care, few dental studies have dealt with the color factor. A study of the white and colored males at the Ohio State Reformatory, a rather unique population, revealed more previous dental treatment of the white males than the nonwhite.[26] However, there was also evidence of a greater frequency of dental caries among the white group, but the difference was probably not sufficiently great to account for the higher rate of treatment.

In the present study white people report a dental rate which is almost 7 times as high as that reported among nonwhite people. See Table 85. The difference between white and nonwhite persons is especially evident in the age groups from 6 to 64 years.

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24. Kaufman, Research Bulletin 400, op. cit.

25. Ibid.

26. W. M. Gafafer, "Results of a Dental Examination of 1,908 White and Colored Males at the Ohio State Reformatory,"

Table 85. Rates of dental care by color and age.

Age	Total	Color: White	Color: Nonwhite	P
Total	16.2	21.5	3.5	.001
Under 6	2.8	4.3	0.0	*
6-13	19.1	28.4	3.8	.001
14-17	16.0	26.4	0.0	.001
18-44	19.4	24.8	4.0	.001
45-64	20.2	24.6	7.6	.001
65-up	7.7	8.8	3.8	*
P	.001	.001	.10	

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

Three of the four counties studied in Mississippi included both white and nonwhite persons, and the fourth included only colored people.[27] By comparing these county reports, some measure of comparison between color groups can be achieved. Such a comparison reveals that the percentage of colored people receiving dental care was considerably lower than the percentage of white people. When the results of the study which included only colored people are compared with the results of the other three, it is found that the greatest color differences are among the higher level of living groups. In the lower level of living classes, the color differences were negligible. Furthermore, the level of living differences in the Negro study

Public Health Reports, Col. 51, No. 13, March 27, 1936, p. 332.

27. Galloway, Sociology and Rural Life Series, No. 1, op. cit., pp. 5 and 11; No. 2, op. cit., pp. 5 and 10; No. 3, p. 6; and No. 4, op. cit., pp. 5 and 13.

were very small compared with the variations found in the other studies which included both white and Negro people.

The distribution of dental rates by income and color for the Wake County study is shown in Table 86. The white group reports significantly higher rates than the nonwhite in every income group. Although the rate for the highest income group of nonwhite people is a little higher than the lowest income group, the difference is not large enough to be significant. The differences found between the white and nonwhite groups and the lack of difference between income groups among nonwhite people indicate that income is only one of the factors involved. Further explanation must be sought in the norms of the different groups.

Table 86. Rates of dental care by income and color.

		Income				
Color	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
White	21.5	10.4	17.8	32.4	20.8	.001
Nonwhite	3.5	3.6	3.2	5.0	0.0*	---
P	.001	.01	.001	.05		

*There were no individuals in this cell.

Home Tenure. Table 87 shows that renters reported somewhat lower rates than owners, a tendency which holds true for

Table 87. Rates of dental care by age and home tenure.

Age	Total	Tenure: Owners	Tenure: Renters	P
Total	16.2	20.4	12.4	.001
Under 6	2.8	3.4	2.5	*
6-13	19.1	28.6	13.6	.01
14-17	16.0	25.7	6.8	.01
18-44	19.4	23.1	16.5	.05
45-64	20.2	22.6	16.3	--**
65-up	7.7	10.8	0.0	*
P	.001	.001	.001	

*The expected frequencies were not large enough in certain cells to warrant computing chi square.
**The rates in this age group are almost identical with those in the age group 18 to 44 years. The difference in P value is due to the fact that the latter group contained about twice as many individuals.

every age group. However, as Table 88 reveals, the difference between the tenure groups shows up only in the lowest income group. As income increases the difference narrows, and in the upper income group the renters begin to show a slight edge over the owners. However, the difference is not significant. The tenure difference in the lower income group may be a reflection of the concentration of nonwhite renters in this group. The number of dental cases was so small in the low income renter group that a more detailed cross-tabulation did not seem to be justified.

It should be mentioned that among both owners and renters dental rates increased with increasing income. The increase is much greater for renters than for owners, a trend which is

probably an indication of the difference in the composition of these two segments of the population.

Table 88. Rates of dental care by income and home tenure.

Tenure	Total	Income				
		Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
Owners	20.4	14.0	15.6	29.3	21.5	.001
Renters	12.4	3.0	12.6	35.8	20.0	.001
P	.001	.001	--	--		

Residence. The various studies are in general agreement that the urban people have higher dental rates than the rural people. Hoffer reports that a significantly lower percentage of residents in the open country saw a dentist in the six-month period before the survey than did residents in the metropolitan or urban areas.[28] The respective percentages were 18.6, 23.4, and 26.1. The Committee on the Costs of Medical Care reports a greater frequency of dental services in the cities than in the rural areas for all kinds of dental care except extractions.[29] The Committee also states that the residence differences were smaller than income differences. The Mississippi studies report that the greatest use of a dentist

28. Hoffer, Special Bulletin 365, op. cit., pp. 26-27.

29. Collins, op. cit., pp. 647ff.

was made by the "non-farm" residents.[30] Connor and Mather, who conducted a study in Pennsylvania, also report a higher percentage of the "borough" population using a dentist than of the rural population.[31]

Table 89 reveals that there is a general increase in dental rates with increasing urbanity. This trend is found in the age groups 6 to 13, 18 to 44, and 45 to 64. However,

Table 89. Rates of dental care by place of residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	16.2	9.5	16.2	21.3	.001
Under 6	2.8	1.0	5.6	2.5	*
6-13	19.1	12.6	19.6	27.3	.05
14-17	16.0	13.0	20.0	17.8	---
18-44	19.4	11.6	19.7	23.9	.01
45-64	20.2	8.7	15.7	28.6	.001
65-up	7.7	7.0	11.1	6.4	*
P	.001	.05	.10	.001	

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

Table 90 shows that it does not hold true in the two lowest income groups. Only in the highest income group are residence differences significant. One would suspect that the low income groups living in urban areas would tend to report higher

30. Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 5; No. 2, op. cit., p. 5; and No. 4, op. cit., p. 5.

31. Connor and Mather, op. cit.

Table 90. Rates of dental care by income and place of residence.

Residence	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
Rural Farm	9.5	5.2	11.8	16.2	15.2	.01
Rural Nonfarm	16.2	9.8	16.1	22.3	19.3	.10
Urban	21.3	4.7	14.1	38.1	29.3	.001
P	.001	--	--	.01		

dental rates than the rural since dental services are more readily available in urban areas. On the other hand, one would expect that, among the high income groups where the economic barrier is not so great, the rural and urban rates would be more nearly alike. As has been indicated earlier, place of residence is not a single factor but a compound factor. Distance cannot be accepted as the explanation either. If it were the major factor involved, the residence differences would tend to show up more in the lower income groups rather than the high groups, since high income classes have better access to transportation and communication facilities. Also, other studies have shown that individuals often travel long distances beyond the nearest dentist to one with whom they have established some special relationship; however, this practice does not necessarily hold true for other services.[32] Furthermore, in

32. Hoffer, Bulletin 352, op. cit., p. 33; Meier and Lively, op. cit., p. 12.

those studies which have investigated the reasons for not seeing a dentist when there was need, distance has not been mentioned as one of the deterrents.[33] Further study is needed in order to account for the residence differences observed here.

Health Environment Index. There is a positive association between health environment index and dental rates. The association is highly significant. Table 91 shows that those persons in the highest index groups have a dental rate 11 times that of the individuals in the lowest index group. With some minor exceptions, this trend is manifest in each age group. It is most apparent among those individuals from 45 to 64 years of age. In this age category the highest index group reports over 22 times as much dental care as the lowest index group. The two highest index groups reported 75.8 percent of all dental care which was reported, although these two groups constitute only 44.0 percent of the sample. It is evident that the people in these index categories are receiving the bulk of the dental care. Since the dental profession and health educators generally recognize that everyone should have a dental examination at least twice each year, some allowance should be made for those who report the amount of dental care they think they should have received, rather than what they actually received. This tendency would be more likely in the high index categories than

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33. Meier and Lively, op. cit, p. 13; Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 6, and No. 2, op. cit., pp. 5-6.

in the low, but it is probably not sufficiently prevalent to affect the distribution to any appreciable degree. Nevertheless, even the highest index groups fall considerably short of the norms of good dental care.

Table 91. Rates of dental care by health environment index and age.

		Health Environment Index				
Age	Total	0-10	11-18	19-22	23	P
Total	16.2	3.6	9.0	24.0	39.7	.001
Under 6	2.8	0.0	1.1	5.5	9.7	**
6-13	19.1	6.6	11.8	31.2	61.9	.001
14-17	16.0	3.6	9.3	31.3	55.6*	.001
18-44	19.4	4.3	10.2	28.4	41.9	.001
45-64	20.2	2.1	11.3	24.5	46.7	.001
65-up	7.7	4.8	2.7	13.7	0.0*	**
P	.001	**	.10	.01	--	

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

It is not surprising to see that people with a high health environment index report a higher rate of dental care than low index people. If the care which people give their teeth at home were studied, the same type of relationship would probably be found. That is, the frequency and consistency with which the teeth are cared for in the home would undoubtedly be correlated positively with health environment index and with general socio-economic status. However, as has been mentioned previously, there is no reason to believe that income, per se,

has much influence on habits of dental care in the home. The difference in home care is one of difference in the internalization of the norms of proper care and treatment of the teeth. It cannot be denied that many people with low incomes may not be able to afford adequate professional care of the teeth, especially such things as dentures or special bridgework which are often extraordinarily expensive for low income budgets. Even so, there is every indication that much educational work is needed before even daily routine care of the teeth at home will meet minimum dental requirements.

This observation is further evidenced by the fact that when dental rates are broken down by both health environment index and income, as shown in Table 92, dental rates do not consistently and significantly increase with increasing income within health environment index groups. However, without exception, the rates do increase with increasing index value within each income group. This trend indicates the close connection between dental care and the normative order. It is the normative system which tends to govern the priority placed on all kinds of health care, hence, the purchase of such care. Hoffer has indicated that "people have been advised to see a dentist twice a year, although it is a well-known fact that many individuals will not go to a dentist unless they have a toothache. The idea of receiving dental care at regular intervals is not accepted, or at least is not practiced, by many persons."[34]

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34. Hoffer, Special Bulletin 365, op. cit., p. 26.

Table 92. Rates of dental care by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
0-10	3.6	3.3	5.0	0.0	0.0	---
11-18	9.0	7.7	9.0	7.0	16.4	---
19-22	24.0	15.2	21.3	28.1	26.8	---
23	39.7	50.0*	26.4	46.7	25.0*	**
P	.001	.01	.001	.001		

*Rate is based on less than 10 individuals.
**The expected frequency in the lowest income group was not large enough to warrant computing chi square.

Further evidence of the general lack of internalization of the norms of good dental care as set up by the health profession is illustrated in the following statement by Meier and Lively:

> "Twenty-five families stated that they used no dentist. Among these families it was not uncommon to find persons who had never been in a dental chair. Some told of trips to a neighbor's house for the purpose of having an aching tooth pulled. Such neighborhood dentistry was usually accomplished by means of a pair of pliers or forceps. Many adults pulled their own teeth . . . . Some men attributed their good teeth to the fact that they chewed tobacco.
>
> "Most people sought the services of a dentist only when a tooth began to ache. Many persons gauged the need for dental work by the pain experience; so long as teeth did not hurt no dental service was needed. Many adults had no teeth, or at best only a few snags. These they resolved to keep as long as possible. Some felt that they were too old to be wasting money for dental care.

> It was rare for persons to obtain a dental examination once a year. Most dental work consisted of extractions. The view was common that teeth were not worth filling and that it was cheaper to have them pulled. Fillings were as expensive as extractions, and 'the tooth would have to be pulled later anyway.'"[35]

Another example of the gap which often exists between the values of the individual and those of the dental profession is shown in the following incident which recently took place in a small North Carolina community. A young man about 17 years of age entered the office of a local dentist with his father. They showed the dentist one of the young man's incisors which was slightly out of line and requested him to pull it. The dentist carefully examined the tooth and told them that there was no need to pull it, that it was in good condition and could be straightened without much difficulty. They insisted that he pull it, but he refused on the basis that the tooth was in excellent condition. The dentist indicated that people frequently came in with similar requests. He said, "They will go from dentist to dentist until they find someone who will pull that tooth even though it is in good condition."

Communication-Participation Index. Table 93 reveals a positive association between dental rates and communication-participation index. The general tendency is for dental rates to increase with increasing index within each age group. With the exception of the lowest index group, within each index group the old and the young have the lowest rates, the former

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35. Meier and Lively, op. cit., pp. 12-13.

being slightly higher than the latter. Within the lowest index group the age differences are negligible.

Table 93. Rates of dental care by communication-participation index and age.

	Communication-Participation Index					
Age	Total	0-3	4-7	8-13	14-25	P
Total	16.2	3.5	11.5	19.4	34.4	.001
Under 6	2.8	0.0	2.7	4.2	4.5	*
6-13	19.1	4.1	11.7	23.3	47.2	.001
14-17	16.0	7.1	11.8	10.5	45.5	*
18-44	19.4	4.1	15.8	23.4	37.2	.001
45-64	20.2	4.8	10.8	24.7	35.0	.001
65-up	7.7	4.3	4.7	11.4	12.5	*
P	.001	*	.02	.001	.10	

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

The rates increase with increasing income within each index group. See Table 94. They also increase with increasing index within each income group. The rates are highest in the high index-high income group and lowest in the low index-low income group.

The data reveal that those persons who have a high index of communication and participation also have the highest rates of dental care. How much of this association is due to higher family income is not indicated. Undoubtedly there is some relationship. However, the influence of the various means of communication and of community participation should not be

underestimated. Such channels provide greater access to the most recent information, and supply greater influence of group pressure. Both of these factors stimulate an awareness of dental problems and concern for proper care of the teeth. There is also more opportunity to check the validity of such information.

Table 94. Rates of dental care by income and communication-participation index.

Communication-Participation Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
0-3	3.5	2.1	6.3	5.0	0.0	.10
4-7	11.5	7.6	10.9	23.1	15.8	.01
8-13	19.4	5.5	16.5	29.4	26.9	.001
14-25	34.4	35.7	22.8	41.3	33.3*	.10
P	.001	.05	.01	.01		

*Rate is based on less than 10 individuals.

Size of Household. Table 95 shows inverse relationship between size of household and rates of dental care reported. Since those households with 3 to 6 members have higher average incomes, they would be expected to report the highest rates. However, the individuals in the smallest households reported significantly larger rates than either of the other household groups. Part of this difference can be traced to the fact that there are very few young children in the smallest households. Households with a large proportion of adult members

would tend to have higher rates than those heavily concentrated with children. However, age is not the full explanation. In the age groups 18-44 and 45-64 the households with 1 to 2 members reported a significantly higher rate than those in households with 3 to 6 members.[36]

Table 95. Rates of dental care by size of household and age.

		Size of Household			
Age	Total	1-2	3-6	7-up	P
Total	16.2	24.2	16.9	6.7	.001
Under 6	2.8	0.0*	3.5	1.2	**
6-13	19.1	0.0*	24.3	11.4	**
14-17	16.0	0.0*	20.7	9.6	**
18-44	19.4	26.8	20.0	5.6	.001
45-64	20.2	29.1	17.3	6.8	.01
65-up	7.7	4.7	10.8	0.0*	**
P	.001	**	.001	**	

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Probably the most important trend in the table is the tendency for persons in the largest households, those with 7 or more members, to report much smaller rates than those in the other household sizes. Table 96 shows this trend to be especially evident in the highest income group where the next largest households reported a rate almost 8 times as high.

36. Among those from 18 to 44 years of age the difference is on the borderline of significance. The P value lacks .035 of reaching the .10 level.

The smallest households had rates over 9 times as high as the largest households. The largest households are also the only ones whose dental rates do not increase with increasing income. Of course, it should be remembered that the larger families have more members to share the family income, a factor which undoubtedly has a considerable influence on the rates of dental care. However, income alone would not account for the differences observed here.

Table 96. Rates of dental care by income and size of household.

Size of Household	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
1-2	24.2	10.3	26.5	39.3	20.0	.001
3-6	16.9	6.0	12.3	32.8	23.2	.001
7-up	6.7	3.1	10.4	4.3	9.1	.05
P	.001	.10	.001	.01		

Education of Household Heads. Table 97 reveals, as would be expected, that dental rates of the members of the households increase with increasing education of both the male and the female household heads. The major difference is between those with less than 9 years of schooling and those with 9 years or more. There is also considerable difference between those with a high school education and those with a college

education. These trends are found consistently throughout the various age groups.

Table 97. Rates of dental care by education of male and female household heads.

Household Head	Total	Education of Household Heads: Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Male	16.2	4.4	9.1	19.5	27.9	45.5	12.8	.001
Female	16.2	3.1	8.4	17.7	36.6	35.5	11.0	.001

*This category includes no answer, no male (or female) head, and male (or female) head not living.

The question naturally arises as to the relative influence of education and income. Tables 98 and 99 reveal that both income and education are highly influential factors in dental care. Dental rates are considerably higher for those individuals with the highest family incomes and whose household heads have the highest educational attainment, especially those with at least some college. Further study of these two factors is necessary before definite conclusions can be drawn as to the relative influence of each. For example, the higher educated persons not only have readier access to information on dental hygiene, but they are also in a better position to evaluate such information. These groups also tend to have higher incomes, which put professional services more readily at their disposal.

Table 98. Rates of dental care by income and by education of male household head.

Education of Male Head	Total	Income Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
Under 4	4.4	2.5	9.5	0.0*	9.1	.05
4-8	9.1	7.4	9.3	12.2	5.3	--
9-12	19.5	6.4	16.5	28.4	21.9	.01
1-3 college	27.9	25.0*	23.2	32.4	40.0*	--
4 college-up	45.5	0.0*	32.4	49.6	37.5*	--
Others***	12.8	7.3	12.3	31.0	30.8	
P	.001	.05	.001	.001		

*Rate is based on less than 10 individuals.
**There were no individuals in this cell.
***This category includes no answer, no male head, and male head not living.

Table 99. Rates of dental care by income and by education of female household head.

Education of Female Head	Total	Income Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	16.2	6.1	14.0	31.2	20.8	.001
Under 4	3.1	1.4	2.4	28.6*	0.0	---
4-8	8.4	6.5	7.7	3.3	27.3	---
9-12	17.7	5.7	15.8	28.4	17.5	.001
1-3 college	36.6	27.8	21.5	48.6	40.0*	.01
4 college-up	35.5	14.3*	37.5	36.1	33.3*	---
Others**	11.0	2.0	14.1	12.5*	22.2	
P	.001	--	.001	.001		

*Rate is based on less than 10 individuals.
**This category includes no answer, no female head, and female head not living.

Summary and Conclusions. Dental practice, which was once devoted almost exclusively to performing extractions of badly infected or decayed teeth, has become a highly skilled profession with extractions only one of several specialties. With the advanced knowledge and understanding of oral hygiene have also come new norms or standards governing the care of the teeth and the mouth. One of these norms involves daily care of the teeth in the home, namely, brushing the teeth after every meal and massaging the gums regularly each day. Another norm involves professional care of the teeth twice each year. Other norms pertain to the diet and its relation to healthy teeth and gums.

