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Information and Beliefs About Heart Disease Held by the Public in Five Areas of Missouri

EDWARD W. HASSINGER AND THOMAS M. ANDERSON

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CHAPTER I

THE STUDY

INTRODUCTION

Heart diseases account for more deaths among people in this country than any other class of diseases. There is no simple prevention; the direct causes of some types of heart disease must currently be classified as hypotheses; and the management of patients with some types of heart disease is not entirely agreed upon by medical authorities. A goal of medical research is to reduce uncertainties in these areas and much has been accomplished.

There is another facet of uncertainty that confronts the professional health worker in efforts of public education about heart disease. It results from lack of reliable knowledge about what information, beliefs, and sentiments the public has concerning heart disease; and further, what channels of communication are utilized and what actions are taken with heart disease as the referent. It is the general goal of this study to reduce somewhat these uncertainties.

This is a feedback that informs the professional health worker what really is "out there." In developing a public education program about heart disease, it would seem that this kind of information would be useful.

The specific objectives of the study were:

1. *To determine the information that a selected sample of people have regarding heart disease.*
2. *To determine the beliefs and sentiments that a selected sample of people attaches to heart disease.*
3. *To search for and identify socio-economic elements in the population which have different information, beliefs, and sentiments about heart disease.*
4. *To determine sources of information about heart disease and the manner in which these sources are related to one another.*
5. *To determine what action people take regarding heart disease under variant conditions of information attached to heart disease.*

Keeping in mind the objectives, our first step was to examine the literature. In addition to an extensive search through the facilities of the University, we contacted other researchers for any additional materials. In reviewing the literature, we have not delved into the technical aspects of heart disease to a great extent. In addition, we have not been too concerned with the epidemiological studies of heart disease. What we did look for, chiefly, were studies of public information and beliefs about heart disease. We also examined some studies on communication research but did not attempt to be exhaustive in this field.

After collecting a large number of studies we were confronted with the problem of putting the varied studies together in some orderly, meaningful way. It was decided to group the studies according to our basic objectives. The bulk of this chapter is the presentation of the review of literature under these objectives together with the application of these studies to the present research.

REVIEW OF LITERATURE

Information

What do people know about heart disease? This is the logical first question for any health educator to ask as he ponders developing a health education program; however, it is only the starting question as will be demonstrated. This section deals with a review of literature concerning information that the lay public has concerning illness. Of concern is the detail and accuracy of information for it is as important to identify misinformation as it is to find accurate information.

In discussing information that people have about heart disease, it must be stated at once that in some areas firm knowledge is not available. At a seminar on the Purdue Farm Cardiac Study, Dr. W. B. Kannel pointed out that because, to a great extent, the causes of heart disease are unknown, "one can only test the population for knowledge of current hypotheses of causation and not on 'causes'." He commented further, "In the present state of ignorance, the statement that 'there is really no way to avoid heart disease,' may not be as naive as it sounds."[1] However, there are informed hypotheses about causation upon which health education programs can be reasonably based. Also, there is firm information about detection and management of heart disease.

To determine what information the public has presents a minor problem compared to determining the meaning and the sources of the information. In considering meaning, one must take into account the manner in which the individual relates information to his life situation. In determining sources of information one must consider the many inter-connected channels of commuication.

In reviewing the literature it was found that systematic studies of lay knowledge about heart disease are rare. The most comprehensive example that deals entirely with this subject is the study conducted by Bertrand and Storla in

[1]W. B. Kannel, "Discussion of Field Study Findings," *Proceedings of the Purdue Farm Cardiac Seminar,* Part VII (Lafayette, Indiana: Agricultural Experiment Station, Sept. 10-11, 1958), p. 78.

Louisiana.[2] As their objectives they proposed, "to discover the nature and extent of lay knowledge, behavior, attitudes, and opinions with respect to heart disease." This broad objective was broken into two sub-topics:

1. "Determination of the informants' information and beliefs about such things as symptoms, types, and treatment."
2. "Discover what relationships, if any, the level of knowledge has to selected social, economic, geographical, and biological characteristics of the sample population."[3]

A sample of 1024 respondents was obtained from a northern area and a southern area of the state. Of the sample, 532 were urban residents, 264 rural farm, and 228 rural non-farm.