The findings of this study show that dental rates are highest in those age groups in which one would expect the greatest need to exist, namely, between the ages of 6 and 65 years. Also, as would be expected, females report more dental care than do males. However, regardless of age and sex differences, the people with high socio-economic status receive the most dental care. Dental rates increase with increasing income, health environment index, communication-participation index, and education of household heads. The rates are also higher for white people than for nonwhite people, for owners than for renters (especially in low income groups), for urban residents than for rural (especially in high income groups), and for the smaller households than for the larger households.

Although family income is clearly associated with the rates of dental care, the fact that the relationship is not consistent when certain other factors are held constant indicates that certain social and psychological factors are also important. The evidence of this and other studies presented here indicates that there is a pronounced cultural lag in the acceptance and internalization of the norms of dental care. Although this lag is especially evident in the lower socio-economic groups, the higher groups also fall considerably short of the recommended goals.

CHAPTER VII

EYE CARE

Eye care has received very little attention in the various surveys which have been made to date. However, a few studies have treated various aspects of eye care, and the results of these studies will be reviewed and compared with the present study where appropriate.

Kaufman reports 5.9 cases of optical care per hundred persons in five representative counties of Missouri during a period of one year.[1] Another Missouri study reports that 7.4 percent of the people used optical services in a 12-month period.[2]

The rate of eye care during the six months prior to the present study was 3.4 for the entire sample population. The yearly rate would be 6.8, a figure comparable to the results of the Missouri studies. However, it is considerably higher than the 3.8 percent per year reported by the Committee on the Costs of Medical Care for the years 1928 to 1931.[3]

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1. Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series No. 2, April, 1946, p. 19.

2. Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, p. 31.

3. C. Rufus Rorem (Editor), "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27

Table 100 reveals that the service most commonly received by the people was "eyes examined and glasses fitted." The rate of use of other kinds of eye care was inconsequential. Even this service was seldom received by the nonwhite portion of the sample. The frequency of this combined service of examining the eyes and fitting glasses is an indication that the people tend to delay seeking eye care until their vision is noticeably impaired. There is little evidence of a periodic checkup or other preventive measures of a professional kind.

Table 100. Rates of eye care by color and type of care.

		Color	
Type of Care	Total	White	Nonwhite
Total	3.4	4.2	1.4
Eyes examined and glasses fitted	2.3	2.9	.8
Eyes diseased	.6	.5	.6
New glasses--no examination	.3	.5	.0
Eyes examined and other	.2	.3	.0

Age and Sex. Kaufman reports that those persons above the age of 40 years made the greatest use of an optician, and

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of the Committee on the Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 9. An earlier report states that there were 39.6 refractions per 1000 population (3.96 per hundred). See Selwyn D. Collins, "Frequency of Eye Refractions in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 49, No. 22, June 1, 1934, p. 651.

that the maximum use was obtained between the ages of 40 and 59 years.[4] Twelve percent of the people in this age group used an optician during the year, contrasted with only 1 percent of the children below 5 years of age.

The Committee on the Costs of Medical Care reports practically no eye examinations for those individuals under 3 years of age.[5] However, such examinations rise to a peak of 87.1 per 1000 (8.7 per hundred) at 50 to 54 years of age. Beyond this maximum, examinations decline to 33.0, the approximate level of the age group from 18 to 39. In reporting on a survey of several thousand white school boys and male industrial workers, Collins and Britten indicate that the percentage of individuals with markedly defective vision (20/50 or less in one or both eyes) increases steadily after 6 years of age.[6] They also indicate that the proportion of persons with normal vision (20/20 in both eyes) declined much more rapidly beyond the age of 45 years.[7]

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4. Kaufman, op. cit., p. 30.

5. Collins, op. cit.

6. Selwyn D. Collins and Rollo H. Britten, "Variations in Eyesight at Different Ages, as Determined by the Snellen Test," Public Health Reports, Vol. 29, No. 51, December 19, 1924, p. 3194.

7. Ibid.

Table 101 shows that eye care tends to increase with increasing age up to age group 65 and over; at this age level there is a slight decline. No eye care was reported for any of the 316 children under 6 years of age. When children reach school age and from then on into youth and adulthood, they begin to have increasing amounts of eye care. Nevertheless, the rates of eye care found in this and the studies reviewed fall far short of the standard suggested by Kempf and Jarman, that "all school children should have the simple Snellen test twice a year."[8] They base their conclusion on the frequency of myopia among school children and the rapidity with which it may develop.[9]

Table 101. Rates of eye care by age.

	Age							
	Total	Under 6	6-13	14-17	18-44	45-64	65-up	P
Total	3.4	0.0	1.4	2.1	3.5	7.1	5.1	.001

A number of factors account for the age trend shown here. As the child begins to use his eyes day after day in his school work, this constant use not only has an effect on his eyes, but defects are often discovered which before may have

8. Grover A. Kempf and Bernard L. Jarman, "A Special Study of the Vision of School Children," Public Health Reports, Vol. 43, No. 27, July 6, 1928, p. 1738.

9. Ibid.

gone undetected. Certain defects are often ignored among young children on the assumption that they may "grow out of them." Furthermore, there is a certain apprehension about having a young child wear glasses because of the constant danger of his falling or otherwise injuring himself with them, the possibility of his losing them, or perhaps developing emotional insecurities because of them. Many of these fears are being allayed and it is becoming increasingly common for young children to be fitted with glasses. A further explanation of the higher rates with increasing age is that nervous tensions and emotional upsets have often been known to affect the focus of the lenses of the eyes. If such a condition proceeds over a period of time, the individual has increasing difficulties in obtaining clear vision without the aid of glasses. Also, as the individual grows older the eyesight generally tends to wane, as do the other senses and one's physical prowess generally. Those whose daily activities demand considerable use of the eyes, especially for close or detailed work, will tend to notice failing eyesight somewhat more readily than others. Therefore, with other things being equal, such individuals will require more eye care. As one reaches the age of 60 or 65 years he begins to be less active. He also has a greater tendency to accept poorer eyesight and to adjust to it. His demand for eye care begins to level off and even to decline. Probably of greater importance, however, is the fact that the rather abrupt increase in eye care in the middle ages tends to coincide with the onset of presbyopia. This condition appears in individuals

in the middle or later middle ages and gradually increases until the age of 60 years where it tends to remain rather stationary.[10]

With regard to sex differences in the use of an optician, Kaufman reports that over twice as many females as males used optical care.[11] Female rates were higher in all age classes. The Committee on the Costs of Medical Care also reports a greater use by females above 10 years of age.[12]

In the present study, females above 18 years of age tend to report higher rates of eye care than males. The difference is not large and is only of borderline significance. The rates are 3.6 for males and 5.7 for females. The P value is only .10. The rates were so low that detailed comparisons could not be made with reliability. Further observation would be necessary before more definite conclusions could be drawn. However, it has been shown that ". . . the onset of presbyopia begins 5 years earlier among women than among men,"[13] a condition which would tend to produce some difference between the sexes.

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10. "Presbyopia and the Duration of Life," Editorial in The Journal of the American Medical Association, October 14, 1933, p. 1239. See also Collins, op. cit., p. 664.

11. Kaufman, op. cit., p. 32.

12. Collins, op. cit., p. 651.

13. Ibid., p. 664.

Income. Various studies have indicated a rather marked increase in the amount of eye care received as family income increases.[14] Isabella Wilson states that in families with incomes below $250 per year there are 17.7 percent more persons with eye defects than in those with incomes above $750.[15] This statement is probably just an indication of the existence of more untreated eye conditions rather than more defects, for she goes on to state that the lower income people are more likely to postpone the purchase of glasses.[16]

It can readily be seen in Table 102 that rates of eye care increase with increasing income. The trend is significant, although not highly so. In the two upper income groups the rates show a rather general increase with increasing age up to age 65 years. However, in the lower income groups the age differences are practically nil, which may be an indication that lower income groups are having some difficulty in meeting their needs. People with the higher incomes not only have greater

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14. Kaufman, op. cit., pp. 20-21; Rorem, op. cit.; and Marie Mason, "Rural Family Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949, p. 24.

15. Isabella C. Wilson, "Sickness and Medical Care Among a Rural Bituminous Coal-Mining Population of Arkansas," Fayetteville, Arkansas: University of Arkansas, Agricultural Experiment Station, Bulletin No. 394, June, 1940, p. 25.

16. Ibid.

financial means at their disposal with which to purchase care, but are more inclined to be engaged in activities which demand greater use of the eyes. These factors, of course, create greater demand for such care. In recent years there has been a considerable change in the design of eye glasses. Although there has been rather widespread acceptance of the new styles, those in the higher income groups already wearing glasses would be more inclined to be refitted for the express purpose of getting the new style than would the lower income groups.

Table 102. Rates of eye care by income and age.

		Income				
Age	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
Under 6	0.0	0.0	0.0	0.0	0.0	**
6-13	1.4	1.1	1.7	2.0	0.0	**
14-17	2.1	0.0	1.7	6.5	0.0	**
18-44	3.5	1.6	3.7	4.9	3.3	--
45-64	7.1	5.1	7.2	9.5	3.4	--
65-up	5.1	1.9	6.8	0.0	50.0*	**
P	.001	**	.01	.10	**	

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Color. Little has been written on color differences with regard to eye care. However, one study has indicated that among the rural Negroes of a county in Mississippi poor vision

was the most common symptom reported.[17] It accounted for 12.7 percent of all the symptoms reported. Poor vision was also mentioned by a higher proportion of people in the Michigan survey than any other symptom.[18] However, no color comparisons were made.

The rate of eye care for the nonwhite population in the present study was only 1.4 cases per hundred, in contrast with 4.2 for the white people. The highest rates for the nonwhite group were found in the age groups 18 to 44 and 65 and up. The rates were 2.7 for the former and 3.8 for the latter. The age group 45 to 64 reported a rate of 1.0, and the age group 6-13 reported a rate of .9. The other groups reported no eye care.

Table 103 reveals that the white people reported the most eye care within every income class. However, the rates of eye care were so small that expected frequencies fell below 5 cases;[19] therefore, computation of chi square in the high and low income groups was not justified. Color differences in the

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17. Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural Negroes in Bolivar County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 3, April, 1951, p. 5.

18. Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 16.

19. See statement on determining expected frequencies in the section on the statistical methods used in the study.

middle income group were not statistically significant. Although the rates for the white group tend to increase with increasing income, the differences are not significant. There is no consistent income trend for the nonwhite group. The low expected frequencies prohibited calculation of chi square, but the differences were obviously insignificant.

Table 103. Rates of eye care by income and color.

		Income				
Color	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
White	4.2	3.0	4.0	5.3	3.5	--
Nonwhite	1.4	1.1	2.0	0.0	0.0*	**
P	.01	**	--	**		

*There were no individuals in this cell.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Both color and income are influential in the rates of eye care. However, on the whole, color differences appear to be greater. Explanation of such differences must be sought in the values and norms of the two groups. It cannot be concluded at this point that the nonwhite people have less need for eye care.

Home Tenure. Table 104 reveals no tenure differences in the rates of eye care. The rates are practically identical in every income group. For both owners and renters the rates

increase with increasing income, but in neither instance does the trend show up as being statistically significant. However, in view of the fact that the rates are so similar and that the income trend for the total is significant, this lack of significance for owners and renters separately is no doubt due to the smaller number of cases that result when the sample is divided into the two groups.

Table 104. Rates of eye care by income and home tenure.

		Income				
Tenure	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
Owners	3.6	1.3	3.4	5.1	2.5	--
Renters	3.2	2.0	3.5	5.1	4.6	--
P	--	*	--	--		

*The expected frequencies were not large enough to warrant computing chi square, but the difference is obviously not significant.

Place of Residence. The Committee on the Costs of Medical Care indicates that the city residents have more eye refractions than rural residents.[20] Wilson also indicates that more town and village people in a bituminous coal-mining section of Arkansas had their eyes tested and wore glasses than the people in the "country."[21] However, a large proportion

20. Collins, op. cit., pp. 658-659.

21. Wilson, op. cit., p. 30.

of village people also stated the need for glasses. The differences appear to be too small to be significant. Tests of significance were not reported.

Table 105 reveals that the residence differences were not significant unless the rural nonfarm and urban, which have practically identical rates, are combined. Even then the P value is only .10. The rural farm residents reported consistently lower rates in each age group up to age 45 where even this slight trend disappeared.

Table 105. Rates of eye care by place of residence.

	Residence				
	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	3.4	2.3	4.0	3.9	--*

*When rural nonfarm and urban are combined the P value is .10.

Table 106 shows the relationship of rates of eye care to both place of residence and income. The residence differences are not significant in any income group. The rates are slightly higher among the higher income groups, but the differences are significant only among rural farm residents. The urban group shows little income variation. The relationship shown here indicates that income tends to be more of a factor among rural residents than among urban in terms of the amount of eye care received.

Table 106. Rates of eye care by income and residence.

Residence	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
Rural Farm	2.3	0.6	2.7	6.8	4.3	.02
Rural Nonfarm	4.0	2.5	4.9	4.9	1.8	--
Urban	3.9	3.9	3.2	4.8	4.9	--
P	--*	**	--	--		

*When rural nonfarm and urban are combined the P value is .10.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Health Environment Index. Table 107 reveals that the higher health environment index groups report higher rates of eye care than the lower groups. The differences are highly significant. The rates level off from the index value of 19 and up. Those individuals with an index value of 23 have a slightly lower rate than the next highest index group. However, the slight difference between these two groups is probably due to chance fluctuations in sampling. The rates of eye care were so small that detailed comparisons between income and health environment index could not be made with any degree of reliability. However, both factors are obviously influential.

Table 107. Rates of eye care by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
0-10	0.4	0.3	0.8	0.0	0.0	**
11-18	2.8	3.3	2.5	7.0	0.0	**
19-22	5.4	2.2	5.6	5.8	5.6	**
23	4.7	50.0*	4.2	3.9	12.5*	**
P	.001	**	**	**		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Communication-Participation Index. There was a consistent increase in rates of eye care with increasing communication-participation index score. See Table 108. The rates leveled off at the two upper index groups. The most noticeable difference, however, is between the lowest index group which reported a rate of only 0.3 and the other index groups. The former reported only one case of eye care out of a total of 313 individuals.

Income differences within communication-participation index are also shown in Table 108, but the expected frequencies were so low in certain cells that chi square was not computed. Nevertheless, certain trends are rather apparent and should be pointed out. In the first place, the general lack of eye care in the lowest index category, which was noted above, shows up

in every income group, even in the highest income class. With this one exception, those persons with either a high index score or a high income, or both, reported the highest rates of eye care. These trends are undoubtedly not due to a difference in need for eye care. Such trends reflect both a difference in financial ability to pay for such care and a difference in standards.

Table 108. Rates of eye care by income and communication-participation index.

Communication-Participation Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
0-3	0.3	0.0	1.1	0.0	0.0	**
4-7	3.4	2.8	3.6	5.1	1.8	**
8-13	4.1	1.8	3.7	5.5	6.0	**
14-25	4.8	7.1	4.3	5.2	0.0*	**
P	.01	**	**	**	**	

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Size of Household. As revealed in Table 109, rates of eye care decrease with increasing size of family. This trend also tends to hold true within each income group. However, the households with from 3 to 6 members were the only ones whose rates consistently increased with increasing income.

Table 109. Rates of eye care by income and size of household.

Size of Household	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	3.4	1.8	3.5	5.1	3.5	.02
1-2	7.4	4.3	10.3	7.9	0.0	--
3-6	3.1	1.1	2.8	5.1	4.5	.02
7-up	0.7	1.2	0.6	0.0	0.0	*
P	.001	*	.001			

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

This trend for the rates of eye care to decrease with increasing size of household is partly a reflection of the high proportion of younger children in the larger households. However, it cannot be taken as the full explanation, because even in the age groups from 18 to 65 years the rates consistently decrease with increasing size of household. The trend is no doubt also due to the lower socio-economic status of the larger households and the attitudes and practices associated with that status.

Education of Household Heads. Table 110 reveals a significant increase in the rates of eye care as education of both the male and female household heads increases. It is obvious that the education of the household heads has considerable influence on rates of eye care. This tendency is no doubt due, at least in part, to the fact that the higher educated also tend to have higher incomes. Furthermore, the more highly

educated groups tend to make greater use of their eyes over prolonged periods of time for close-up work of a detailed nature. Such use of the eyes places a greater strain on them; hence, eye deficiencies show up more readily. This group is also more conscious of health needs and tends to be more concerned over the care of the eyes.

The rates of eye care tend to increase with increasing income within each level of education. They also increase with increasing education within each income group. These trends indicate the combined influence of both education and income. However, they cannot be explained solely by the fact that education and income are highly correlated, because the rates of even the low income people remain relatively high in the higher education groups.

Table 110. Rates of eye care by education of male and female household heads.

	Education of Household Heads							
Household Head	Total	Under 4	4-8	9-12	1-3 college	4 college-up	Others*	P
Male	3.4	2.2	1.6	3.7	7.3	7.8	3.1	.001
Female	3.4	0.8	2.0	4.1	4.7	6.4	3.9	.01

*This category includes no answer, no male (or female) head, and male (or female) head not living.

Summary and Conclusions. The most frequent type of eye care reported in the study was "eyes examined and glasses fitted." It has been seen in this chapter that the rates of eye care increase with increasing age up to age groups 45 to 64 and 65 and up, where they level off. This trend is largely a reflection of need, which increases as one grows older.

There is some evidence that the rates of eye care tend to be slightly higher for females than for males, but the data are not conclusive. The slight differences which were observed may be due to differences in the rate of maturity of the two sexes; this rate, in turn, is related to the onset of presbyopia and other factors affecting the eyes.

There is a general increase in eye care with increasing income, health environment index, communication-participation index, and education of household heads. The rates are higher for the urban and rural nonfarm residents combined than for the rural farm residents, and higher for the white people than for the nonwhite people. Eye care decreases with increasing size of family, a tendency which appears to be due largely to the younger average age of the larger households as well as their lower family incomes. There are no tenure differences.

From the data presented here it can be inferred that, in general, eye care is sought only when vision is impaired or other defects become noticeable. There seems to be little emphasis on regular eye examinations or check-ups as preventive measures. Most of the care received was in connection with the fitting of glasses.

The rather low rates of eye care which were reported lead one to suspect that there is considerable need which is going untreated. This tendency appears to be especially evident in the lower socio-economic groups and among the nonwhite group regardless of economic standing. The evidence suggests the need for a greater dissemination of information on the proper care of the eyes and the desirability of periodic eye examinations.

CHAPTER VIII

PREVENTIVE CARE

The concept of preventive medicine involves more than the services of the Public Health Service. The difference between preventive medicine and public health is clearly outlined by the Committee on Medicine and the Changing Order of the New York Academy of Medicine in a book entitled, Medicine and the Changing Order.[1] The Committee makes the point that: while the two are interrelated, "public health deals with those phases of disease prevention and disease control which are amenable only to social control and which are applicable mainly to the large group. Preventive medicine, on the other hand, primarily embraces those practices which only the individual is capable of applying to his own benefit."[2] Although it is agreed that the distinction which the Committee makes has considerable merit, preventive care, as used in this study, refers almost exclusively to the services rendered by the Public Health Service. For that reason, the following analysis will be built primarily in relation to the activities of that service.

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1. Committee on Medicine and the Changing Order of the New York Academy of Medicine, Medicine and the Changing Order, New York: The Commonwealth Fund, 1947, pp. 143-144.

2. Ibid., p. 143.

Charms, fetishes, and other magical devices have long been known and used as a means of warding off sickness and disease.[3] Such methods have been deeply imbedded in the folk practices and culture of society. Even the early beginning of the Public Health Service left much to be desired. This fact was brought out by William Cochrane, who made the following statement: "Illustrative of the emergency nature of their (county boards of health) work were cases upholding their power to remove smallpox victims to the county pest house, and to feed and attend them there at the expense of the county."[4] The origin of the science of preventive medicine as it is known today is comparatively recent and is still not entirely accepted. The first full-time county health service in North Carolina was established in Guilford County in 1911.[5] It was not until 1949 that the state had a full-time local health service in every county.[6]

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3. Iola Meier and C. E. Lively, "Family Health Practices in Dallas County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Bulletin 369, June, 1943, p. 19.

4. William M. Cochrane, "Health Law Revision in North Carolina," From an address given at the 42nd annual meeting of the North Carolina Public Health Association, September 10, 1953, Chapel Hill: University of North Carolina, Popular Government, Vol. 20, No. 7, April, 1954, p. 7.

5. Ibid., p. 8.

6. Ibid.

Throughout the nation new codes of preventive care based on scientific information are being established both in the customs and in the legal codes of the people. These standards involve such services as communicable disease control, maternal and child care, sanitation, chest X-rays, health examinations, vital statistics, health education, and many other relating to public and private measures of a preventive nature. However, various studies have indicated that the people of the nation are still much more concerned with the curative than the preventive aspects of medicine.[7] Mystical powers of magic and ceremony are still being invoked by many, while others take no precautions.[8] However, in recent years, there has been "an increasing emphasis upon the prevention rather than the cure of disease."[9]

The need for preventive care is well known by health authorities. Collins states that health examinations have been widely advocted in recent years as a means of diagnosing

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7. Marie Mason, "Rural Family Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949, p. 12; Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, pp. 27 and 41; Meier and Lively, op. cit., p. 22.

8. Ibid., p. 19.

9. C. Rufus Rorem (Editor), "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on the Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 16.

incipient pathological conditions.[10] He also states that early attention to minor diversions from normal may prevent the development of a serious condition. Further verification of this statement by Collins is the point made by Quick who, in a discussion of cancer, said that "routine health examinations carefully and seriously done, will contribute greatly toward early diagnosis of many malignant growths."[11]

Comparisons of the results of the present study with those of other studies are quite difficult due to the fact that most studies report on various specific aspects of preventive care, such as immunizations, physical examinations, dental examinations, school health examinations, X-rays, and others. However, the results of the various studies will be discussed and compared with the present study where feasible.

The rate of preventive care reported for residents of Wake County was 9.6 per hundred for the six-month period. This rate, which would be 19.2 on an annual basis, is a little below the 24.3 percent of the people in the Michigan state-wide study who reported having been "personally examined or advised by a public health nurse or officer within the past year."[12]

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10. Selwyn D. Collins, "Frequency of Health Examinations in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 49, No. 10, March 9, 1934, p. 321.

11. Douglas Quick, "The Care of the Cancer Patient," Bulletin of the New York Academy of Medicine, July, 1933, Quoted in Collins, ibid.

12. Charles R. Hoffer, et alii, "Health Needs and Health Care in Michigan," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 365, June, 1950, p. 32.

Age and Sex. The Committee on the Costs of Medical Care reports that children under five years of age have a higher physical examination rate for preventive purposes than any other age group.[13] The Committee attributes this higher rate largely to the high examination rate for children under one year of age. The Committee indicates further that less than four percent of adults had had an examination of any kind during a twelve-month period.[14] However, the most frequent contacts with the Public Health Department which were reported in the Mississippi studies were among the school-age children.[15]

Among the most active programs of the Public Health Service affecting the individual in Wake County are the Maternal and Prenatal Clinic, Infant and Preschool Program, Immunization and Communicable Disease Control, Public Health Nursing,

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13. Collins, op. cit., pp. 326-327.

14. Ibid., p. 345.

15. Robert E. Galloway and Harold F. Kaufman, "Health Practices of Rural People in Lee County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 1, December, 1950, p. 9; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural Negroes in Bolivar County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 3, April, 1951, p. 10; Robert E. Galloway and Marion T. Loftin, "Health Practices of Rural people in Forrest County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 4, July, 1951, p. 9.

Tuberculosis Control, Venereal Disease Control, and Public Health Nursing.[16] Two of the major health problems in the Raleigh area in 1949 were communicable disease control and school health and hygiene, according to a survey report made at that time.[17] On the basis of this information, therefore, the highly significant negative association between preventive care and age shown in Table 111 is about what one would expect.

Table 111. Rates of preventive cases by age.

		Age			
	Total	Under 6	6-17	18-up	P
Total	9.6	24.4	18.5	3.5	.001

Evidence of the work of the maternal and prenatal program shows up in the age group 18 to 44 years where females report a preventive rate of 5.2 as contrasted with 2.2 for males.

16. See A. C. Bulla (M.D.), "Survey of Public Health Facilities," A typed report of the Wake County Health Department, Raleigh, North Carolina, May 27, 1949. For a graphic summary of the range of health practices during the years 1943 through 1946 among communities in 34 states, one territory, and four Canadian provinces, see: Committee on Administrative Practice, Health Practice Indices 1943-1946, New York: American Public Health Association, November, 1947.

17. Bulla, ibid., p. 5.

There is no preventive care reported for males beyond 44 years of age, and the rates for females are too small to be of any consequence. The Committee on the Costs of Medical Care also reports more health examinations for females under 55 years of age than for males of the same age group.[18] Two of the Mississippi studies also report more contacts by females with the Public Health Department; one of these studies attributed this higher rate for females to the maternity care program.[19]

Income. Since the services of the Public Health Department are rendered free of charge to the individual, one would expect to find no difference in the use of such services if family income were the sole barrier between man and preventive health care. However, many studies have shown that, even with regard to services which involve no cost, the lowest income groups still report less care. For example, Meier and Lively found that the "families claiming no preventive measures were generally families of small economic means."[20] Larson and Hay, in their study of rural health in New York, found that the percentage of low income families using certain specified public health services was only half that of the higher income families.[21]

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18. Collins, op. cit., p. 327.

19. Galloway, Sociology and Rural Life Series, No. 3, op. cit., and No. 4, op. cit.

20. Meier and Lively, op. cit., p. 19.

21. Olaf F. Larson and Donald G. Hay, "Hypotheses for Sociological Research in the Field of Rural Health," Rural Sociology, Vol. 16, No. 3, September, 1951, p. 234.

Since these services were rendered free of charge, the authors conclude that the "use of health resources is not only a matter of availability and dollars."[22] In their investigation of health examinations, the Committee on the Costs of Medical Care found such examinations to be more frequent among the higher income groups.[23] Kaufman also points out that the proportion of people immunized is definitely related to income, and that it increases with increasing income.[24] He indicates that the difference is greatest for persons 16 years of age and under, the age group which received the most immunizations. Galloway shows a positive association between the use of the county health department and level of living among both Negroes and white people.[25] In treating the consumption of foods as a preventive measure, Marie Mason has pointed out that the consumption of certain essential foods was positively associated with income.[26] Mickey indicates that the wrong choice of food is a matter which can be remedied only by public education.[27]

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22. Ibid.

23. Collins, op. cit., p. 330.

24. Harold F. Kaufman, "Use of Medical Services in Rural Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 400, Rural Health Series, No. 2, April, 1946, p. 22.

25. Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 15.

26. Mason, op. cit., pp. 12-15 and 32.

27. Karl B. Mickey, Health from the Ground Up, Chicago: International Harvester Company, 1946, p. 31.

Table 112 reveals a tendency for those with incomes of $4,000 and over to report slightly higher preventive rates than those below $4,000; however, the rates are significantly higher only in the age group under 6 years. The inconsistency in the income trend among those individuals from 6 to 17 years of age is probably due to the school health program and to the influence of the nonwhite group which, as will be shown later, reported comparatively high preventive rates for school-age children. The nonwhite group is heavily concentrated in the low income category. Fifty-nine percent of the nonwhite individuals were in families with incomes of less than $1,500, while only 17.3 percent of the white group were in this income class.

Table 112. Rates of preventive cases by income and age.

		Income				
Age	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
Under 6	24.4	15.9	25.2	39.6	15.0	.05
6-17	18.5	21.3	14.5	25.9	10.0	.10*
18-up	3.5	2.1	3.1	4.5	8.5	--
P	.001	.001	.001	.001		

*The P value in this instance was only .23 short of the .10 level.

The highest rate of preventive care was reported for the preschool children in households with the highest family incomes.

Those persons with the lowest rates were adults above 17 years of age in households with the lowest family incomes. Preventive rates decreased with increasing age in every income group.

The evidence suggests that, even when various kinds of health services are offered on a free basis, the lower income groups do not avail themselves of such services as readily as the higher income groups. In fact, Meier and Lively indicate in their study that 20 percent of the families were opposed to immunization as a means of preventing disease.[28] The authors state that the proportion of families opposed to such measures increased with decreasing income.[29] The explanation must be sought in the complex of social-psychological factors which underlie the motivations of the people.[30] Kaufman states, for example, that "persons of higher social and economic standing are more likely to be aware of the causes of illness and disease and to have a better understanding of the health practices and medical treatment necessary to maintain good health."[31]

Color. Although the Mississippi studies treated the color factor, the data are in such form as to make color comparisons rather difficult. However, it appears that the Negro

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28. Meier and Lively, op. cit., p. 20.

29. Ibid.

30. For essentially the same point of view see: Larson and Hay, op. cit.

31. Kaufman, op. cit., p. 28.

population was on a par with the whites with regard to certain services, but slightly below with regard to others.[32]

As shown in Table 113, there is no significant difference between the color groups with reference to preventive care when age is not taken into consideration. However, except for ages 6 to 17 years, the white population reported higher rates than the nonwhite. This exception is due to the comparatively high rate reported for the nonwhite school children, which is a reflection of the school health program. This program not only facilitates reaching the children but the parents as well,

Table 113. Rates of preventive cases by color and age.

		Color		
Age	Total	White	Nonwhite	P
Total	9.6	10.2	8.3	--
Under 6	24.4	30.0	13.8	.01
6-17	18.5	17.5	20.2	--
18-up	3.5	4.4	1.1	.01
P	.001	.001	.001	

both directly and indirectly. The programs of the school

32. Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 9f; No. 3, op. cit., p. 10f; No. 4, op. cit., p. 9f; and Robert E. Galloway and Harold F. Kaufman, "Health Practices in Choctaw County," State College: Mississippi State College, Agricultural Experiment Station, Sociology and Rural Life Series, No. 2, December, 1950, p. 9f.

itself often do a great deal to supplement the educational and preventive work of the Public Health Service.

Among both the white and the nonwhite groups the major portion of preventive care is concentrated in the preschool and school-age children. Out of 355 nonwhite individuals above 17 years of age, there were only 4 cases of preventive care reported, all of which were females. No nonwhite males above 17 years of age received any preventive care, and only 9 cases were reported for the 497 white males.

The total rates for white and nonwhite persons are practically identical in both the rural farm and urban areas.[33] However, among rural farm individuals under 6 years of age the white rate is considerably higher than the nonwhite. Compare Tables 114 and 115. In the rural nonfarm areas the white group reports a significantly higher rate than the nonwhite group. The rates are 11.9 and 1.3, respectively. In the rural nonfarm areas the only nonwhite persons who received preventive services were the school-age children. In the white group, preschool children received the greatest amount of preventive care in all residence areas. Among the nonwhite group,

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33. It is interesting to note that in 1950 there were 5.9 percent of the rural farm households of Wake County which did not have any kind of toilet, not to mention the number whose toilet facilities did not meet even minimum standards of sanitation and fly protection. The corresponding percentage for the nonwhite households was 8.4. See: C. Horace Hamilton, "Statistics on Rural Population and Rural Family Living," Raleigh: The North Carolina Agricultural Extension Service, Compiled from the 1950 U. S. Census of Population in the Department of Rural Sociology, North Carolina State College, November, 1953.

the school children received the most care. However, in the urban areas the preschool and early school rates were very similar.

Table 114. Rates of preventive cases of whites by place of residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	10.2	9.5	11.9	9.5	--
Under 6	30.0	26.4	31.6	30.8	--
6-17	17.5	15.5	13.5	22.8	--
18-up	4.4	4.1	6.6	3.1	.10
P	.001	.001	.001	.001	

Table 115. Rates of preventive cases of nonwhites by place of residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	8.3	9.6	1.3	8.9	.10
Under 6	13.8	9.6	0.0	23.3	.10*
6-17	20.2	19.2	8.3	25.0	--*
18-up	1.1	1.7	0.0	1.1	**
P	.001	.001	**	**	

*The expected frequencies were not large enough to include the rural nonfarm area in this computation of chi square.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Preventive rates are arrayed by color and family income in Table 116. While the preventive rates increase with increasing income in the white group, the reverse was found for the nonwhite group. Both trends are on the borderline of significance.[34] White rates are significantly higher than nonwhite rates only in the highest income group.

Table 116. Rates of preventive cases by income and color.

		Income				
Color	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
White	10.2	7.0	9.7	12.6	9.7	.10
Nonwhite	8.3	10.0	6.5	0.0	0.0*	.10
P	--	--	--	.05		

*There were no individuals in this cell.

The white people, especially those with the highest incomes, tend to direct considerable attention toward preventive care for their children even before they begin school. When children reach school age, the school health program tends to

34. In the study of rural Negroes in Mississippi, Galloway reports a positive association between use of the County Health Department and level of living. The differences appear to be rather small, but tests of significance were not reported. See Galloway, Sociology and Rural Life Series, No. 3, op. cit., p. 15.

narrow the difference between the white and nonwhite groups. The difference between the color groups in all three areas is negligible in these ages. Beyond school age the white group again reports higher rates of preventive care. These differences tend to illustrate the operation of the norms and values of the two groups. The children of both groups are compelled to go to school, and, as members of this institution, they are involved in the public health program designed for schools. In this instance, neither the individual nor his parent is the major deciding factor as to whether or not he receives care. The decision depends on the operation of the Public Health Department and the extent to which it brings its services to the child. Outside of the formal organization of the school, the influence of these services on given individuals is dependent upon the efforts of the Public Health Service, the values of the people, in addition to their knowledge and awareness of the Service and their image of what it is and what it does.

Home Tenure. The preventive rates reported for individuals in owner and renter households were 9.7 and 9.6, respectively. There were no significant differences within any age group nor within any income group. Both groups showed a slight tendency for their rates to increase with increasing income, but neither trend was significant.

Place of Residence. Hoffer has shown that there was no difference in the proportion of open country and urban people

who had been personally advised or examined by their local health department during the year.[35] However, he reported that proportionately more people in metropolitan areas had such contacts than those persons in other areas.[36] In three of the Mississippi studies it is reported that the nonfarm people had more contacts with the Public Health Department than the farm people.[37] However, the authors state that the people receiving such services constitute more nearly a cross section of the population than was the case for other health services.

The Committee on the Costs of Medical Care reports that town and city housewives had about twice as many health examinations for preventive purposes as farm housewives.[38] In terms of immunizations, however, the Committee found the rural areas had more of certain kinds of immunizations than the urban, less of others, and about the same of still others.[39]

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35. Hoffer, op. cit., p. 32.

36. Ibid., pp. 32 and 34.

37. Galloway, Sociology and Rural Life Series, No. 1, op. cit., p. 9; No. 3, op. cit., p. 10; No. 4, op. cit., p. 9.

38. Collins, op. cit., p. 331.

39. Compare the following reports: Selwyn D. Collins, "History and Frequency of Smallpox Vaccinations and Cases in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 51, No. 16, April 17, 1936, p. 477; Selwyn D. Collins, "History and Frequency of Typhoid Fever Immunizations and Cases in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 51, No. 28, July 10, 1936, p. 924; and Selwyn D. Collins, "History and Frequency of Diphtheria Immunizations and Cases in

Table 117 reveals no significant difference between residence groups in the rates of preventive care which they reported. The urban rates among the preschool and the school children are slightly higher than those in the other residence groups, but these rates are not high enough to be statistically significant. Above 17 years of age the urban people report the smallest rate.

Table 117. Rates of preventive cases by residence and age.

		Residence			
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	9.6	9.5	10.4	9.3	--
Under 6	24.4	18.1	26.7	28.1	--
6-17	18.5	17.3	12.8	23.6	--
18-up	3.5	3.3	5.6	2.5	.05
P	.001	.001	.001	.001	

Table 118 reveals no significant residence differences in any income group. On the other hand, there are slight income variations in the rural farm and the rural nonfarm areas, with the general tendency for the higher income groups to report the highest rates. The comparatively low rate among low income, rural nonfarm residents is probably due to the low rate for nonwhite people in that area, which was pointed out

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9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31," Public Health Reports, Vol. 51, No. 51, December 18, 1936, p. 1771.

earlier. Income differences among urban residents were not significant.

Table 118. Rates of preventive cases by income and residence.

Residence	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
Rural Farm	9.5	10.4	6.8	17.6	6.5	.05
Rural Nonfarm	10.4	4.1	11.7	11.6	15.8	.10
Urban	9.3	10.1	8.4	10.9	4.9	--
P	--	--	--	--		

The evidence of the present study, along with that of other studies, indicates that rural or urban residence is probably not as important in the determination of the rates of use of public health services as are the services which are offered and the activeness with which they are promoted by the various health departments.

Health Environment Index. Table 119 reveals that the people in the two highest index groups tend to report higher preventive rates than those in the two lowest groups. There are some minor variations within age groups, but the relationship is consistent and significant throughout the age distribution.

Table 119. Rates of preventive cases by health environment index and age.

	Health Environment Index					
Age	Total	0-10	11-18	19-22	23	P
Total	9.6	8.0	6.5	12.7	13.7	.001
Under 6	24.4	13.1	18.9	37.4	38.7	.01
6-17	18.5	16.0	11.3	26.6	40.0	.001
18-up	3.5	1.7	2.3	5.2	4.6	.05
P	.001	.001	.001	.001	.001	

Table 120 shows that the high health environment index groups rather consistently report the most preventive care within each income group. On the other hand, the only preventive care reported by the high income people was among those in the two highest health environment index categories. A greater health awareness seems evident among those people with a high index score than those with a low index. The differences undoubtedly would be even greater if members of the Public Health Service were not consciously attempting to reach the public with their services. It appears that greater efforts on the part of the health service would stimulate greater use of preventive measures. However, long-time gains will require a more intensive educational program designed to create a felt need in the minds of the people for such services. Such a program would also tend to stimulate more effective use of other community health facilities within the limits of the economic ability of the respective families.

Table 120. Rates of preventive cases by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
0-10	8.0	10.2	4.2	0.0	0.0	.05
11-18	6.5	4.8	8.7	0.0	0.0	--
19-22	12.7	19.8	9.0	14.2	19.7	.10
23	13.7	0.0*	16.7	13.2	0.0*	**
P	.001	**	.05	.02		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Communication-Participation Index. Table 121 shows a consistent increase in preventive rates as communication-participation index increases. There is a general tendency for high index groups to report higher rates than low index groups at all ages.

Table 121. Rates of preventive cases by communication-participation index and age.

Age	Total	Communication-Participation Index: 0-3	4-7	8-13	14-25	P
Total	9.6	4.8	7.8	11.7	14.1	.001
Under 6	24.4	6.3	22.3	34.5	31.8	.01
6-17	18.5	12.7	17.2	13.1	43.1	.001
18-up	3.5	1.6	1.7	6.1	3.2	.001
P	.001	.01	.001	.001	.001	

Income trends within index groups are not consistent. However, with some minor variations, the tendency is for the highest index groups to report the highest rates within each income group. On the whole, the highest rates were reported for the people with both a high index and a high income.