It was found that, in general, the lay public had little precise knowledge about heart disease. About half (52.4 percent) were unaware that heart disease was the most important cause of death. Almost 60 percent definitely knew that there was more than one type of heart disease, but few could name even one type (12 percent named rheumatic heart which was the largest percentage to name any one type).

The level of information about heart disease was low. For instance, 70 percent had never heard of an electrocardiogram and 50 percent did not understand well the term, heart failure.[4]

Over 60 percent of the sample population reported that they had never consciously thought about symptoms of the disease. Not all of those who reported that they had thought about symptoms could name one. The symptoms reported in the peoples' own words in order of frequency were: (1) short-winded, (2) pain in the chest, (3) pain in the left arm or shoulder, (4) temperature and "color," (5) faint feeling, light headedness, dizziness or "black-outs," (6) loss of energy, feeling of tiredness and "giving out" while working, and (7) indigestion type pains.[5]

On the other hand, 70 percent reported a connection between diet and heart disease. However, in many cases their knowledge was not very sophisticated. "Very few of the informants, indeed, gave indication that they were aware that certain cardio-vascular conditions necessitate qualitative dietary prescriptions." A few older people even reported that "now-a-days people eat too much canned food."[6]

Eighty percent of the respondents connected obesity to heart disease, and about the same percentage thought there was a connection between the use of tobacco and alcohol and heart disease which seems to be in agreement with informed opinion.[7]

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[2]Alvin L. Bertrand, and Clarence A. Storla, *Lay Knowledge and Opinion About Heart Disease in Selected Areas of Louisiana*. (Baton Rouge: Louisiana Agricultural Experiment Station, July, 1955), 31 pp.
[3]*Ibid.*, p. 1.
[4]*Ibid.*, p. 11.
[5]*Ibid.*, pp. 9-10.
[6]*Ibid.*, p. 15.
[7]*Ibid.* p. 15.

Bertrand related knowledge about heart disease to a number of socio-cultural variables. These relationships will be considered in a later part of this report.

The Purdue Farm Cardiac Project is another major study, in part sociological, that was conducted in relation to heart disease. This multiphasic and interdisciplinary project placed great emphasis on energy requirements in agriculture and was concerned with developing more effective and economical farm work methods for the workers with cardiovascular disease. We are particularly interested in the sociological aspects of this study. The major report of the research is contained in the "Proceedings of the Purdue Farm Cardiac Project Seminar."[8] The section by D. C. Riedel, R. L. Eichhorn, and W. H. M. Morris, titled "Information and Beliefs Concerning Health and Heart Disease," is especially important to our investigation.

The procedure used in obtaining the sample for the Purdue Farm Cardiac Study was as follows: The population was defined so as to include only those farmers who (a) were 65 years of age or younger at the time of the first contact; (b) who farmed 80 acres or more; and (c) who did not work more than 100 days per year off the farm. A short mail questionnaire was developed and sent to all farmers in a five county area in Indiana. Over-all response involved 5867 people or 78.8 percent of the total number of farmers.[9] Of the total number, 2487 were found to be acceptable. A stratified cluster type sample was used for one county, and stratified samples for the other four. From these stratified samples, 400 respondents were selected. The sample was weighted so that a yield of 50 percent cardiacs was insured. Including refusals, and insignificant data, the authors further reduced the sample number to 362 which was used in their analysis.

Data were gathered covering three areas: (1) farm operation, (2) social psychological aspects of work and health, and (3) the Cornell Medical Index (self-administered) and physicians' evaluation.[10]

A comparison of physical examinations and the respondents' answers showed that there were many differences between beliefs of health status, and the factual medical examinations. There was a considerable amount of underreporting and overreporting of heart disease. The sample was divided into four categories: (1) the diagnosed cardiacs who realized their heart disease, (2) the false-positives (those who believed that they had a heart ailment, but actually did not), (3) the false-negatives (those who actually had a form of heart disease and did not know it), and (4) the true-normals (those proven free of the disease and aware that they were free of it).[11]

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[8]W. H. M. Morris, responsible investigator, *Proceedings of the Purdue Farm Cardiac Seminar*. 90 pp.

[9]L. S. Hardin. "Objectives and Techniques of the 400 Case Field Study," *Proceedings of the Purdue Farm Cardiac Seminar*. Part V, p. 42.

[10]J. M. Beshers, "Analysis of the Cardiac Field Study: An Overview," *Proceedings of the Purdue Farm Cardiac Seminar*, Part V, p. 44.

[11]R. L. Eichhorn and W. H. M. Morris, "Respondent Errors in Reporting Cardiac Conditions on Questionnaires, "*Proceedings of the Purdue Farm Cardiac Seminar*. Part V, pp. 46-47.

To determine the level of information of the respondents, each was asked to name "as many types, symptoms, and treatments of heart disease as he could."[12]

The previously diagnosed cardiacs proved to have the most information concerning types, symptoms, and treatment. The false-positives, the false-negatives, and the normals followed in descending order. While only 21.2 percent of the cardiacs admitted that they did not know any of the types of heart disease, 42.3 percent of the false-positives, 52.1 percent of the false-negatives, and 52.3 percent of the normals did the same.[13]

As in the Bertrand and Storla study, the percentage of respondents naming other forms of heart disease was low: heart leakage 16 percent, angina pectoris 7.7 percent, arteriosclerosis or hardening of the arteries 7 percent, etc.[14]

The respondents were also asked whether or not they agreed with various statements about heart disease. Results agreed with the findings of the Bertrand and Storla study in that 60.8 percent thought heart disease runs in some families, 93.1 percent thought eating too much is bad for your heart, and 83.3 percent thought worry increased the likelihood of having heart trouble.

The Purdue study demonstrates that experience plays an important part in determining the extent of a person's knowledge about heart disease. In the present study we will be unable to carry on the elaborate design of the Purdue study because that would involve physical examinations. However, through survey techniques we can inquire into past experience. It is probable that this influence extends to the experience that family members and other associates have had with the disease.

The Purdue study also establishes the importance of the phyiscian as a source of information and indicates the problems of communication between the expert and the layman.

Material valuable for our purpose can be obtained from studies that deal with other diseases. In one such study, Daniel Horn gives a report of a national sample survey for the American Cancer Society titled "Public Opinion on Cancer and The American Cancer Society."[15] The report deals with a comparison of a 1948 and a 1955 national sample. In 1948, 1244 interviews were given and in 1955, 6928. Some of the findings were: 70 percent thought children could get cancer; 40 percent of the sample group could not name a correct symptom; 60 percent of the informants got their information from the mass media; 41 percent thought cancer might be contagious; and 73 percent waited to go to the doctor because of fear. With cancer as well as heart disease, there is considerable variation among people in beliefs about the disease.

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[12]D. C. Riedel, R. L. Eichhorn, and W. H. M. Morris, "Information and Beliefs Concerning Health and Heart Disease," *Proceedings of the Purdue Farm Cardiac Seminar*. Part VI, p. 57.

[13]*Loc. cit.*

[14]*Loc. cit.*

[15]Daniel Horn, *Public Opinion on Cancer and the American Cancer Society: Report of National Sample Survey*. New York: American Cancer Society, Inc., April 1956, 35 pp.

Godfrey Hochbaum[16] points out that, "Knowledge may equip a person to give correct answers to questions but may not in any way influence his behavior."[17] He found that similar proportions of those well informed and poorly informed about tuberculosis had had chest X-rays,[18] and concluded that, "people learn to give correct answers to questions before they learn to believe what they say and long before they use this information to guide their behavior."[19] The next section of this review will deal with these considerations.