Hoffer and Jane indicated in their study that over half of the informants were not even acquainted with the work of the county health department.[40] Larson and Hay point out that, in the New York study, the proportion of people who had heard of the county health department increased with increasing income.[41] The authors state that 56 percent of the low income families had heard of the county health department, as contrasted with 73 percent for the high income families. These findings indicate that merely raising the level of one's income or making certain health services available without charge does not automatically change the health behavior of the people. On the whole, the low income people are not as fully aware of the services available to them. However, the results of this study show that persons who have a high index of communication and community participation tend to make the greatest use of preventive measures regardless of income. This greater access to information appears to exert considerable influence on the use which these groups make of preventive health services.

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40. Charles R. Hoffer and Clarence Jane, "Health Needs and Health Care in Two Selected Michigan Communities," East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin 377, June, 1952, p. 5.

41. Larson and Hay, op. cit., p. 234.

Size of Household. As would be expected, the individuals in the two largest household sizes report the highest preventive rates. See Table 122. These higher rates are a reflection of the greater proportion of children in these households. The individuals in households with 3 to 6 members report higher rates than the individuals in the largest households, especially the preschool children. This tendency is probably a reflection of the higher socio-economic status of the former group. At the school-age level there is little difference between them. This lack of difference is another indication of the influence of the school health program and the way it tends to reach the children of varying family backgrounds with about equal frequency. However, prior to entering school, whether or not the child receives preventive service is determined largely by his family background.

Table 122. Rates of preventive cases by size of household and age.

	Size of Household				
Age	Total	1-2	3-6	7-up	P
Total	9.6	3.7	11.4	8.9	.001
Under 6	24.4	0.0*	30.6	8.1	.001**
6-17	18.5	11.1*	19.8	17.2	---**
18-up	3.5	3.5	4.0	1.2	---
P	.001	***	.001	.001	

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough to include households with 1-2 members in this computation of chi square.
***The expected frequencies were not large enough in certain cells to warrant computing chi square.

Among those households with 1 to 2 and 3 to 6 members the rates increase consistently with increasing income. The trend is reversed among those households with 7 or more members. The data do not reveal sufficient explanation of these trends. Nevertheless, it is obvious that many individuals do not seek various kinds of health care even when the economic barrier is removed.

Education of Household Heads. Marie Mason has indicated a positive association between education and the utilization of certain specified preventive measures in the age group above 19 years.[42] She found no consistent differences in the age group 15 to 19 years. In the present study, rates of preventive care were found to increase as the education of household heads increased, as is shown in Table 123. The same relationship was found within each age group. The highest rates were found among children of preschool and school ages whose household heads had one or more years of college. The lowest rates were reported among those age groups 18 years of age and over, whose household heads had less than a high school education.

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42. Mason, op. cit., p. 32.

Table 123. Rates of preventive cases by education of male and female household heads.

Household Head	Total	Education of Household Heads: Under 9	9-12	1 college-up	Others*	P
Male	9.6	6.6	11.4	17.2	7.8	.001
Female	9.6	6.5	11.7	15.5	3.9	.001

*This category includes no answer, no male (or female) head, and male (or female) head not living.

Tables 124 and 125 reveal that within income groups the rates tend to increase with increasing education, except in the lowest income group. The education differences within the lowest income group are not significant. Within education levels income differences are not consistent. However, on the whole, the highest rates are found among those persons in households with the highest incomes and whose household heads have the highest education.

It is evident that preventive care was influenced somewhat by both family income and the education of household heads. These groups tend to be more fully informed concerning the programs of the Public Health Service and the need for preventive health measures in general.

Table 124. Rates of preventive cases by income and by education of male household head.

Education of Male Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
Under 9	6.6	9.3	5.2	4.9	0.0	.02
9-12	11.4	8.5	12.0	7.1	20.3	--
1 college-up	17.2	0.0*	12.9	21.1	0.0	.10
Others**	7.8	8.5	8.9	0.0	3.8	
P	.001	--	.01	.001		

*Rate is based on less than 10 individuals.
**This category includes no answer, no male head, and male head not living.

Table 125. Rates of preventive cases by income and by education of female household head.

Education of Female Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	9.6	8.9	8.8	12.1	9.7	--
Under 9	6.5	9.3	4.8	2.5	3.6	.05
9-12	11.7	12.3	11.4	9.5	19.0	--
1 college-up	15.5	4.0	14.2	18.6	0.0*	--
Others**	3.9	2.0	5.1	12.5*	0.0	
P	.001	--	.01	.01		

*Rate is based on less than 10 individuals.
**This category includes no answer, no female head, and female head not living.

Summary and Conclusions. The concept of prevention of sickness and disease is not a new concept. It has long been deeply rooted in the customs and folk practices of the people. Until recent years it took the form of magical devices and ceremonies as a means of warding off sickness and maintaining good health. Although vestiges of such practices still remain in many segments of society, the concept of prevention has become a highly technical and complex field involving both public health and preventive medicine. Standards of good preventive care have evolved which include such measures as immunizations for certain kinds of contagious diseases, periodic X-rays of the chest, codes of sanitation, annual physical examinations, maternal and child care, and others. Many of these standards or norms are becomming legalized and considerable emphasis is being placed on the educational aspects of preventive care. However, studies have shown that greater emphasis is still being placed on the curative rather than on the preventive aspects of health care.

This chapter has shown that for the sample population of Wake County the rate of preventive care during the six months prior to the survey was 9.6 per hundred population. The rates were highest among the preschool and the school-age children. This trend corresponds rather closely with the emphasis of the programs of the Public Health Service at that time. Also, the fact that females received more preventive service than males

is an indication of the influence of the maternity program being carried on by the health department.

The rates of preventive care were shown to increase with increasing income, but the differences were significant only for preschool children. Apparently the school health program narrowed the gap between income groups. The rates also increased with increasing health environment index, communication-participation index, and education of household heads. Although income differences are not consistent within certain of these measures, in general, those persons who had high status with regard to these respective measures, and whose family income was also high, were the individuals most likely to have the highest rates of preventive care.

Other findings of this chapter can be summarized as follows. The white people reported higher rates than the non-white people in each age group, except those of school age. The greatest color differences were found among the rural non-farm residents and in the highest income group. There were no appreciable residence or tenure differences. The rates were higher among individuals in the two largest household groups where the relative proportion of children is high. The fact that the second largest household group had a higher rate than the largest households is undoubtedly due to its higher socio-economic status.

Differences in the use of preventive measures were not as divergent among the various socio-economic levels as they

were in the use of certain other health facilities. This greater similarity of rates is the result of the combined influence of the lack of expense connected with such services and the efforts put forth by the Public Health Service. However, even though these services were provided without charge, the persons in the higher socio-economic levels received the greatest amount of care. This tendency appears to be due to the fact that they are more fully informed, and that they tend to be more concerned with health and health care. Greater efforts in the area of health education would undoubtedly narrow these differences even further.

CHAPTER IX

DIAGNOSTIC SERVICE

According to a representative of the North Carolina Insurance Commission, most, if not all, insurance companies exclude diagnostic services from their contracts. Such services are omitted by implication, if not by a specific exclusion clause, since the policies are issued to insure against the cost of sickness and accidents. A representative of a local health insurance agency expressed the opinion that diagnostic services were not included in insurance contracts since practically all calls to a medical practitioner involve diagnosis of one kind or another. He felt that if such services were included every call could result in a claim. If such were the case, insurance rates would have to be raised to prohibitive levels.

Only one study was found which even remotely dealt with diagnostic services. The study was that of Almack in Missouri.[1] Almack refers to the service as "consultation," which he defined as consulting "a practitioner for purposes other than the treatment of illness, or disability, or for

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1. Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, p. 27-28.

physical examination."[2] The service may or may not have included diagnosis, but in view of the definition used there would be little else left. In any event, 10 percent of the sample population received consultation service during the course of a year.

In the present study the rate of diagnostic services for the six months prior to the survey was 5.4, which would amount to a rate of 10.8 on an annual basis.

Age and Sex. Since the rates were generally quite low, the age distribution was combined into larger groupings, as shown in Table 126. This table shows a general decline in diagnostic rates with increasing age, but the differences are too small to be statistically significant.

Table 126. Rates of diagnostic cases by age.

		Age			
	Total	Under 18	18-44	45-up	P
Total	5.4	6.2	5.4	4.2	--

It was found that females reported higher rates than males, especially in the age group 18 to 44 years. This was the only age group in which females were significantly higher

2. "Physical examination" apparently refers to a "check-up" or an examination for the purpose of detecting possible incipient conditions. It does not appear to include known physical impairments.

than males. This tendency is undoubtedly related to conditions incident to childbearing.

Income. Income has a highly significant association with the use of diagnostic services. Table 127 shows that there is a marked increase in reporting of the use of diagnostic services as income increases. It is most pronounced among those in the younger ages, but it becomes decreasingly less prominent with increasing age.

Table 127. Rates of diagnostic cases by income and age.

		Income				
Age	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
Under 18	6.2	0.9	4.8	18.7	6.0	.001
18-44	5.4	0.5	5.9	8.3	6.6	.01
45-up	4.2	2.0	5.7	3.8	6.1	---
P	--	--	--	.001		

The tendency for the use of diagnostic services to decrease with increasing age is quite pronounced among those with incomes of $4,000 and above. Age differences are not significant for either of the lower income groups. This trend coincides with the greater emphasis of the high income people on the health needs of their children, an emphasis which has been pointed out in previous chapters.

Color. The association between the use of diagnostic services and color is highly significant. White persons reported four times as much diagnostic service as nonwhite. The rates are significantly higher at all ages.

Table 128 shows that the white group reported higher diagnostic rates than the nonwhite group at all income levels. Furthermore, the rates for white persons increase with increasing income, but there is no consistent trend for the nonwhite group. It should also be pointed out that the rate of 3.2 for the nonwhite middle income group involved urban residents entirely. The other nonwhite rate involved only rural farm residents. No diagnostic services were reported for nonwhite rural nonfarm residents. White rates were also consistently higher than nonwhite rates in all places of residence.

Table 128. Rates of diagnostic cases by income and color.

		Income				
Color	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
White	6.9	2.0	6.3	10.4	6.2	.001
Nonwhite	1.6	0.6	3.2	0.0	0.0*	**
P	.001	**	.10	**		

*There were no individuals in this cell.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

The difference in the rate of use of health services between the white and the nonwhite people has been shown repeatedly throughout this study. The white group quite consistently reports the highest rates regardless of income levels. The reason for this difference lies in the cultural backgrounds of the two groups, i.e., the customs, norms, values, and attitudes.

Tenure. Individuals in owner households reported higher diagnostic rates than those in renter households. The difference between them is not large, but it is significant. This tendency is found at all ages except the age group 18 to 44.

This trend is not consistent when income is considered. See Table 129. The owner group reported slightly higher rates in the middle income group, but among those with incomes of $4,000 and over the renters have a rate more than double that of the owners. There is no significant difference between them in the lowest income level.

Among both owner and renter households the diagnostic rates increase with increasing income. This tendency is more pronounced among the latter group.

Table 129. Rates of diagnostic cases by income and home tenure.

	Income				
Tenure	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
Owners	6.5	1.9	6.9	6.9	11.4	.10
Renters	4.4	0.7	4.3	17.5	0.0	.001
P	.05	--	.10	.001		

Place of Residence. When rates of diagnostic services are related to residence, as shown in Table 130, it is readily seen that diagnostic rates increase with increasing urbanity. This trend is consistent in every age group except those 45 years of age and up, where the rates for the various residence groups are practically identical.

Table 130. Rates of diagnostic cases by place of residence and age.

	Residence				
Age	Total	Rural Farm	Rural Nonfarm	Urban	P
Total	5.4	2.2	4.2	8.5	.001
Under 18	6.2	1.3	5.1	12.5	.001
18-44	5.4	1.7	3.4	8.8	.001
45-up	4.2	4.4	4.3	4.0	---
P	--	--	--	.01	

Among urban residents the rates of diagnostic service tend to decrease with increasing age. This tendency is not evident among the other residence groups. Age differences do not appear to be of much consequence among the other groups.

Table 131 reveals that the high income, urban residents report the highest rates of diagnostic service. The urban people are the only residence group whose rates increase consistently and significantly with increasing income.

Table 131. Rates of diagnostic cases by income and place of residence.

		Income				
Residence	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
Rural Farm	2.2	1.0	1.1	6.8	8.7	*
Rural Nonfarm	4.2	1.6	6.9	1.0	3.5	.02
Urban	8.5	0.8	7.3	13.9	7.3	.001
P	.001	*	.01	.01	--	

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

Health Environment Index. The relationship between diagnostic rates and health environment index is highly significant. The rates increase from a rate of zero in the lowest index group to 17.1 in the highest group. Within the highest index group the rates decrease with increasing age, from 32.8 for those under 18 years of age to 4.4 for those

45 and above. It will be remembered that this same trend existed for the highest income group. However, for those persons under 18 years of age the rate for the high health environment index group is almost double that of the high income group. On the other hand, the rates are almost identical for those persons 45 years of age and above.

Table 132 reveals that the highest diagnostic rates were reported among those with a high health environment index and a high income. While both factors are influential, the evidence indicates a greater influence of the health environment index.

Table 132. Rates of diagnostic cases by income and health environment index.

Health Environment Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
0-10	0.0	0.0	0.0	0.0	0.0	**
11-18	2.2	2.4	2.1	0.0	3.6	**
19-22	8.3	2.2	9.0	8.5	8.4	**
23	17.1	0.0*	19.4	16.4	12.5*	**
P	.001	**	.001	.01		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Communication-Participation Index. There is a positive association between the rate of diagnostic care received and

communication-participation index. However, the differences are somewhat smaller than those found for health environment index. Although there is some evidence of decreasing diagnostic rates with increasing age in the two highest index categories, it is of slight significance in the second highest category and of no significance in the highest.

When communication-participation index is considered in relation to income, as shown in Table 133, it can be seen that income has a slightly greater influence upon diagnostic rates than does the communication-participation index. However, both are influential.

Table 133. Rates of diagnostic cases by income and communication-participation index.

Communication-Participation Index	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
0-3	1.0	0.5	2.1	0.0	0.0	**
4-7	4.0	1.2	4.8	10.3	3.5	.01
8-13	6.1	1.8	6.6	6.9	7.5	--
14-25	11.9	0.0	6.5	15.5	22.2*	.05
P	.001	**	--	.05		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.

Size of Household. Size of household and rates of diagnostic services are negatively associated. This holdstrue

generally for each age group. However, in the smallest households there was no diagnostic care reported for persons under 18 years of age. This absence of diagnostic care in this group is probably due largely to the small number of individuals in this category. With this one exception, the difference between the smallest and the middle sized households is practically nil. The major difference, therefore, is between those with less than 7 members per household and those with 7 or more members.

While there is some evidence of decreasing rates with increasing age, it is not very pronounced in any household group. It is most evident in the households with 3 to 6 members.

Contrary to what would be expected, in families with 7 or more members there was no diagnostic care reported for females above the age of 17 years. One would expect some diagnostic care during the childbearing ages, 18 to 44 years. On the other hand, in this age group the females in the smaller households reported twice as much diagnostic care as males.

It is rather evident that factors in addition to objective need are influencing the rates of diagnostic service. Table 134 reveals, as have other tables above, that income is one of those factors. That there are other factors operating is further evidenced by the fact that diagnostic rates increase with increasing income in each household size except among households with 7 or more members. In this instance there was

no diagnostic service reported for either the highest or the lowest income group.

Table 134. Rates of diagnostic cases by income and size of household.

Size of Household	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
1-2	6.8	3.4	6.6	12.4	0.0	.10
3-6	6.1	0.7	5.6	10.7	8.0	.001
7-up	1.7	0.0	4.0	0.0	0.0	*
P	.01	*	--	.10		

*The expected frequencies were not large enough in certain cells to warrant computing chi square.

Education of Household Heads. There is a significant increase in diagnostic rates as education of both the male and female heads increases. This increase is consistent in all age groups. The higher education groups report the highest rates for individuals below 18 years of age with decreasing rates as age increases. This tendency has been consistent among all of the higher socio-economic groups. Among those individuals whose household heads have less than a high school education the age differences are not significant.

Tables 135 and 136 show that diagnostic rates increase with increasing education of both male and female household heads as well as with family income. Those with the highest incomes and whose family heads have had 1 year or more of

college report the highest rates. Out of 225 individuals whose male household heads had less than 4 years of schooling there was only 1 case of diagnostic care reported, and that was in the lowest income group. There were only 6 cases of diagnostic care reported among the 560 individuals in the lowest income group.

Table 135. Rates of diagnostic cases by income and by education of male household head.

Education of Male Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
Under 4	0.4	0.6	0.0	0.0*	0.0	**
4-8	3.3	1.1	5.0	1.0	10.5	**
9-12	6.2	2.1	6.8	7.8	3.1	**
1 college-up	13.3	0.0*	7.8	17.1	7.7	.05
Others***	3.8	1.2	4.4	3.4	15.4	
P	.001	**	--	.001		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.
***This category includes no answer, no male head, and male head not living.

Table 136. Rates of diagnostic cases by income and by education of female household head.

Education of Female Head	Total	Income: Under $1,500	$1,500-3,999	$4,000-up	Unknown	P
Total	5.4	1.1	5.5	10.0	6.2	.001
Under 4	0.0	0.0	0.0	0.0*	0.0	**
4-8	2.3	1.3	2.6	1.4	9.1	**
9-12	5.9	0.9	6.6	6.8	6.3	.10
1 college-up	13.3	4.0	9.4	17.0	12.5*	.05
Others***	3.9	0.0	7.7	0.0*	0.0	
P	.001	**	.01	.001		

*Rate is based on less than 10 individuals.
**The expected frequencies were not large enough in certain cells to warrant computing chi square.
***This category includes no answer, no female head, and female head not living.

Summary and Conclusions. The rate of diagnostic care received by the individuals of this study during the six months prior to the survey was 5.4 cases per hundred population. The highest rates were found among the younger ages, white people, urban residents, owners, the members of the smaller households, and females (especially those from 18 to 44 years of age). The rates increased with increasing income, health environment index, communication-participation index, and education of household heads.

It has been indicated that seeking diagnostic service is not simply a matter of need nor of financial ability to pay for such services. It is also related to the differences in

the health norms and standards of the higher socio-economic groups as contrasted with the lower groups. These norms have not been isolated as such in this study. But it is through them that a more complete understanding of behavior as related to diagnostic health care will be had.

CHAPTER X

COST OF HEALTH CARE

Many studies have been made of the cost of various aspects of medical care. Such studies are of considerable value locally as well as nationally as an aid in planning health programs and in anticipating the needed financial resources for adequate health care of a population. There is no question that the cost of modern medical care has exceeded the ability of many people to pay.[1] The Serbein report shows that personal expenditures for medical care in the United States were three times as high in 1951 as they were in 1929, and more than four times as high as the low reached in 1933 during the depression years.[2] Sound programs of financing health care can be formulated only on the continued accumulation of objective information on the costs of health services and facilities and the relative financial ability of the people to pay for such services, as well as their buying habits and budget priorities.[3]

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1. Charles E. Lively, "Some Problems Warrant Study for Continuing Health Improvement," The Journal of Osteopathy, November, 1953, p. 17. See also Alfred E. Cohn and Claire Lingg, The Burden of Diseases in the United States, New York: Oxford University Press, 1950, p. v.