Beliefs and Sentiments

In this section we will review literature dealing with the beliefs of illness. Beliefs are cognitions of what is true or right; sentiments are feeling states. Information is an item of belief that is placed against an objective criterion and judged to be right or wrong. In this section we are not concerned with information as such but the perception that people have of disease.

Several related studies indicate some of the dimensions of beliefs applied to health matters. The principal study to be reviewed is Hochbaum's research on participation in mass X-ray screening programs in three cities.

A sample of 1201 individuals was obtained, and personal, standardized interviews were conducted. The interview was designed to stimulate the expression of opinions, feelings, and attitudes. All responses were free-answer and were recorded as nearly verbatim as possible.

Hochbaum found that the persons most likely to voluntarily participate in chest X-ray programs were those who had the following beliefs:

1. Accepts the possibility of contracting tuberculosis.
2. Accepts the fact that he might not be aware of having contracted tuberculosis.
3. Believes that he would benefit from early diagnosis.[20]

Of the 259 respondents who expressed the above total set of beliefs, 82 percent had at least one voluntary chest X-ray during the seven-year period preceding the study, compared with 47 percent in the total sample, and 20 percent who expressed none of the above beliefs.[21]

Hochbaum points out that, "Information alone is not a motivating force, although it is basic to most behavior. Without knowing what to do and how to do it, one cannot act. But only when this knowledge is related in some way to one's needs will it actually be translated into action."

Rosenstock found a similar set of cognitions operating in the acceptance of the Asian influenza vaccine. In interviews with 1600 families in two cities, he

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[16]Godfrey M. Hochbaum, *Public Participation in Medical Screening Programs: A Socio-Psychological Study*, (United States Dept. of Health, Education and Welfare, Public Health Service, Publication No. 572, Washington, D.C.: U. S. Gov. Printing Office, 1958) 23 pp.

[17]*Ibid.*, p. 5.

[18]*Ibid.* p. 15.

[19]*Ibid.*, p. 16.

[20]*Ibid.*, p. 8.

[21]*Ibid.*, pp. 9-10.

found that "on an individual basis, the vast majority of families took no action to ward off the threat of the disease."[22]

In explaining this he used a 3-point combination of beliefs. "Other things being equal, a person will not take action to ward off a disease unless he believes, first, that he is susceptible to it; second, that its occurrence would be a serious matter; and third, that effective and acceptable means for preventing or controlling it exist and are available to him."[23] The first and third point are almost identical to the formulation in the study of participation in medical screening programs. When these points were examined in the population studied it was found that "not more than 25 percent of the 600 families interviewed even accepted the possibility that someone in the family might contract the disease. Regarding beliefs about the severity of the conditions, it was quite evident that concern was low. Surprisingly, perhaps, less than one-half of the general population even believed that Asian influenza was more serious than the usual common cold, grippe or "flu." Less than 3 percent of the population believed that contracting influenza would require any marked changes in their daily activities."[24] On the other hand, most persons had a favorable opinion about the effectiveness of the vaccine. This combination of beliefs in the opinion of the author accounted for the low rate of immunization.

Another study utilized a similar set of cognitions in association with the prophylaxis behavior for rheumatic fever. The finding was that "With respect to rheumatic fever, persons who believe they are susceptible to another attack; who believe their last attack was serious—and by inference that their next attack would be serious; and who believe that there is a beneficial course of action available, demonstrate prophylaxis behavior much more often than persons who do not hold any of these beliefs."[25]

In the same vein, Rosenstock, Derryberry, and Carriger[26] reviewed research conducted on the acceptance of polio vaccine. The authors were able to identify 40 research activities concerned with poliomyelitis vaccination; 17 of these were found to bear directly on why people failed to accept the vaccine. Of the 17, only 13 were available to the authors and because of various methodological limitations only six research reports were utilized. The authors found that the three cognitive beliefs used in the influenza study were useful in summarizing

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[22]Irwin M. Rosenstock, "Public Acceptance of Influenza Vaccination," *American Review of Respiratory Diseases.* Vol. 83, No. 2 (Feb., 1961), p. 172. The article is a report of a larger study reported more fully in I. M. Rosenstock, G. M. Hochbaum, H. Leventhal, et al. *The Impact of Asian Influenza on Community Life: A Study of Five Cities* (United States Department of Health, Education and Welfare, Public Health Service Publication 766, 1960).

[23]*Loc. cit.*

[24]*Loc. cit.*

[25]Fred Heinzelmann, "Factors Influencing Prophylaxis Behavior with Respect to Rheumatic Fever, An Exploratory Study" *The Journal of Health and Human Behavior.* Summer 1962, p. 76.

[26]Irwin M. Rosenstock, Mayhew Derryberry, and Barbara K. Carriger, "Why People Fail to Seek Poliomyelitis Vaccination," *Public Health Reports.* Vol. 74, No. 2, (Feb., 1959), pp. 98-103

these studies. They found the factors of "personal readiness" to be operative and the explanation follows closely Hochbaum's formulation.

The Hochbaum study does not provide us with an adequate connection between cognitive beliefs and the socio-cultural situation. He did indicate that the optimum combination of beliefs was least likely to be present among the elderly and those in lower socio-economic strata.[27] There is good sociological reason for the hypothesis that the upper and middle classes would have a belief system similiar to the optimum combination indicated by the above studies. This belief system is dependent upon a rational-scientific view of illness--a view that is especially prevalent among the middle and upper socio-economic strata. It takes a rather high level of intellectualization to take health action if "nothing is wrong." In the review article on polio, the authors consider the socio-economic factors connected with the acceptance of the vaccine as a separate set of factors. The point to be made here is that the "personal readiness' factors are not separate from socio-cultural factors but that the beliefs of people are to a large extent conditioned by the social-cultural milieu.

In elaboration of this point it was reported in Kit Carson County, Colo., that "Middle class farmers with their acceptance of science and technology rely predominantly on modern medical science and the physician's skill." While on the other hand, "The group of farmers temporarily working in town and day laborers and their wives do not believe strongly in early medical care or immunization for their children or going to the doctor themselves unless seriously ill." It is among the latter that folk beliefs are strongest and hostility toward the medical profession greatest.[28]

A feeling frequently accompanying illness is anxiety or fear. In a study conducted in 1959 using a nationwide quota sample of 2970 persons, respondents were asked a variety of questions about six diseases: cancer, tuberculosis, cerebral palsy, arthritis, birth defects, and poliomyelitis. A scale from much fear to little fear concerning these diseases produced the following ratings:[29]

cancer	72
polio	58
cerebral palsy	52
arthritis	50
birth defects	46
tuberculosis	38

It was found that education and fear were inversely related. "The better educated, it would appear, are less apt to tremble in the face of unforeseen and unwanted events; and they are less helpless when action is called for."[30] Also

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[27]Hochbaum, *op. cit.*, p. 17.

[28]Stephen E. Boggs, et. al., *A Health Study in Kit Carson County, Colorado* (United States Dept. of Health, Education and Welfare, Public Health Service, Pub. No. 844, Washington, D. C.: United States Government Printing Office, 1962), p. 23.

[29]Gene N. Levine, "Anxiety About Illness: Psychological and Social Basis," *Journal of Health and Human Behavior*.Vol. III, (Spring, 1962), pp. 30-34.

[30]*Ibid.*, p. 30.

it was found that personal experience increased anxiety about a disease at the same time it increased knowledge about it.[31] Levine reports further that "one of our srongest findings reveals that perceived prevalence and anxiety are positively, highly, and consistently correlated. . . . As one example, take cancer: fully two-thirds who believe that many people suffer from this affliction fear it a lot, but only two in five who think that there are few sufferers are anxious to the same degree."[32] To account for this, the author points out that "people worry about the threat a disease poses for their own well-being (or for their immediate family)." He observes further that, "People seem to be essentially self- rather than other-oriented when it comes to matters of health."[33]