2. Oscar N. Serbein, Paying for Medical Care in the United States, New York: Columbia Press, 1953, p. 48.

3. The Serbein report cited above is a comprehensive analysis of methods of paying for medical care in the United States. This study was based entirely upon secondary source materials. See: Ibid., entire volume.

A separate medical case record was made for each case of acute illness, chronic illness, dental care, eye care, preventive care, and diagnostic care. Each of these categories is mutually exclusive, and each may or may not have involved some cash expenditure. The costs of medical care discussed in this chapter refer to the total costs involved for the combined total of these various medical cases, unless otherwise specified. Time does not permit a detailed analysis of the cost of each type of medical service received. A brief summary will be made of the cost of health care expended by the various socio-economic groups under study here. The cost of insurance premiums was not included in the analysis. It should also be pointed out that there were 106 cases out of 1737 medical cases for which costs were unknown. Therefore, the figures reported in the following pages are slightly lower than the actual amount spent by the total sample for health care. The problem of unknown and forgotten costs is one which faces all researchers in this area unless day by day records are kept.[4]

The services of M.D.'s, M.D. specialists, non-M.D.'s, and dentists combined accounted for 50.9 percent of all of the medical care costs. Hospitals were next highest with 20.8 percent of the costs, and drugs followed with 15.0 percent. Next in order were glasses, dentures, and appliances which accounted

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4. The Canadian Sickness Survey employed a convenient technique for having informants record day to day illnesses and expenditures. See: A. F. W. Peart, "Canada's Sickness Survey Review of Methods," Reprinted from the Canadian Journal of Public Health, October, 1952, pp. 404-414.

for 6.0 percent of the costs, and midwives, special nurses, and practical nurses accounted for 3.8 percent. The cost of other services was practically nil.

The results of this study show that the total cost for all kinds of medical care during the six-month period was $44,284 for the 2125 individuals. The mean cost was $27.15 per medical case and $20.84 per capita. Since there was an average of 3.69 persons per household in Wake County in 1950, the mean cost per household would amount to $76.90 for six months and $153.80 per household per year.[5] As was pointed out above, since there were some cases with unknown costs in the study, these household estimates are a little low. Even so, this figure is somewhat below the estimated national average of $178.00 made in the N.O.R.C. study for the year 1952 to 1953.[6]

Since the mean is often distorted by one or two cases involving relatively large costs, preference has been given to the median in the present study. The median cost for all cases was $6.70. However, since a close approximation of the median

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5. This latter figure is about double the average of $82.10 per year estimated for Canada by the Canadian Sickness Survey. See: "Canadian Sickness Survey, 1950-51," Special Compilation: No. 1, Family Expenditures for Health Services (National Estimates), Ottawa, Canada: The Dominion Bureau of Statistics and the Department of National Health and Welfare, May, 1953, p. 10.

6. Odin W. Anderson, "Voluntary Health Insurance and Consumer Expenditures for Personal Health Services in the United States, July 1952 through June 1953," National Consumer Survey of Medical Costs and Voluntary Health Insurance, New York: Health Information Foundation, Summary Report No. 2, 1954, p. 5.

can be had from simple inspection of the tables which give the percentage of cases involving specified costs, medians were calculated only for those cases which involved some cost. This measure gives a comparative estimate of the expense incurred in those cases involving some costs. The median cost for all cases with costs was $11.74.

It should be pointed out that since the data on cost of health care in this chapter are based on percentage distributions rather than distributions of ratios, the regular form of chi square is used. Therefore, only one P value is reported for each table, since this value is based on the frequency distribution of the entire table.

Age and Sex. With some minor variations, Table 137 shows that as age increases there is a general decrease in the percentage of medical cases which involve no costs. Furthermore, for those cases with some cost involved, the median cost increases with increasing age, reaching a peak at ages 45 to 64. Thereafter, the median cost of medical care declines slightly. In the age group 45 to 64, about half (49.2 percent) of the cases involved costs above $17.00. On the other hand, among children under 6 years of age only 12.3 percent of the cases involved that much cost.

The age variations with regard to cost of health care can be explained primarily in terms of the amount and kind of health services used. With regard to the percentage of cases without costs, the primary age difference appears to be between those individuals 17 years of age and below and those above 17.

Table 137. Median costs and percent distribution of medical cases by total cost of health care and age.

Cost	Total	Age					
		Under 6	6-13	14-17	18-44	45-64	65-up
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	284	284	77	637	344	111
None	21.7	28.5	39.0	28.4	15.3	11.8	18.0
$1.00-$5.00	25.6	37.2	27.1	25.7	26.9	12.1	21.0
$6.00-$17.00	26.2	22.0	22.1	29.7	29.4	26.9	25.0
$18.00-up	26.5	12.3	11.8	16.2	28.4	49.2	36.0
Cases with Costs Unknown	106	7	4	3	34	47	11
Median Costs (Cases with Costs)	11.74	5.30	7.30	9.58	11.86	--*	15.10
P**	.001						

*This median went above $17.00 and, therefore, could not be computed.

**Since the data on cost of health care in this chapter are based on frequency distributions rather than distributions of ratios, the regular form of chi square is used throughout this and the remaining tables. Therefore, only one P value is reported for each table, since this value is based on the frequency distribution of the entire table.

Those individuals 17 years of age and under have been shown to make greater use of the facilities of the Public Health Service, which are provided without cost. On the other hand, they are less likely to require dental and eye care than the older age groups. Furthermore, the illnesses which they report are of a comparatively short duration, and the indication has been that these illnesses are of a less serious nature than those in the older ages. These factors tend to decrease the amount of service required per case; hence, the cost per case is lower. The older age groups, on the other hand, tend to report higher rates of more serious and long term illness. They also have relatively higher rates of dental and eye care. These factors tend to increase the percentage of cases which require some expenditure as well as the average cost per case.

The percentage of males and females above 17 years of age reporting cases without costs is 13.0 and 16.8, respectively. The proportion of females reporting cases with costs above $17.00 is also slightly higher than the proportion of males. Furthermore, the median for those cases with costs is $12.58 for males and $15.46 for females. The difference between the sexes is more pronounced in the age group 18 to 44 years than in the other ages. The median cost is $8.98 for males and $13.66 for females in this age group, but there is little or no difference between them in the other age groups. This sex difference in the cost of health care is obviously due to a greater use of health services by women than men.

Females had a higher use of every type of health service studied. This trend was especially pronounced in the age group 18 to 44 years of age.

The Committee on the Costs of Medical Care found much the same trends with regard to the distribution of costs of health care by age and sex as were found in this study.[7] The Committee reported a general increase in average cost with increasing age. Furthermore, in the age groups above 14 years, females had the highest cost. The difference was greatest in the age groups 19 to 44 years of age. It should be pointed out, however, that the Committee report was based on the average cost per person rather than per medical case.

Income. The Canadian Sickness Survey not only found that the percentage of family units without expenditures decreased with increasing income, but also that the mean expenditure increased with increasing income.[8] Both the nation-wide study conducted by N.O.R.C. and the Missouri study conducted by Almack reported a positive association between income and

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7. Helen Hollingsworth, et alii, Medical Care and Costs in Relation to Family Income: A Statistical Source Book, Bureau Memorandum No. 51, Second Edition, Washington: Federal Security Agency, May, 1947, p. 177.

8. "Canadian Sickness Survey, 1950-51," Special Compilation: No. 2, Family Expenditures for Health Services by Income Groups (National Estimates), Ottawa, Canada: The Dominion Bureau of Statistics and the Department of National Health and Welfare, July, 1953, pp. 10-11.

family expenditure for all medical and health services.[9] Various other studies have reported an increase in expenditure for health care with increasing income; however, these studies have also indicated that the expenditure does not increase proportionately.[10]

Table 138 shows that in the present study as family income increases the percentage of cases which involve no costs decreases. This trend is largely a reflection of the greater use of health services by the upper income groups. Among those cases which involved some costs, the median cost increases slightly with increasing income. This trend is also indicative of a greater expenditure by the higher income groups for more costly medical procedures and accomodations, as well as greater use of health services per case. The interpretation presented here is in essential agreement with that of Almack, namely, that these income differences are not a reflection of

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9. Anderson, op. cit., Tables 4 and 5; Ronald B. Almack, "The Rural Health Facilities of Lewis County, Missouri," Columbia: University of Missouri, Agricultural Experiment Station, Research Bulletin 365, May, 1943, p. 38.

10. Marie Mason, "Rural Family Health in a Selected County in Kentucky," Lexington: University of Kentucky, Agricultural Experiment Station, Bulletin 538, June, 1949, p. 24; C. Rufus Rorem (Editor), "The Economic Aspects of Medical Services," A reprint of two chapters of Publication 27 of the Committee on the Costs of Medical Care, Chicago: The University of Chicago Press, 1935, p. 12; Isabella C. Wilson, "Sickness and Medical Care Among the Rural Population in a Petroleum-Producing Area of Arkansas," Fayetteville, Arkansas: University of Arkansas, Agricultural Experiment Station, June, 1941, p. 27; Hollingsworth, op. cit., p. 154.

differences in need, but rather of differences in standards and in ability to obtain and to pay for needed health services.[11]

Table 138. Median costs and percent distribution of medical cases by total cost of health care and income.

Cost	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total Percent	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	374	723	519	121
None	21.7	35.5	21.4	13.1	17.5
$1.00-$5.00	25.6	23.4	26.1	24.8	32.9
$6.00-$17.00	26.2	19.4	25.2	32.2	28.2
$18.00-up	26.5	21.7	27.3	29.9	21.4
Cases with Costs Unknown	106	19	45	24	18
Median Costs (Cases with Costs)	11.74	11.02	11.74	12.46	8.98
P	.001				

Color. Table 139 shows that a much larger proportion of the nonwhite cases involved no costs than did the white cases. This difference is a reflection of the lower use of medical services in time of sickness. However, for those cases which involved some cost, the median cost for white and nonwhite is practically identical. At least part of this lack of difference in median cost is due to the fact that the average length

11. Almack, op. cit., p. 39.

of stay in a hospital was longer for the nonwhite than the white people. Greater color differences would probably be revealed if color groups were further subdivided into income groups. However, the number of cases prohibits further cross-tabulation.

Table 139. Median costs and percent distribution of medical cases by total cost of health care and color.

		Color	
Cost	Total	White	Nonwhite
Total Percent	100.0	100.0	100.0
Total Cases	1737	1419	318
None	21.7	17.3	41.4
$1.00-$5.00	25.6	26.5	21.2
$6.00-$17.00	26.2	28.5	16.2
$18.00-up	26.5	27.7	21.2
Cases with Costs Unknown	106	85	21
Median Costs (Cases with Costs)	11.74	11.74	11.50
P	.001		

Home Tenure. Previous chapters have shown minor variations between the tenure groups in the use of various health services. Table 140 indicates that individuals in owner households have a slightly higher percentage of cases which involved some costs than do renters. The tenure differences in this table are not large, but they are significant according to the chi square test. However, for those cases with costs there is

very little difference between the medians for owners and renters. The median for owners is slightly higher.

Table 140. Median costs and percent distribution of medical cases by total cost of health care and home tenure.

Cost	Total	Tenure	
		Owners	Renters
Total Percent	100.0	100.0	100.0
Total Cases	1737	877	860
None	21.7	17.8	25.7
$1.00-$5.00	25.6	25.2	25.8
$6.00-$17.00	26.2	29.2	23.4
$18.00-up	26.5	28.0	25.1
Cases with Costs Unknown	106	72	34
Median Costs (Cases with Costs)	11.74	12.10	11.26
P	.001		

Place of Residence. Studies in Pennsylvania and Arkansas have reported that the average cost per family for medical care decreased with rurality.[12] Furthermore, the Committee on the

12. Ruth M. Connor and William G. Mather, "The Use of Health Services in Two Northern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 517, July, 1949, p. 11; W. G. Mather, "The Use of Health Services in Two Southern Pennsylvania Communities," State College: The Pennsylvania State College, Agricultural Experiment Station, Bulletin 504, July, 1948, Table 17; Wilson, op. cit., p. 32.

Costs of Medical Care found that per capita expenditure increased with increasing size of community.[13] The data of the present study reveal relatively little difference between residence groups in the cost of medical care. Table 141 shows that the proportion of cases with no costs declines slightly with increasing urbanity. However, the distribution presented in this table is not statistically significant. The median of those cases with costs increases with increasing urbanity, but differences are so slight that they too are probably insignificant.

Table 141. Median costs and percent distribution of medical cases by total cost of health care and place of residence.

Cost	Total	Residence		
		Rural Farm	Rural Nonfarm	Urban
Total Percent	100.0	100.0	100.0	100.0
Total Cases	1737	467	463	807
None	21.7	25.4	21.3	19.8
$1.00-$5.00	25.6	25.6	26.1	25.2
$6.00-$17.00	26.2	25.2	24.9	27.7
$18.00-up	26.5	23.8	27.7	27.3
Cases with Costs Unknown	106	30	26	50
Median Costs (Cases with Costs)	11.74	11.02	11.86	11.98
P	--			

13. Rorem, op. cit., p. 14.

In order to get a clearer idea of the relationship of the use and cost of health services to rural and urban residence, other factors, such as income, color, tenure and others, need to be held constant. For example, it has been shown in another study that, while the average medical expenditure increased with increasing urbanity, the percentage of the family income spent decreased with urbanity.[14]

Health Environment Index. Table 142 reveals that the lowest index group had by far the largest proportion of cases which involved no costs. Of those cases which involved costs, the median cost for this low index group is also somewhat below that of the higher index groups. The medians tend to decrease slightly beyond the peak in the index group 11 to 18. However, the decline is small and probably not significant.

The trends revealed here reflect the comparatively low rates of use of medical services by the low index group. This lower usage is due in part to a difference in ability to pay as well as differences in health standards, as has been pointed out. The fact that the low index people tend to have lower incomes probably affects the kind of service used, in terms of the expensiveness of the service.

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14. Bureau of Labor Statistics, Family Spending and Saving in Wartime, 1945, p. 71, quoted in Hollingsworth, op. cit., p. 154.

Table 142. Median costs and percent distribution of medical cases by total cost of health care and health environment index.

Cost	Total	Health Environment Index 0-10	11-18	19-22	23
Total Percent	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	252	470	712	303
None	21.7	41.2	21.5	19.5	10.9
$1.00-$5.00	25.6	26.0	24.0	26.4	25.7
$6.00-$17.00	26.2	17.9	25.4	25.0	37.3
$18.00-up	26.5	14.9	29.1	29.1	26.1
Cases with Costs Unknown	106	17	29	41	19
Median Costs (Cases with Costs)	11.74	7.78	12.70	12.10	11.50
P	.001				

Communication-Participation Index. It is seen in Table 143 that the proportion of cases for which there was no cost is greatest in the lowest index group. There were 41.0 percent of the cases in this group for which no cost was reported, compared with 16.0 in the highest index group. Furthermore, for those cases with costs the median cost increases with increasing communication-participation index. Differences in use of health services and economic status are reflected by these trends. However, it has been pointed out in a previous chapter that the communication-participation index needs greater refinement in order to become a more discriminating measure.

Table 143. Median costs and percent distribution of medical cases by total cost of health care and communication-participation index.

		Communication-Participation Index			
Cost	Total	0-3	4-7	8-13	14-25
Total Percent	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	182	540	727	288
None	21.7	41.0	23.8	17.5	16.0
$1.00-$5.00	25.6	21.6	26.0	27.2	23.2
$6.00-$17.00	26.2	19.9	25.4	26.8	30.4
$18.00-up	26.5	17.5	24.8	28.5	30.4
Cases with Costs Unknown	106	11	28	42	25
Median Costs (Cases with Costs)	11.74	10.30	11.26	11.74	12.94
P	.001				

Size of Household. There is a definite relationship between size of household and total cost of health services. See Table 144. The percentage of individuals in the largest households reporting cases without costs is over three times as high as the percentage of those in the smallest households. The respective percentages are 36.3 and 11.4. Also, for those cases which involve some costs the median cost decreases with increasing size of household.

Even though the middle-sized households have a relatively higher economic standing than the smallest households, the latter group reported somewhat more cases with costs above $17 than did

Table 144. Median costs and percent distribution of medical cases by total cost of health care and size of household.

Cost	Total	Size of Household 1-2	3-6	7-up
Total Percent	100.0	100.0	100.0	100.0
Total Cases	1737	330	1198	209
None	21.7	11.4	21.9	36.3
$1.00-$5.00	25.6	21.2	26.2	28.4
$6.00-$17.00	26.2	29.7	27.5	13.9
$18.00-up	26.5	37.7	24.4	21.4
Cases with Costs Unknown	106	24	74	8
Median Costs (Cases with Costs)	11.74	14.74	11.14	8.50
P	.001			

the former group. This greater average cost for the smaller households is probably due to the high proportion of older people in such households. It has already been shown that the older people not only reported a higher percentage of cases with costs, but also that the median cost for such cases was considerably above that of the cases in the younger age groups. On the other hand, the largest households not only have a large proportion of persons in the younger ages, but their use of health services generally has been shown to be lower, on the whole, than the individuals in the other household sizes. Furthermore, their economic standing is lower than the other household groups. These factors tend to account for the trends shown here.

Education of Household Heads. Mason found no consistent relationship between education of household heads and expenditure for health care.[15] However, Tables 145 and 146 show that, in the present study, the persons whose household heads have the lowest level of education report the highest percentage of cases without any cost involved. Among those individuals whose household heads have less than a fourth grade education, the median cost for those cases with costs is less than half of the medians in every other educational level. This trend, however, is not revealed for education of female heads. In fact, the median in the lowest educational level of female heads is slightly above those of the higher education groups. The data do not reveal sufficient explanation of these trends. They may be due to chance variations in sampling.

The trend of greatest importance is that the proportion of cases without any costs decreases as education of both the male and female household heads increases. This trend is indicative of the higher use of health services and facilities by the more highly educated groups. It also reflects the higher income of such groups and the difference in health standards which, of course, affect both the amount and type of health resources used.

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15. Mason, op. cit., p. 27.

Table 145. Median costs and percent distribution of medical cases by total cost of health care and education of male head.

Cost	Total	Education of Male Head					
		Under 4	4-8	9-12	1-3 college	4 college-up	Others*
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	118	383	481	204	239	312
None	21.7	36.0	27.5	18.6	9.8	13.6	28.0
$1.00-$5.00	25.6	34.2	24.3	24.2	31.1	25.9	21.8
$6.00-$17.00	26.2	23.7	21.8	31.2	25.4	34.1	19.3
$18.00-up	26.5	6.1	26.4	26.0	33.7	26.4	30.9
Cases with Costs Unknown	106	4	12	23	11	19	37
Median Costs (Cases with Costs)	11.74	5.20	12.10	11.86	12.10	11.62	13.38
P	.001						

*This category includes no answer, no male head, and male head not living.

Table 146. Median costs and percent distribution of medical cases by total cost of health care and education of female head.