Heart disease seems to offer a curious combination of perceived seriousness, but of low anxiety. Paul R. Robbins conducted a study on anxieties related to illness which was mostly methodological in nature. As part of it, he asked 46 mothers (median age 31.5 years; husbands usual occupation, skilled manual) who attended well-child clinic about their "perceived seriousness" of nine diseases and about their "experienced concern" or worry about these diseases. A high proportion (50 percent) regarded heart disease as very serious; this was second only to cancer. At the same time, a smaller proportion of mothers reported that they worried less about heart disease than for any of the other conditions, which included such common ailments as colds and dental trouble.[34]

These several studies establish in one way or another the importance of beliefs and feelings for health behavior. They indicate that different people not only have different information, but relate that information to their life situations differently. In reviewing these studies in a sensible way it has been necessary to consider social and cultural correlates. In the following section the socio-cultural variables are the focus of attention.

Socio-cultural characteristics

The sociological point of view is that society is structured along several dimensions and that these dimensions have consequence for the behavior of people. This has been demonstrated to be true of health behavior in a number of studies, some of which have been reviewed under the headings, information, beliefs, and feelings. Among these socio-economic variables are: age, sex, occupation, class, education, religion, and locality (rural-urban).

We are also interested in the idea of culture as it pertains to heart disease. Culture is regarded as that part of the human enviroment which is man made. It includes ideas and values, as well as the artifacts of a society. The culture of a

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[31] *Ibid.*, p. 31.
[32] *Ibid.*, p. 32.
[33] *Loc. cit.*
[34] Paul R. Robbins. "Some Explorations into the Nature of Anxieties Relating to Illness," Reprinted from *Genetic Psychology Monographs* 1962, Vol. 66, 91-141 (pp. 99-103).

group exists as an integrated system of culture traits that fit together into a culture complex.

In reviewing the literature pertinent to these socio-economic and cultural items we will demonstrate how and to what extent some of these variables are related to information, beliefs, and sentiments.

The authors of the Louisiana study found some definite relationships of socio-economic characteristics to knowledge and opinions about heart disease. The characteristics they discussed were: (1) race, (2) marital status, (3) age, (4) education, (5) sex, and (6) income level.[35]

Age appears to play an important role in the relationship of knowledge and opinions. The Louisiana study found that older persons were more likely to think that heart disease "is becoming more common," while respondents under 40 were more familiar with rheumatic fever and the fact that one can be born with heart disease. Although increased education may play an important part in the more specific knowledge of those under 40, there are also other manifestations related to age.

Levine reported that age is a factor in anxiety. "The older a person is, the less likely he is to fear a disease that affects the young. And, conversely, the younger he is, the less likely he is to fear a disease that affects the old."[36] This supports data presented by Rosenstock, Derryberry, and Carriger concerning polio where older persons tended to regard polio as a childhood disease without consqeuence to them.[37]

Bertrand and Storla tentatively concluded that women are "slightly better informed on facts pertaining to heart disease than men."[38] Regarding knowledge of rheumatic fever, 71.4 percent of the women and only 54.0 percent of the men had heard of it. A few more women than men also had heard of electrocardiography and knew more types of heart disease.

Although the Louisiana study advances no explanation, one might suggest that the mother role involves the care of the family in illness, and therefore women tend to have more information about health matters.

There are some distinctions to be made regarding the social class of persons and health behavior. Earl Koos, in *The Health of Regionville: What the People Thought and Did About It*, found that, "The health attitudes and behavior of a family are related to its position in the social class hierarchy of the community and are significantly affected by the prescriptions and proscriptions regarding health shared by those who are members of the same social class."[39] In addition, "There is a difference in the way and degree to which people participate in

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[35]Bertrand, *Op. cit.*, p. 20.

[36]Levine, *Op. cit.*, p. 31.

[37]Rosenstock, Derryberry, and Carriger, *Op. cit.*, p. 99.

[38]Bertrand, *Op. cit.*, p. 24.