Cost	Total	Education of Female Head					
		Under 4	4-8	9-12	1-3 college	4 college-up	Others*
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Cases	1737	61	463	670	267	172	104
None	21.7	33.3	29.7	20.3	14.3	14.2	20.5
$1.00-$5.00	25.6	13.0	25.6	27.4	25.0	25.3	21.6
$6.00-$17.00	26.2	22.2	19.6	27.3	32.1	29.6	30.7
$18.00-up	26.5	31.5	25.1	25.0	28.6	30.9	27.2
Cases with Costs Unknown	106	7	25	33	15	10	16
Median Costs (Cases with Costs)	11.74	16.54	11.38	10.90	12.22	12.58	12.58
P	.001						

*This category includes no answer, no female head, and female head not living.

Summary and Conclusions. A separate medical case record was made for each case of acute and chronic illness and each case of dental, eye, preventive, and diagnostic care received. Any given case may or may not have involved some cost. There were 106 cases out of 1737 for which the costs were unknown. Therefore, the figures presented in this chapter understate the total amount of cost involved.

The total cost of health services for all cases during the six-month period was $44,284. The mean cost was $27.15 per case and 20.84 per capita. The estimated average cost per household for Wake County was $76.90 for six months and $153.80 for a year, exclusive of insurance premiums.

Since the median is not distorted by extreme cases, as is the mean, the median was given preference throughout this chapter. The median cost for all medical cases was $6.70, and for all cases with costs it was $11.74.

In general, as would be expected, those groups which have been shown in previous chapters to have the highest rates of use of health services also had the highest percentage of medical cases with costs. Such groups also reported higher median costs for those cases which involved some cost. This latter tendency appears to be a result of a greater use of health services per case as well as the use of more costly services and facilities.

CHAPTER XI

SUMMARY AND CONCLUSIONS

Summary

In recent years there has been greater emphasis in this country on health and health care programs than at any other period of time. In North Carolina, as in many other states, there has been a pronounced upswing in interest and efforts in the field of health. Some examples of this interest and activity are the establishment of the North Carolina Medical Care Commission, the hospital building program, the expanded medical school program of the University of North Carolina, increased efforts to make health insurance available to the people of the state, and the establishment of a medical education loan fund.

With the rapidly expanding health programs and activities in the state, there has been a need for more detailed analyses of the factors associated with health and with the health care activities of the people. The present study was designed to provide some of this needed information for those health agencies, social workers, applied sociologists, and other groups who are concerned with the health of the people.

This investigation was part of a larger state-wide study of health conditions and of medical services and facilities directed by Dr. C. Horace Hamilton, Head of the Department of

Rural Sociology at North Carolina State College, during the latter part of 1949. This phase of the study was based on a house-to-house canvass of a two percent, random sample of the population in Wake County. The resulting sample population was composed of 588 households and 2125 individuals, including both white and nonwhite people in rural and urban areas.

The objective of the study was to collect and analyze data which, it was judged, would be useful in planning a more effective health program for the county and which would also provide a basis whereby basic principles regarding health programs may be derived. The analysis was based on three basic or dependent variables: morbidity, the use of health services and facilities, and the cost of health services and facilities. These variables were analyzed in relation to a set of selected social and economic factors considered as independent variables; namely, age, sex, income, color, home tenure, place of residence, health environment index, communication-participation index, size of household, crowding index, and education of household heads. The results of the findings are summarized below.

Age. Age was found to be one of the major influencing factors in terms of the amount of acute and chronic illnesses reported and the use of various health services. The highest rates of acute illness were reported for the youngest age groups, particularly in the highest income group. On the other hand, chronic illness rates showed a marked increase with increasing age. Age differences were also found in the use of

health services. The highest rates of use of a doctor, for example, were found among the youngest and the oldest age groups. This trend corresponds rather closely with the higher rate of use of a doctor for acute illness in the younger ages and for chronic illness in the older ages. Age variations in hospitalization rates were not significant. When hospitalization for acute illness was considered separately, however, the age differences were of borderline significance. Those individuals under 6 years of age and those from 18 to 44 reported the highest rates.

Dental rates were lowest for those individuals under 6 years of age and next lowest for persons 65 years of age and over. The other age groups reported comparatively similar rates. Eye care, on the other hand, increased with increasing age up to age 65 where there was a slight decline.

There was a rather pronounced decrease in the rates of preventive care as age increased. This tendency was due largely to the programs of the Public Health Service which were directed specifically at the younger age groups. There was also a slight decrease in diagnostic rates with increasing age, but the trend was not statistically significant, except in the highest income group and among urban residents.

The percentage of medical cases without costs decreased with increasing age. However, the median cost for those cases with costs increased with age up to age 65 where there was a slight drop.

Sex. The sex variable was analyzed only for those age groups above the age of 17 years, since it was assumed that sex differences below that age would be of little consequence in this study. It was found that there was no difference between the sexes with regard to acute illness. For chronic illness, females reported higher rates in the age groups 18 to 44 and 45 to 64. They also had higher rates of use of doctors and hospitals, and reported more dental, eye, preventive, and diagnostic care than did males. This tendency was manifest primarily in the age group 18 to 44 years, but in some instances it appeared in the older age groups as well.

The percentage of medical cases with some costs was greatest for females. The median cost for the total number of cases with costs was also higher for females. These trends are obviously a result of a greater use of health facilities and a greater expense per medical case.

Income. Family income was definitely associated with the rates of illness reported, with the various kinds of health care received, and with the cost of health care. Acute illness rates reported in the study increased with increasing income. The major difference was found between those individuals whose family income was $4,000 or more and those persons with a family income below $4,000. Income differences were most pronounced in the age groups under 14 years. On the other hand, there was a decline in chronic illness rates as income increased. The primary difference was between those with a family income

under $1,500 and those with $1,500 or more. However, income differences for the nonwhite portion of the sample with regard to chronic illness rates were not statistically significant.

The use of a doctor increased as family income increased. However, when age was considered, this tendency appeared only in the younger age groups. There was also some indication of higher hospitalization rates as income increased, especially for those with $1,500 or more, but the trend was only on the borderline of significance. Further study would be necessary to confirm this result.

There was a definite increase in the rates of dental, eye, and diagnostic care received as income increased. Rates of preventive care also increased with increasing income for those individuals under 6 years of age, but income variations were not significant for the other age groups nor for all groups combined.

Color. Another of the influential factors in morbidity and the use and cost of health services was the color factor. The white people reported considerably higher rates of acute illness, a tendency particularly marked in the lower age groups. It was also manifest in the rural farm and urban areas but not in the rural nonfarm areas. There were no significant color differences in the rates of chronic illness.

The rate of use of a doctor was higher for white than for nonwhite people except in the oldest age group. The difference showed up in every income group. The white people also

had a higher rate of use of hospitals, but the difference was only of borderline significance. However, the average length of stay in a hospital was greater for nonwhite people.

White people reported higher rates of dental, eye, and diagnostic care than did the nonwhite people. They also reported more preventive care, except in the ages 6 to 17 years where the school health program was operative.

The percentage of cases without any costs was greatest for the nonwhite people due largely to a comparatively larger percentage of unattended illnesses and the lower use of health services generally. On the other hand, for those cases which did involve some costs, the median cost for white and nonwhite cases was about the same. This lack of difference in median costs is probably due, at least in part, to the longer average length of stay of nonwhite people in hospitals, which tends to make up for the generally higher rates of use of health facilities by the white people.

Home Tenure. Home tenure was one of the least discriminating of the variables examined in the study. Greater tenure differences would probably be observed if other factors such as color, place of residence, and income could all have been held constant. However, such detailed cross-tabulations would require a very large sample.

Place of Residence. Residence differences in this study were not as pronounced as is commonly anticipated, especially when age, income, and color are held constant. However, due

to the size of the sample these factors could not be held constant for every comparison.

Health Environment Index. There was no consistent relationship between scores on the health environment index constructed for this study and chronic illness rates. There appeared to be a slight tendency for chronic illness rates to increase with increasing index below 18 years of age but to decrease in the age groups 18 and above. However, these trends were only suggestive and need additional study. Within income groups differences between the rates of chronic illness in the various index groups were not significant.

Acute illness rates increased with increasing health environment index scores. This tendency was less pronounced as age increased.

There was a consistent increase in the use of a doctor as health environment index increased. This tendency was manifest among those persons in every age group except those 65 years and up. It was also consistent in every income group. On the contrary, the income differences within index groups were not significant. There was also an increase in hospitalization rates as health environment index increased. In general, the index appeared to be more influential in rates of hospitalization than was family income. The rates of dental, eye, preventive, and diagnostic care also increased with increasing health environment index.

The percentage of medical cases without costs decreased with increasing health environment index. This trend would

be expected in view of the generally greater use of health services by the higher index groups. The lowest index group reported the lowest median cost for those medical cases with costs. The next lowest index group reported the highest median, and beyond this peak there was a slight decline with increasing index. The higher median costs of the higher index groups reflect greater use of health facilities per case and probably more expensive care in general. The greater use of hospitals, which is generally more expensive than other kinds of medical care, would account for at least part of the difference.

Communication-Participation Index. There was no significant relationship between rates of acute illness and the communication-participation index. However, there was a slight tendency for chronic illness rates to decrease with increasing index, but this tendency was evident only for the total and for the age groups 18 to 44 and 65 and up. The latter was only on the borderline of significance. Within income groups the differences between the index groups were not significant.

There was a tendency for rates of use of a doctor to increase with increasing communication-participation index, but the trend was not consistent within either the age groups or the income groups. There was also no significant relationship between the index and rates of use of a hospital. On the other hand, there was a general increase in the rates of

dental care, eye care, preventive care, and diagnostic care as communication-participation index increased. The preventive and diagnostic care trends, however, were not entirely consistent throughout the income groups.

As the communication-participation index increased, the percentage of medical cases with costs and the median cost for those cases with costs increased slightly. This slight trend is probably due to the generally higher use of certain types of health care by the higher index group. However, the relatively higher incomes of the high index group are probably part of the explanation. The communication-participation index was among the least influential factors studied. It is in need of further refinement.

Size of Household. Individuals in households with from 3 to 6 members reported the highest rates of acute illness. This tendency was especially pronounced in the higher income groups and in the younger age groups. Trends were not significant beyond the age of 13 years. The rates of chronic illness, on the other hand, decreased with increasing size of household. This tendency was consistent throughout the income groups. However, with age held constant the differences between the rates for individuals in the various household sizes were not significant. This lack of difference within age groups points up the major influence of age upon chronic illness rates. Individuals in the smaller households reported higher rates of

chronic illness than the others primarily because the relative proportion of older people was higher in such households.

Individuals in the largest households reported the lowest rates of use of both doctors and hospitals. The rates for the individuals in other household sizes were about the same.

The rates of dental care decreased with increasing size of household within every income group. This tendency is due in part to the higher proportion of older people in the smaller households. However, age is not the full explanation since the same trend was found among adults. The lower economic standing and differences in the standards of the persons in the largest households are also responsible in part for this trend.

There was a decrease in rates of eye care with increasing size of household. Individuals in the largest households reported practically no eye care. This trend was due in part to the larger proportion of children in the largest household group and the lower economic status of this group. However, since this tendency appeared even with income and age constant, further explanation must be sought in the health standards of the people.

Diagnostic rates were also lower for the individuals in the largest households. The rates for individuals in the other two household sizes were about the same. Those persons in the largest households also reported the lowest rates of preventive care, despite the fact that preventive care was

generally most prevalent in the younger age groups. Individuals in the middle-sized households reported the highest rates of preventive care. This trend is due primarily to the higher social and economic standing of this group in relation to the other groups and to the corresponding health standards of such status.

Both the percentage of medical cases with costs and the median cost for those cases with costs decreased with increasing size of household. These trends are a reflection of the relatively lower use of health facilities by the largest households and the higher proportion of adults in the smallest household group. Despite the higher average income of the middle-sized households, the median cost was higher for cases in the smallest households. This trend points up the relatively greater cost of illness among the older people since the proportion of older people is higher in the smallest households.

Crowding Index. The least crowded and the most crowded index groups reported the lowest rates of acute illness, while the middle groups reported the highest rates. This tendency is comparable to that of the largest and smallest households. However, the relationship between acute illness rates and crowding index was not consistent within age and income groups.

The rates of chronic illness decreased with increasing index. Although this tendency was rather constant throughout the income groups, it was not consistent within any age group.

Crowding index trends were obscured due to the necessity of combining cells for cross-tabulations; furthermore, since the results based on the size of household were fairly similar to those based on the crowding index, further analysis of this index was not made.

Education of Household Heads. There was a general increase in the rates of acute illness as education increased. The major difference was between those individuals whose household heads had less than 9 years of education and those who had 9 or more. When age was taken into account, it was found that this trend was manifest primarily in the two youngest age groups. This trend was not consistent throughout the income groups, and in no instance were income differences significant within educational levels. Chronic illness rates, on the other hand, decreased with increasing education of household heads, but no trends appeared either when age or when family income were held constant.

There was a rather definite increase in the use of a doctor as education of household heads increased. This trend was especially pronounced in the younger ages, and it was consistent throughout the income groups except the lowest. Within educational levels there were significant income differences.

Those persons whose household heads had 9 years or more of schooling had slightly higher rates of hospitalization than did those with less than 9 years. However, the differences between educational levels were not highly significant.

There was an increase in the rates of dental, eye, preventive, and diagnostic care as education of household heads increased. This trend was rather consistent within both age and income groups.

The percentage of medical cases with costs increased with increasing education of household heads, but there was little variation in the median cost for those cases with costs.

Conclusions

Morbidity. The data of this study suggest that there is more agreement among the various social and economic groups regarding chronic illness than there is in the area of acute illness. The definitions which the people have of illness are important in this connection. Even though an individual may, from a medical standpoint, have some morbid condition, he will not report such a condition unless he recognizes it and defines it as such. These differences are due in part to differences in health standards and in part to the nature of the illness. Due to the health standards, certain groups tend to place greater emphasis upon health and health care than do others; hence, more concern is shown over a wider variety of afflictions. This is especially true of acute conditions which are relatively short lived. On the other hand, other groups do not look upon various afflictions with as much concern. They tend to overlook many illnesses, especially those of a less serious nature. However, such chronic conditions as cancer,

tuberculosis, arthritis, heart disease, and others, have been publicized considerably and have come to be widely recognized as conditions which require medical attention on the part of all groups.

The Use of Health Services and Facilities. The two major factors which appear to be among the most important influences in the use of health services and facilities are the need for such services, on the one hand, and the ability to pay for them, on the other. These factors, however, are not fixed. They both depend upon the particular circumstances and the persons involved. They are also dependent upon each other to a certain extent.

One of the vital aspects of need in terms of the decision of a given individual to seek medical care is not just need from a physician's point of view. Felt need, from the patient's point of view, is the primary basis for action. The individual may not even be ill as far as he himself is concerned. Objective need (that is, need from the medical standpoint) is based primarily on scientific information. Need from the patient's point of view may be based in part on objective information, and in part on customs, habits, fears, attitudes, and superstitions which have been handed down from generation to generation or which have developed from the individual's own experiences. Furthermore, conflicting goals in terms of time and money as well as financial ability not only influence the use of health services directly, but they also influence the felt needs of the individual.

On the basis of the information at hand, both the medical profession and the layman consciously or unconsciously set up standards or norms not only concerning what constitutes need for medical care in a given situation, but also what constitutes the proper means of meeting that need. It is obvious, therefore, that the standards of various groups of people are not only at variance with the medical profession but also with each other. These standards are the basis for the decisions which result in action. Other things being equal, those groups whose standards most nearly coincide will be more likely to make the same decisions with regard to the use of medical services. If the standards of the laymen vary from those of the medical profession, their decisions and the consequent actions will vary from what would be recommended by the medical profession.

Even though there are differences in objective need from one group to another, it cannot be concluded from this and similar studies that because the higher social and economic groups generally reported more acute illness and more use of health services in this study, that they had more objective need for health care. Although health standards were not investigated as such in the study, the data presented here, along with the findings and conclusions of other studies, suggest that the standards of the higher social and economic groups are more nearly in line with those of the medical profession. These groups appear to be more nearly recognizing and fulfilling

their objective health needs than are the other groups. The norms of the higher groups stimulate a greater awareness and concern over health and health care, and the generally higher economic status of such people permit them to make greater use of health services and facilities once the need is recognized. As a consequence, illnesses tend to be checked in their early stages, and the favorable experiences which these groups have with the medical profession develops in them a greater confidence in the profession and the norms of scientific medicine. The norms of lower groups, on the other hand, are at greater variance with the norms of the health profession. Furthermore, being of a generally lower economic status, they are faced with greater conflict of goals in terms of the use of the income which they have. These factors lead to delays in seeking medical advice and attention. Such delays often postpone the treatment of an illness until it is in its advanced stages, and, therefore, mortality is comparatively high.

Ability to pay for health services is related to family income and other economic resources. It is also related to other financial obligations, spending habits, the costs involved, conflicting goals, and aspirations which may have higher priority. Ability to pay is also affected by felt need in the sense that budget priorities may have to be reassessed and certain goals sacrificed if the need become sufficiently pronounced. Although it is commonly agreed that certain groups cannot "afford" all of the medical care they need, it would be

difficult to draw the line at any given income level and say that those families above that level can, with prudent management, have access to all the health care they need. Sometimes expenses are too great. This problem is one of the dilemmas in the financing of medical care at the present time, and one which needs more attention. Perhaps with additional study of the value-attitude systems of the people, their health habits and expenditure patterns, a clearer understanding of the problem will be available.

Cost of Health Care. In this study, groups which tended to have more medical cases with costs also tended to report a higher median cost for those cases with costs. The cost of health care for a given individual or groups is influenced not only by the rate of use of health services but also by the type of services used. Therefore, the study of costs without reference to these factors is misleading. Two individuals with equal costs do not necessarily receive the same amount or kind of care. More study should be given to the cost of health care in relation to the type of service received.

Health Environment Index. Good health habits are a result of health standards which are reflected in the immediate surroundings in the home. To measure these surroundings, a health environment index was constructed. The use of this index has helped to establish the fact that standards of health and health care vary within given income groups and that the use of health services is related to other health habits,

attitudes, and practices, and not just to economic factors. Simply raising an individual's income or reducing the cost of health care would not necessarily change his standards of health, nor his use of health services. Further use of such an index as this in health research is justified, although additional standardization of the various items of the index is needed.

Communication-Participation Index. A communication-participation index such as the one used in this study is a useful device as an aid in explaining the behavior of the people with regard to health and health care. However, more study must be given to the individual items of the index and the relative influence which they have on health matters. For example, one or two items of mass media may devote more attention to health than any or all of the others. Therefore, an individual may have a fairly low score on the index and yet be more highly influenced in his attitudes toward health and health care by these one or two items than a person who receives a high score.

Such an index would also be very useful in planning or carrying on health education programs if the individual items were studied in terms of the kinds of groups which they reach and the relative influence which they have. It is only with a knowledge of such channels of communication and participation that greater numbers of people can be reached by health information.

Recommendations for Action. The results of this study suggest two major recommendations for action. The first of these concerns the need for greater emphasis on health education. The second concerns the need for meeting the costs of medical care.

First, there is a need for greater dissemination of health information concerning:

1. Conditions which call for immediate medical attention.
2. Problems of personal hygiene and daily health habits.
3. Prevention of sickness and accidents.
4. Instruction on the availability and the most adequate use of health services and facilities, both public and private, within the limits of family financial abilities.

The first recommendation is directed toward changing the health standards of the people and bringing them more nearly in line with the standards of medical science.

Second, greater experimentation is needed in methods of financing the cost of medical care, especially for low income people and hardship cases who can least afford modern medical care, and who are also least likely to afford health insurance to cover their needs at the present premium rates. This recommendation is designed to provide the means whereby health care can be received once it is needed and desired by the people.

Recommendations for Further Study. Several crucial problems need further study. They are set forth in a series of questions below.

1. What are the commonly accepted standards of good health and health practices of medical science and of the layman?

   a. In what ways do the standards of medical science and those of the layman coincide, and in what way do they differ?

   b. Where did these standards originate, and on what are they based?

2. How can the attitudes of the people be modified so that the people will make more adequate use of the health facilities available to them?

3. Through what channels of communication do the various groups of people receive health information, and what are the most influential sources of information in terms of subsequent behavior?

4. How are decisions made within family units concerning the use of health services and facilities? What are the status and role relationships in such situations?

5. How are budget priorities set up within the family unit, and how are they rearranged to meet the demands of ill health?

6. What is the image which people have of the various health services and facilities? That is, what are the people's attitudes and expectations concerning these services and facilities?

7. How does having insurance influence the use of health services? For example, are those who purchase health insurance:

   a. The persons who are most able to pay for health care?

   b. Those persons who, for a variety of reasons, anticipate greater use of health services?

8. What are the attitudes of the people toward and expectations of health insurance as a means of meeting the cost of health care?

CHAPTER XII

METHODOLOGICAL NOTE

Some research workers seem to proceed on the assumption that a healthy state is a goal that all men strive for with equal intensity at all times. Such reasoning has lead many to the conclusion that the only barrier between man and good health, or at least access to modern medical care, is an economic one, or perhaps one of lack of facilities and services or distance from such services.[1] These factors are admittedly important, but they are by no means the only ones.

The present study has indicated through actual findings and by implication of the findings what some of these additional factors are. It has also pointed up the desirability of analyzing data on sickness and the use of health services in terms of a theoretical framework so the results will be cumulative with other research in the field of health and with research in other fields as well. On the basis of the experience in this study, it is believed that the action schema would be very useful in this regard. Such an approach integrates the findings into a logical interdependent framework

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1. For a discussion and refutation of this point of view see: Olaf F. Larson and Donald G. Hay, "Hypotheses for Sociological Research in the Field of Rural Health," Rural Sociology, Vol. 16, No. 3, September, 1951, pp. 228 and 234.

not obtained at the simple descriptive level or through testing unrelated hypotheses. In this framework, the use of health services is only one of the elements of a total situation in which the actor is directing his efforts and attention toward the goal of good health, either in terms of relief from some morbid condition or of preservation of a healthy status. Morbidity and cost of health care are simply additional elements in the situation.

The action schema is set forth in brief below as an indication of how studies such as the present one could fit into such a framework, if the research were so designed from the beginning. It can be applied to an intensive analysis of individuals, families, or communities and also to the analysis of larger sample populations.

The Action Schema. An act can be analyzed into four inseparable factors or elements.[2] These four elements are: an actor, an end or goal, conditions, and means. Each of these elements of action is analytically distinct, and each is necessary for an understanding of action.

The actor is that person or group of persons who actually does the acting. In the field of health the particular actors which are studied depend on the objectives of the research. In some instances it may be medical personnel of various kinds, a health agency or group, or it may be the patient or the

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2. The following discussion is drawn largely from Talcott Parsons, The Structure of Social Action, New York: McGraw-Hill Book Company, Inc., 1937, Chapter II; also Kingsley Davis, Human Society, New York: The Macmillan Company, 1949, Chapter V.

patient's family. In studies such as the one just concluded the actors are the household heads and the members of the households whom they represent.

In any given action the actor participates only in terms of certain fairly well-defined roles, that is, in terms of "a pattern or type of social behavior which seems situationally appropriate to the individual in terms of the demands and expectations of those in his group."[3] Within the health context the actor may be playing the role of the sick person, doctor, nurse, lab technician, public health specialist, druggist, parent or guardian, and many others depending upon the particular situation in question.[4] Also, one person may at various stages of the action play different roles. He may, while playing the part of the patient, diagnose and treat his own ailments which, whether he uses scientific medical knowledge or not, places him in the role of the lab technician, druggist, physician, and patient. Furthermore, a given role varies from individual to individual and from situation to situation depending upon what seems to be appropriate in the given situation. For example, the role of the sick person, including his reaction to the treatment situation, may vary considerably

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3. S. Stansfeld Sargent, Social Psychology: An Integrative Interpretation, New York: The Ronald Press Company, 1950, p. 279.

4. For a detailed discussion of the role of the medical practitioner and of the sick person see: Talcott Parsons, The Social System, Glencoe, Illinois: The Free Press, 1951, pp. 433ff.

depending upon whether the individual considers himself to be basically healthy or whether he accepts his status as being ill; whether the illness is a minor ailment or a major affliction; whether sickness is sought as a refuge or whether it is a condition to be overcome. Some of the implications of these various situations are outlined by Barker and others in Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability.[5] The authors present a very interesting discussion largely in terms of the concepts of Lewinian field theory. More needs to be known about the various roles and role expectations with regard to sickness and the use of health services,

The status of the actor is another important factor, since each status carries with it not only certain rights but also certain obligations and expected behavior. Therefore, in any given action the various statuses of the actor will have an influence in determining the availability of means, his choice of means, his norms, as well as the nature of the goal itself.[6] Therefore, a knowledge of the statuses occupied by the actor is necessary for a complete understanding of his action. Statuses are of two types, namely, ascribed and achieved. The ascribed statuses which were investigated in

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5. Roger G. Barker, et alii, Adjustments to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability, New York: Social Science Research Council, Bulletin 55, Revised, 1953, pp. 310ff.

6. James W. Green, "The Farmhouse Building Process in North Carolina," Unpublished Doctoral Dissertation, Chapel Hill: University of North Carolina, 1953, p. 14.

the present study were age, sex, and color. The achieved statuses were education, income, health environment index, communication-participation index, home tenure, place of residence, and crowding index. It was considered that these various statuses would have particular value in attempting to explain the behavior which was recorded in the study. However, other statuses need to be investigated, and more needs to be known about the various components of these indices of status and how they operate to influence behavior with regard to health care. For example, what is it about high or low income or education which influences the use of health services? What are the social-psychological and cultural factors involved, and how do they function?

The end or goal refers to some future state of affairs toward which the actor is motivated. It may be conscious or unconscious, but in either case it is subjective since, by definition, there is no end unless such exists for the actor. The concept, end, implies some motivation and exertion on the part of the actor to obtain it. The particular ends which are chosen by an actor are related to his value-attitude system which has been derived from his cultural background and the social systems of which he is a part. The primary goal within the present context is the obtaining of good health. This general goal may involve many concrete acts. These acts can be classified into three types as follows: (1) those which involve seeking some kind of cure as a means of restoring health, (2) those which involve seeking diagnostic services for the

purpose of detecting or determining the nature of some known or suspected malfunction, and (3) those which involve seeking services to protect and maintain a healthy condition, which is actually a long-range goal of good health. As has just been indicated, in seeking good health or the preservation of good health, major emphasis is placed upon the use of health services and facilities, that is, the means whereby the actors attempt to reach their goal. These medical services and facilities may actually be looked upon as secondary or subordinate goals since, as Durkheim has stated, "Every means is from another point of view, an end."[7]

Illness or morbidity is investigated since it is the primary factor in the situation which motivates the individual to seek the desired end. Whether the individual has relief from ill health as a goal depends in large measure on his definition as to what constitutes illness. Illness or morbidity can be defined on both an objective and a subjective level. From an objective point of view it is any state of the human biological organism for which professional medical diagnosis would indicate the need for some kind of medical attention. This definition is, of course, limited by the advancement of medical knowledge and understanding, but is the most objective basis available. From a subjective point of view illness refers to the informant's (actor's) views concerning his own state of

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7. Emile Durkheim, (Translated by Sarah A. Solovay and John H. Mueller), The Rules of Sociological Method, Glencoe, Illinois: The Free Press, 1938, p. 48.

well-being and that of members of the household about whom he is reporting. His definitions depend on the normative order and on his value-attitude system which have been derived from his socio-cultural background. They may or may not be based on objective fact. In any event, to be most meaningful, human action must be viewed from the point of view of the actor;[8] for, as W. I. Thomas has emphasized, "If men define situations as real, they are real in their consequences."[9]

"Every concrete activity is the solution of a situation."[10] And every situation is composed of both subjective and objective phenomena or events. By objective, in the present

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8. In essence, the Lewinian field theory is a situational analysis of action from the point of view of the actor, an approach which can be put to very good use in the field of health care. Roger G. Barker and others have done some work along this line in their Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability, op. cit., especially Chapter VII, "Social Psychology of Acute Illness." For a summary and critique of the Lewinian approach see: Robert W. Leeper, Lewin's Topological and Vector Psychology, Eugene, Oregon: University of Oregon, 1943.

Studying behavior from the actor's point of view has been termed by perception psychologists as the "phenomenological approach." As described by Krech and Crutchfield, this is "the systematic attempt to observe and describe the world as it appears to the experiencing individual." See: David Krech and Richard S. Crutchfield, Theory and Problems of Social Psychology, New York: McGraw-Hill Book Company, Inc., 1948, p. 78.

9. Quoted by Robert K. Merton, Social Theory and Social Structure, Glencoe, Illinois: The Free Press, 1949, p. 179.

10. W. I. Thomas and Florian Znaniecki, The Polish Peasant in Europe and America, New York: Alfred A. Knofp, Vol. 1, 1927, p. 68. For a discussion of the definition of the situation see the "Methodological Note"; see also "Definition of the Situation," by the same authors in Theodore M. Newcomb and Eugene L. Hartley, et alii, Readings in Social Psychology, New York: Henry Holt and Company, 1947, pp. 76-77.

context is meant from the point of view of the researcher as suggested by Parsons,[11] but it may also mean from the point of view of the medical profession which, in certain aspects of the health context, is probably the most objective criterion available. The subjective refers to viewing phenomena or events from the point of view of the actor, that is, the ego or self, not the biological organism. The biological organism is considered in the same relationship to the self as the physical environment. However, as has been pointed out, to be most meaningful human action must be viewed from the point of view of the actor.

The components of any situation may be considered either as conditions or as mean, depending on the situation. They arise from three sources, the physical environment, the actor's innate capacity, and society.

The conditions are of two kinds. They are either obstacles or facilitating conditions. Any given situation contains both. Since the actor must exert himself in order to obtain a given end there must be certain obstacles in the way, otherwise the end would come without any effort on his part. On the other hand, there are conditions in the situation which facilitate the achieving of the desired end or goal. To use a rather mundane example, in an isolated rural area with dirt roads, rain may impede travel and, therefore, prevent the individual from attaining needed medical care. On the other

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11. Parsons, The Structure of Social Action, op. cit., p. 46.

hand, to the individual who feels the necessity of continuing his work in spite of some affliction, the rain may afford him an opportunity to leave the job and to seek medical aid. The conditions, then are those aspects of the situation over which the actor has no control. They establish the limits of action. Probably the most commonly recognized condition in the present context is the economic factor related to obtaining health care. In a given situation the cost of health services and the individual's economic resources are fairly well fixed. The actor has relatively no control over the conditions of action during the period of time in which he is attempting to reach his goal. Hence, little, if anything, can be done to alleviate the cost or to expand the income or other economic resources during this span of time.

The means are those aspects of the situation over which the actor has control and which can be used, within the conditional limits, for the attaining of the desired goal. In the example of the isolated person above, rain may simply limit the use of the automobile as a means of travel. A horse, a boat, or other means may be used within the limits set by the conditions of the situation. In the example which relates to economic resources, while the actor's income may be relatively fixed during the period of action, he has considerable freedom as to how that income will be used in obtaining the desired goal. As directed by his norms and within the limits of other conditions, he may use his income for the purchase of patent medicines, ingredients for home remedies, faith healers,

M.D.'s, M.D. specialists, non-M.D.'s, and others.

The components of the situation may be classified as relating primarily to the actor and his family or to the community, and, as suggested above, they may be considered as means or conditions depending on the situation. Among those items included in the community-related components are the following:

1. The state of advancement of medical knowledge, understanding, techniques, and equipment.

2. Distance from medical services and facilities.

3. Channels of communication through which medical attention or information can be received.

    a. Automobile and other means of transportation.
    b. Telephone, radio, television, and movies.
    c. Newspapers, bulletins, magazines, and related mass media.
    d. Organizational participation.

4. Economic factors.

    a. Cost of health services and facilities.
    b. Welfare, charity, or other provisions for financing medical costs.

5. Laws which affect health practices.

6. Place of residence, although a community-related component, is related to other factors, especially to the family-related components such as psychological distance, custom, income, and others. It is only by breaking residence down into these other components that it begins to have meaning, and then only if it can be demonstrated that one residence group has more or less of a particular characteristic or combination of characteristics than another.

Family-related components of the situation include the following:

1. Size and composition of the family.

2. Customs, mores, folkways, superstitions, fear, and religious beliefs.

3. Knowledge, information, and understanding.

4. Distance from a psychological point of view.

5. Image of health services, facilities, and personnel, including the value placed on medical care in general as well as for specific kinds of service.

6. Social stratification including both social class and caste and the values and customs associated with the differential behavior of the various levels.

7. The severity of the illness, which is also influenced by objective factors.

8. Economic resources.

   a. Income.
   b. Real estate or other property which may be sold or mortgaged to provide capital.
   c. Insurance against the costs of ill health.

9. Other goals--competing interests in terms of time, money, or desirability.

   Neglect has often been stated as a factor by informants for not seeking medical attention. However, it has no meaning except as it is related to the reasons for neglect. Competing goals is, no doubt, one of those reasons.

Theoretically, in any given situation the actor has an indefinite number of alternative choices with regard to means and ends. However, as a consequence of his understanding,

there is a possibility of error through the choice of wrong means, or of failure through lack of knowledge of available means, or through ignorance of the relationship of the particular means to the ends which are sought. The actor is not only limited by his own understanding but also by the normative restrictions which are placed upon him. "A norm is an independent selective standard relating the situation and the end. A knowledge of norms answers the question 'why?' a certain course of action is chosen rather than other possible alternative courses within the area of control of the actor. It is an indispensable structural element of action without a knowledge of which concrete courses of action cannot be fully understood. Norms may be classified in three types."[12] These types are efficiency norms, legitimacy norms, and norms of taste. They are discussed briefly below.

Efficiency norms are the norms of rationality and utility. These norms are those standards which determine the most effective adaptation of the means to the ends in a given situation. In obtaining relief from ill health they are the standards which are derived from knowledge and experience and which govern the choice of means necessary to obtain the restoration of health with the least expenditure of time, money, and the least inconvenience and pain.[13] For example, the actor

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12. Green, op. cit., p. 20. The following discussion of norms is based on Green, p. 21ff and on Parsons, The Structure of Social Action, op. cit., Chapter XVII.

13. Parsons has indicated that ". . . these are no simple matters of weighing a rationally understood 'need'

may be faced with a choice between a home remedy and going to a physician. A home remedy may be inexpensive and readily available and, though it may or may not have any real medicinal value, it has become associated with bringing relief from the affliction. On the other hand, going to see the doctor may involve considerable expenditure of time and money not only for doctor's fees but for transportation and drugs as well. The doctor's examination and treatment may also involve considerable pain which the home remedy avoids. Of course, the situation may be completely reversed; that is, through experience one may have found that early treatment by a physician may be the most efficient and in the long run involve less expenditure of both time and money and perhaps even less pain. Efficiency norms are also involved in the choice of the type of practitioner whether it be an M.D., a non-M.D., a specialist, public health nurse, faith healer, or others.

Legitimacy norms are the standards of moral obligation. "The attitude of the actor to these norms may vary; that is, they may, on the one hand, be morally neutral conditions to which he orients his action, as he would to the availability of any technical means, or, on the other hand, his attitude may be a 'moral' one of acceptance and hence an obligation to live up to them, or rejection and a corresponding obligation

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against an equally assessed 'cost' in the form of discomfort or inconvenience." Parsons, The Social System, op. cit., p. 452.

to combat them."[14] In the field of health there are certain legal codes and restrictions governing not only the medical profession but the layman as well. Such things as licensing, laws governing the practice of euthanasia, certain doctor-patient relationships, and codes of sanitation are among those included. These restrictions may compel the individual to orient his action in certain ways, but may not involve moral obligation. Such restrictions, therefore, are more accurately classified as conditions. However, if a moral acceptance is involved these restrictions are classified as norms which govern the choice of means. For example, a doctor may avoid the practice of euthanasia solely because of the legal restrictions placed on such action. On the other hand, he may avoid it because of a moral aversion to the taking of a human life. Other examples can be found in certain superstitions and religious beliefs and practices which are nonlegal but which carry a strong moral obligation. For example, the Hopi Indians of Arizona have a variety of taboos which a woman must observe during pregnancy and childbirth. These norms, which are not observed by the medical profession, have been one of the major stumbling blocks in getting these people to use the hospital during childbirth.[15] The deep-rooted aversion which some people have toward cutting human flesh and certain faith healing practices, taboos, and rituals can all be classed as legitimacy norms.

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14. Parsons, The Structure of Social Action, op. cit., p. 652.

15. Sheldon G. Lowry, "The Major Rites of Passage of

Norms of taste operate within the limits established by the efficiency and legitimacy norms, but they are not binding in the same way as the other two types.[16] These norms do not denote standards of "right" nor of utility as do the other types, but rather standards of beauty, appreciation, and "taste." Such norms are greatly affected by the individual's status positions. Among the many examples which can be chosen in the field of health and health care are: having teeth filled with gold when the choice is made on the basis of "show" rather than the utility or durability of the substance, wearing braces on the teeth for the purpose of beautifying the mouth by straightening the teeth, performing certain kinds of plastic surgery, removal of various growths on the skin, avoiding operations because of the scar which it might leave, and others. The selection of a private room in the hospital, special nurses, a suite of rooms, and similar items can often be classed as norms of taste depending upon the situation.

It should be pointed out that it very often happens that all three of these types of norms are involved in the same concrete situation. Therefore, one need not feel the necessity to ascribe all norms in a particular action to any one type. In fact, in any complex of action more than one type is usually

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the Hopi Indians," An unpublished paper based on secondary sources, 1948, p. 1.

16. See Parsons, The Structure of Social Action, op. cit., pp. 677ff.

involved.[17]

As indicated above, a definite action can only appear as a result of a definition of the situation, and, hence, the selection of the particular means to be used in attaining the desired end. This reduction of alternatives to a single course of action which predominates over the others is reached only after an interpretation of the existing conditions that must be overcome and the selection and special combination of the individual's values and attitudes. Although at times a certain attitude or value imposes itself seemingly unreflectively and leads immediately to action, there is usually a period of reflection, after which either a ready-made social definition is applied or a new personal definition is constructed.

Since the various socio-economic groups in this country share a common culture, they also have many characteristics in common. However, much of their socio-cultural background is different because they are actually subcultures within the larger culture. To the extent that this background is different, there will also be a difference in the normative orders, the value-attitude systems, and the relative knowledge and understanding of the various groups. Moreover, the extent to which these factors vary in the area of health and health care the definitions of morbidity, the goals with regard to health care, and the means of attaining these goals will also vary. There is considerable need for a clearer understanding and a greater elaboration of these various factors as they relate to the total health situation of the nation.

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17 Ibid., p. 651.