[39]Earl L. Koos, *The Health of Regionville: What the People Thought and Did About It* (New York: Columbia University Press, 1954), p. 160.

health activities in the community which is significantly associated with their membership in a social class."[40] The actual determinants for these differences are income and other status variables which make up class.

Income is related to knowledge and heart disease. Bertrand and Storla found that the higher the income of an individual, the more he knew of heart disease.[41] "...the lower income groups were more ignorant generally, of the various questions relating to heart disease."[42]

Another point which ties into these socio-economic findings is that in all phases of knowledge and information, urban respondents were better informed than rural respondents. The factors of education and income seem to play an important part in accounting for this difference.[43]

Education indeed seems to be a major factor in the transmission of information. Bertrand and Storla found that "only 34.4 percent of the informants who had four or less years of schooling, as compared with 88.8 percent of those with at least one year of college said that there was more than one kind of heart disease."[44] Again, of those with 4 or less years of education, less than one-third knew of rheumatic fever; while 95 percent of those with a high school education knew of it. The authors of the Louisiana study stated that "Education is one of the most significant of the population characteristics in relation to group knowledge concerning heart disease."[45] In the present study, a major variable will be the socio-economic levels of selected geographic areas. Criteria for selecting these areas were similar to those for establishing status positions for individuals (education, income, occupation).

Concerning racial differences, it was found that whites were more aware of different kinds of heart disease (white-67 percent, Negro-35 percent); more agreed that children could be born with a heart condition (78 percent, and 62 percent); more were acquainted with rheumatic fever (76 percent and 39 percent); more were familiar with the electrocardiogram (42 percent and 4 percent); and fewer were prone to use home diagnosis and treatment (11 percent and 22 percent).[46] The last item, however, is perhaps more significant than the authors mentioned. Twice as many Negroes as whites used home diagnosis and treatment. Because of their minority status and lack of opportunity, the Negro society in many areas represents a folk-culture. In a folk-culture, the education of the members about health practices tends to be a combination of actual scientific knowledge and various forms of folk-medicine, the latter many times being the more accepted. In a discussion of folk-medicine, Lyle Saunders[47] states, "What

[40] *Loc. cit.*
[41] Bertrand, *Op. cit.*, p. 22.
[42] *Ibid.*, p. 25.
[43] *Ibid.*, pp. IX, 6, 7, 11.
[44] *Ibid.* p. 24.
[45] *Loc. cit.*
[46] *Ibid.*, pp. 20-21.
[47] Lyle Saunders, "Healing Ways in the Spanish Southwest," *Patients, Physicians, and Illness: Sourcebook in Behavioral Science and Medicine*, pp. 189-206.

should be done about a given condition defined culturally as illness, and the proper relationship of a sick person to other people are also culturally prescribed."[48] When any particular folk-culture is without "scientific" methods, folk-medicine serves as an answer to the unknown. Folk-medicine practices are retained and believed even when competition from modern medicine is available because, "Folk-medicine is usually well integrated with other elements of a folk culture and is reinforced by them."[49] These beliefs fit into the existing structure and run parallel to the needs and knowledge of the people.

A number of studies have been compiled concerning the relationship of culture to health behavior and attitudes. Signal among them was a compilation of researches by Benjamin Paul and Walter Miller, titled *Health, Culture, and Community.*[50] In this book they bring together case studies from all parts of the world which illustrate the cultural dimension in health behavior. In other articles, Paul elaborates the point of the relationship of culture and health. In "Medicine's Third Dimension,"[51] he lists three dimensions in which to view the patient: (1) organic, (2) psychological, and (3) cultural, and he emphasizes the last. "America is a complex society with numerous sub-groups and subcultures. In a sense, most American doctors work in a cross-cultural setting without leaving the country." Minority groups are present in almost every large city and at times in smaller cities.

In this section we have tried to demonstrate the importance of various socio-cultural variables. They appeared to be important individually and collectively in determining the information, opinions, beliefs, and action of persons.

In the next section, communication processes will be discussed. As will be seen, socio-cultural factors are closely related to the communication networks.