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APPENDIX A

STATISTICAL METHODS USED IN THE STUDY

STATISTICAL METHODS USED IN THE STUDY

In the chapter on the cost of medical care, and in one or two other instances which are specifically stated, percentages were used. In the remainder of the study rates have been used throughout. The rates are simply ratios of cases of illnesses (or of use of health services) to population. The rate in each cell of a given table, therefore, is based on the number of cases of illness (or use) and the number of individuals in that cell, and is reported as so many cases per hundred population. Of course, the rates can go above 100 since a given individual may report more than one case of illness or of use of health services.

To test the association between two characteristics or variables, the chi square test was used throughout the study.[1] When percentages were involved, the traditional chi square formula,

$$X^2 = \Sigma \frac{(f - f_c)^2}{f_c}, \text{ or } \Sigma \frac{f^2}{f_c} - N,$$

was used and was applied to the frequency distributions from which the percentages were computed. In this instance only one P value is reported for the entire distribution of each table.

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1. For a detailed discussion of the chi square test the reader is referred to Margaret Jarman Hagood and Daniel O. Price, Statistics for Sociologists, New York: Henry Holt and Company, 1952, and to other general statistics texts.

For those tables involving rates the following derivation of the above formula, as developed by Dr. C. Horace Hamilton, was used. The test was applied to each row and to each column in the tables where appropriate, and a separate P value is reported for each. The formula implies expected frequencies based on the populations in the given cells and on the ratio of the total cases to the total population in the given row or column. The expected frequency of each cell, therefore, is obtained as follows:

$_if_c = rp_i$ in which $_if_c$ = the expected frequency of the ith cell,

$r = \frac{\Sigma f_i}{\Sigma p_i}$ or the total frequency of the column divided by the

total population of the column, and p_i = the population base of the ith cell.

Therefore, the conventional formula for chi square,

$\Sigma \frac{f_i^2}{_if_c} - N$ becomes:

$$X^2 = \Sigma \frac{f_i^2}{rp_i} - N = \frac{1}{r} \Sigma \frac{f_i^2}{p_i} - N = \frac{\Sigma p_i}{\Sigma f_i} \left[\Sigma \frac{f_i^2}{p_i} \right] - \Sigma f_i$$

The degree of freedom for a given column is one less than the number of cells in the column. It should also be pointed out that those cells with expected frequencies below 5 were combined with other cells, in which case, one degree of

freedom was lost for each combination. However, when such combinations did not seem to be logical or if they appeared to distort or change the general trend of the data, the chi square test was omitted and this fact was reported.

The chi square test in this instance is a test of the null hypothesis that in the population from which the sample has been drawn, there is no association between two given variables, i.e., the variables are independent. To test this hypothesis the observed distribution is compared with an expected distribution (which in this case is based on the marginal totals, since they are the best available estimate of the universe) to determine "if the discrepancies between the two distributions are greater than could have been explained by chance variations in sampling."[2] The hypothesis is that there is no difference between them. In other words, the observed deviations could have occurred by chance alone. In this study, if the probability that such discrepancies could have occurred by chance is 5 or less in 100, the null hypothesis that there is no difference between the two variables is rejected, and the observed variations are said to be significant. A probability of 10 or less but greater than 5 in 100 is said to be on the borderline of significance, and that the data are in need of further study.

Since the chi square test does not show direction, conclusions which involve direction are derived from empirical

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2. Ibid., p. 364.

observation of the data rather than from the statistical test. Furthermore, the chi square test does not single out individual cells as being more influential in the distribution than others. However, there is justification for calling attention to the peculiarities of individual cells, such statements merely being suggestive of possible trends and areas which need further study. Observations based on the chi square test are not conclusive anyway; the test simply adds some assurance as to the accuracy of the empirical observations.

Only the following probability values have been reported in the study: .001, .01, .02, .05, and .10. To avoid the cumbersome use of the phrases "greater than" and "less than" and the symbols which represent these phrases, the actual probability values in the study are less than the value reported but greater than the next lower value. For example, a P value reported as .05 is actually less than .05 but greater than .02; similarly, a value reported as .02 is less than .02 but greater than .01, etc. In one or two instances the P value was almost exactly the value reported. Any value which went above .10 is not considered to be significant, and this fact is represented with a dash (--). Chi square was not computed on the "unknown," "no answer," and similar categories since it was felt that nothing would be added to the value of the analysis by so doing.

APPENDIX B

THE INTERVIEW GUIDE

THE INTERVIEW GUIDE

The interview guide used in the study is reproduced below. Detailed instructions to the interviewers for the study as a whole and for each individual question are on file in the Department of Rural Sociology at North Carolina State College.

Map No.____Enumerator_____Date____Edited by____Date_____

WAKE COUNTY HEALTH SURVEY

North Carolina Agricultural Experiment Station
Department of Rural Sociology

Head of Household_____Informant_____

Address_____

Column	Item and Data	Code
1	Card Set	____
2-4	Record Number	____
5	Residence: Rural Farm Rural Nonfarm Urban	____
6	Color: White Nonwhite	____
7	Home tenure: Owners Renters	____
8	Family Income $_____	____
9	Occupation: _____	____
10	Industry: _____	____

Column	Item and Data	Code
11	Farm tenure: _____	____
	NUMBER OF PERSONS IN THIS HOUSEHOLD WHO WORKED AND/OR RECEIVED AN INCOME DURING THE PAST YEAR	
12	Total	____
13	Agricultural	____
14	Nonagricultural	____
15	Both	____
16	Age of male head _____	____
17	Age of female head _____	____
18	Education of male head _____	____
19	Education of female head _____	____
20-21	Number rooms in this house	____
22-23	Number persons in this house	____
24	Crowding index	____
25	Moved: '45 '46 '47 '48 '49	____
26-27	Health environment index	____
28-29	Communication-participation index	____
	AGE DISTRIBUTION	
30	Children under 6	____
31	Children 6-13	____
32	Children 14-17	____
33	Males 18-44	____
34	Females 18-44	____
35	Males 45-64	____
36	Females 45-64	____

Column	Item and Data	Code
37	Males 65-up	____
38	Females 65-up	____
39-40	Number living children	____
41	Number infant deaths	____
42	Deaths of other children	____
43	Stillbirths	____
	HEALTH ENVIRONMENT (Card Set 2)	
30	Condition of structure:	____
	(4) Excellent (3) Good	
	(2) Fair (1) Poor (0) Bad	
31	Entrance not in alley	____
32	Dual egress	____
33	Living room	____
34	One or more bedrooms per two people	____
35	Windows for all rooms	____
36	Insect-proof screens	____
37	Safe water supply (Public system or private drilled well, covered and properly located.)	____
38	Running water in house	____
39	Carry water less than 50 feet	____
40	Kitchen sink	____
41	Sanitary sewage disposal (Public system, septic tank or approved pit privy.)	____
42	Private bath and toilet	____

Column	Item and Data	Code
43	Private kitchen	____
44	Running hot water	____
45	Central heating system	____
46	Electric lights	____
47	Mechanical refrigerator	____
48	Ice box	____
49	Rats and insects under control	____
	COMMUNICATION AND PARTICIPATION (Card Set 2)	
50	Automobile for family use	____
51	Radio in operating condition	____
52	Telephone	____
53	Daily newspapers	____
54	Weekly or local newspapers	____
55	Farm magazines	____
56	Other magazines	____
57	Encyclopedia	____
58	Home Health Guide	____
59	Government pamphlets on infant and child care	____
60	Other government pamphlets	____
	Attend and Work in Following Organizations	
	Much Some None	
61	Church, Sunday School, etc. M S N	____
62	Lodges and fraternal orders M S N	____
63	Civic and luncheon clubs M S N	____

Column	Item and Data		Code
64	Business and professional	M S N	____
65	Labor unions	M S N	____
66	Cooperatives	M S N	____
67	General farm organizations	M S N	____
68	P. T. A.	M S N	____
69	Home Demonstration Clubs	M S N	____
70	Other educational organizations	M S N	____
71	Social and recreational	M S N	____
72	Boards and committees of any organizations	M S N	____
	HEALTH INSURANCE AND RELATED SUBJECTS (Card Set 3)		
30-31	Number of individual medical care records		____
32-35	Total cost of medical care		____
	How Paid: Percent by:		
36-37	Cash		____
38-39	Credit		____
40-41	Insurance (Blue Cross)		____
42-43	Insurance (Other)		____
44-45	Government		____
46-47	Organized philanthropy		____
48-49	Friends and relatives		____
50-51	Unpaid		____
52-53	Discount allowed		____
54	Family Blue Cross Hospital Insurance		____
55	Is surgery included?		____

Column	Item and Data	Code
56-57	Number of persons covered	____
58	Commercial health, hospital or accident insurance included	____
59	Include surgery?	____
60	Include hospitalization?	____
61	Disability clause?	____
62-63	Number of persons covered	____
64-65	Health insurance premiums per year	____
66	Miles from nearest doctor _____	____
67	Miles from nearest hospital _____	____
68	Usual fee for call in doctor's office $____	____
69	Usual fee for home call by doctor $____	____
70	Usual fee for night home call $____	____
71-72	Number office calls	____
73-74	Number home calls	____
75	Have you heard any talk on radio, or read anything about National Health Insurance?	____
76	Have you made up your mind on the matter?	____
77	Attitude: For it _____	____
	Against it _____	
	Undecided _____	
	No opinion _____	
78	Group coverage	____
79	Number in household covered	____
80	Include surgery?	____

INDIVIDUAL RECORD FOR ALL TYPES OF ILLNESS AND MEDICAL TREATMENT
(Card Set 4)

Includes dental work, fitting glasses, vaccinations, diagnostic work, preventive and educational clinics, as well as acute and chronic illness. Must include all acute illnesses which began or ended during the preceding six months.

Column	Item and Data	Code
30	Name_____ No.____	____
31	Age_____ Sex_____	____
32	Cause_____	____
33	Acute_____ Chronic_____	____
	Dental_____ Eyes_____	
	Diag._____ Preventive_____	
34	Disability: None____ Partial____ Full___	____
35	Present Condition: Well____ Ill____	____
	Conv.____ Dead____	
36	Date terminated_____	____
37-38	Length of Illness:	____
	Years_____ Months_____ Days_____	
39-40	Days in hospital	____
41-42	Days in home bed	____
43	Doctor: None____ M.D.____ M.D. Spec.____	____
	Non-M.D.____ Dentist____	
44	Home calls by doctor	____
45-46	Office calls	____
47-48	Hospital calls	____
49-50	Total calls	____

Column	Item and Data				Code
51	Visits by patient to out-patient department, to clinic, or to Public Welfare Department				____
	Cost by Type of Service				
52-54	General M.D.	$_____	Specialist M.D.	$_____	____
	Non-M.D.	$_____	Dentist	$_____	
55-57	Midwife	$_____	Spec. Nurse	$_____	____
	Prac. Nurse	$_____			
58-60	Attendant	$_____	Servant	$_____	____
61-63	Hospital	$_____			____
64-65	Rx drugs	$_____	Other drugs	$_____	____
66-67	Diagnostic (X-ray, Lab., etc.)			$_____	____
68-70	Glasses	$_____	Dentures	$_____	____
	Appliances	$_____			
71-72	Ambulance	$_____			____
73-74	Other	$_____			____
75-78	Total	$_____			____
79-80	Wages lost	$_____			____

APPENDIX C

BASE SAMPLE POPULATION TABLES

Table 1. Frequency distribution of sample population by income and age.

Age	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Under 6	316	88	155	53	20
6-13	282	93	119	50	20
14-17	144	43	60	31	10
18-44	856	184	405	206	61
45-64	410	98	167	116	29
65-up	117	54	44	15	4

Table 2. Frequency distribution of sample population 18 years of age and over by sex and age.

Age	Total	Sex	
		Males	Females
Total 18-up	1383	658	725
18-44	856	410	446
45-64	410	191	219
65-up	117	57	60

Table 3. Frequency distribution of sample population by color and age.

		Color	
Age	Total	White	Nonwhite
Total	2125	1498	627
Under 6	316	207	109
6-13	282	176	106
14-17	144	87	57
18-44	856	632	224
45-64	410	305	105
65-up	117	91	26

Table 4. Frequency distribution of sample population by income and color.

		Income			
Color	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
White	1498	201	702	451	144
Nonwhite	627	359	248	20	0

Table 5. Frequency distribution of white sample population 18 years of age and over by sex and age.

		Sex	
Age	Total	Males	Females
Total 18-up	1028	497	531
18-44	632	310	322
45-64	305	143	162
65-up	91	44	47

Table 6. Frequency distribution of nonwhite sample population 18 years of age and over by sex and age.

		Sex	
Age	Total	Males	Females
Total 18-up	355	161	194
18-44	224	100	124
45-64	105	48	57
65-up	26	13	13

Table 7. Frequency distribution of sample population by home tenure and age.

		Tenure	
Age	Total	Owners	Renters
Total	2125	1005	1120
Under 6	316	118	198
6-13	282	105	177
14-17	144	70	74
18-44	856	372	484
45-64	410	257	153
65-up	117	83	34

Table 8. Frequency distribution of sample population by income and home tenure.

		Income			
Tenure	Total	Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Owners	1005	157	435	334	79
Renters	1120	403	515	137	65

Table 9. Frequency distribution of sample population by place of residence and age.

		Residence		
Age	Total	Rural Farm	Rural Nonfarm	Urban
Total	2125	692	530	903
Under 6	316	105	90	121
6-13	282	127	56	99
14-17	144	69	30	45
18-44	856	233	238	385
45-64	410	115	89	206
65-up	117	43	27	47

Table 10. Frequency distribution of white sample population by place of residence and age.

Age	Total	Residence		
		Rural Farm	Rural Nonfarm	Urban
Total	1498	421	454	623
Under 6	207	53	76	78
6-13	178	62	47	67
14-17	87	35	27	25
18-44	632	152	207	273
45-64	305	84	76	145
65-up	91	35	21	35

Table 11. Frequency distribution of nonwhite sample population by place of residence and age.

Age	Total	Residence		
		Rural Farm	Rural Nonfarm	Urban
Total	627	271	76	280
Under 6	109	52	14	43
6-13	106	65	9	32
14-17	57	34	3	20
18-44	224	81	31	112
45-64	105	31	13	61
65-up	26	8	6	12

Table 12. Frequency distribution of sample population by income and place of residence.

Residence	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Rural Farm	692	309	263	74	46
Rural Nonfarm	530	122	248	103	57
Urban	903	129	439	294	41

Table 13. Frequency distribution of sample population by health environment index and age.

Age	Total	Health Environment Index			
		0-10	11-18	19-22	23
Total	2125	448	742	701	234
Under 6	316	99	95	91	31
6-13	282	91	93	77	21
14-17	144	28	75	32	9
18-44	856	161	291	299	105
45-64	410	48	151	151	60
65-up	117	21	37	51	8

Table 14. Frequency distribution of sample population by income and health environment index.

Health Environment Index	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
0-10	448	303	119	16	10
11-18	742	209	435	43	55
19-22	701	46	324	260	71
23	234	2	72	152	8

Table 15. Frequency distribution of sample population by communication-participation index and age.

Age	Total	Communication-Participation Index			
		0-3	4-7	8-13	14-25
Total	2125	313	741	801	270
Under 6	316	63	112	119	22
6-13	282	49	94	103	36
14-17	144	14	51	57	22
18-44	856	122	311	329	94
45-64	410	42	130	158	80
65-up	117	23	43	35	16

Table 16. Frequency distribution of sample population by income and communication-participation index.

Communication-Participation Index	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
0-3	313	187	95	20	11
4-7	741	249	357	78	57
8-13	801	110	406	218	67
14-25	270	14	92	155	9

Table 17. Frequency distribution of sample population by size of household and age.

Age	Total	Size of Household		
		1-2	3-6	7-up
Total	2125	351	1370	404
Under 6	316	1	229	86
6-13	282	4	173	105
14-17	144	5	87	52
18-44	856	157	591	108
45-64	410	141	225	44
65-up	117	43	65	9

Table 18. Frequency distribution of sample population by income and size of household.

Size of Household	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
1-2	351	116	136	89	10
3-6	1370	282	641	335	112
7-up	404	162	173	47	22

Table 19. Frequency distribution of sample population by crowding index and age.

Age	Total	Crowding Index				
		Under .50	.50-.99	1.00-1.49	1.50-1.99	2.00-up
Total	2125	258	826	550	229	262
Under 6	316	2	100	83	59	72
6-13	282	5	76	95	50	56
14-17	144	10	45	43	20	26
18-44	856	81	378	231	84	82
45-64	410	122	183	71	12	22
65-up	117	38	44	27	4	4

Table 20. Frequency distribution of sample population by income and crowding index.

Crowding Index	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Under .50	258	53	87	101	17
.50-.99	826	113	373	272	68
1.00-1.49	550	143	296	80	31
1.50-1.99	229	115	101	0	13
2.00-up	262	136	93	18	15

Table 21. Frequency distribution of male sample population 18 years of age and over by crowding index and age.

Age	Total	Crowding Index				
		Under .50	.50-.99	1.00-1.49	1.50-1.99	2.00-up
Total 18-up	658	105	289	166	47	51
18-44	410	38	182	112	40	38
45-64	191	50	84	41	6	10
65-up	57	17	23	13	1	3

Table 22. Frequency distribution of female sample population 18 years of age and over by crowding index and age.

Age	Total	Crowding Index				
		Under .50	.50-.99	1.00-1.49	1.50-1.99	2.00-up
Total 18-up	725	136	316	163	53	57
18-44	446	43	196	119	44	44
45-64	219	72	99	30	6	12
65-up	60	21	21	14	3	1

Table 23. Frequency distribution of sample population by education of male household head and age.

Age	Total	Education of Male Head					
		Under 4	4-8	9-12	1-3 college	4 college-up	Others*
Total	2125	225	628	518	165	167	422
Under 6	316	42	97	91	26	20	40
6-13	282	33	110	59	12	23	45
14-17	144	17	55	26	6	7	33
18-44	856	74	228	255	64	73	162
45-64	410	39	111	71	44	42	103
65-up	117	20	27	16	13	2	39

*This category includes no answer, no male head, and male head not living.

Table 24. Frequency distribution of sample population by income and by education of male household head.

Education of Male Head	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Under 4	225	157	42	4	22
4-8	628	188	323	98	19
9-12	518	47	266	141	64
1-3 college	165	4	82	74	5
4 college-up	167	0	34	125	8
Others*	422	164	203	29	26

*This category includes no answer, no male head, and male head not living.

Table 25. Frequency distribution of sample population by education of female household head and age.

Age	Total	Education of Female Head					
		Under 4	4-8	9-12	1-3 college	4 college-up	Others*
Total	2125	129	735	752	213	141	155
Under 6	316	15	119	126	30	19	7
6-13	282	16	119	107	15	12	13
14-17	144	8	75	40	10	2	9
18-44	856	41	259	339	86	67	64
45-64	410	31	134	107	61	35	42
65-up	117	18	29	33	11	6	20

*This category includes no answer, no female head, and female head not living.

Table 26. Frequency distribution of sample population by income and by education of female head.

Education of Female Head	Total	Income			
		Under $1,500	$1,500-3,999	$4,000-up	Unknown
Total	2125	560	950	471	144
Under 4	129	69	42	7	11
4-8	735	309	310	72	44
9-12	752	106	393	190	63
1-3 college	213	18	79	111	5
4 college-up	141	7	48	83	3
Others*	155	51	78	8	18

*This category includes no answer, no female head, and female head not living.