The Communication of health information, beliefs and sentiments

One of the most popular, and perhaps clearest formulations of communication is *who* says *what* to *whom* with *what effect.*[52] Hovland defines communication as, "the process by which an individual (the communicator) transmits stimuli (usually verbal) to modify the behavior of other individuals (the audience)."[53] The communication system, then, consists of the following elements: the initiator, the message, the channels of communication, and the recipient. Here we are most concerned with the channels of communication used in transmitting health information and beliefs and their differential effectiveness on various recipients.

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[48] *Ibid.* p. 190

[49] *Ibid.*, p. 191.

[50] Benjamin D. Paul and Walter B. Miller, editors, *Health, Culture, and Community: Case Studies of Public Reactions to Health Programs.* (New York: Russell Sage, 1955).

[51] Benjamin D. Paul, "Medicine's Third Dimension," *Journal of the National Medical Association,* Vol. 48 No. 5, (Sept., 1956), pp. 323-325.

[52] Cited in C. Hovland, I. Janis, and H. Kelley, *Communication and Persuasion,* (New Haven: Yale University Press, 1953), p. 12.

[53] *Loc. cit.*

When considering channels of communication, we almost automatically think of the mass media. Lazarsfeld and Merton comment, "the ubiquity of the mass media promptly leads to an almost magical belief in their enormous power."[54] Although the mass media by definition have a large audience, it may have a narcotizing effect or at least, "this vast supply of communication may elicit only a superficial concern with the problems of society, and this superficiality often cloaks mass apathy."[55] And, "The mass media prove most effective when they operate in a situation of virtual 'psychological monopoly', or when the objective is one of canalizing rather than modifying basic attitudes, or when they operate in conjunction with face-to-face contacts."[56] Certain categories of people are more affected by the mass media than others. Theodore Newcomb found a solid core of people who were hard to reach. He reported that these people may be passively absorbed by the mass media but are not motivated to action by it.[57] Rosenstock, Derryberry and Carriger conclude from their review of polio studies "that there is evidence that the groups hardest to reach (the poorly educated and the non-white) will have to be approached personally rather than through mass means of communication."[58] John Belcher found, for example, that Negro ministers were most effective communicators to their people about polio vaccine.[59] Class distinctions are also related to information and those groups that are hard to reach. One study on polio vaccine revealed that information varied by class in that lower classes reported less information from each communication source.[60]

These difficulties in communication are related to Hochbaum's statement that, "The trouble is that merely bombarding the public with health information, no matter how valuable and useful, in no way assures that the public learns from it or even hears or sees such communications."[61]

Elihu Katz says, "until very recently, the image of society in the minds of most students of communication was of atomized individuals, connected with the mass media but not with one another. Society--the 'audience'--was conceived of as aggregates of age, sex, social class, and the like, but little thought was given to the relationships implied thereby or to more informal relationships."[62]

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[54]Paul F. Lazarsfeld, and Robert K. Merton, "Mass Communication, Popular Taste, and Organized Social Action," *Mass Culture: The Popular Arts in America* (Bernard Rosenberg, editor. Glencoe, Ill: The Free Press, 1962), p. 457.

[55]*Ibid.*, p. 464.

[56]*Ibid.* p. 472.

[57]Herbert H. Hyman and P. B. Sheatsley, "Some Reasons Why Information Campaigns Fail," *Readings in Social Psychology.* (Macoby, Newcomb, and Hartley, editors, New York: Holt, 1958), p. 164

[58]Rosenstock, Derryberry and Carriger *Op. cit.*, p. 101.

[59]John C. Belcher, "Acceptance of the Salk Vaccine," *Rural Sociology,* Vol. 23, No. 2. (June, 1958), pp. 158-170.

[60]Francis A. J. Ianni, Robert M. Albrecht, and Adele K. Polan, "Group Attitudes and Information Sources in a Polio-vaccine Program," *Public Health Reports.* Vol. 75, No. 7 (July, 1960), p. 688.

[61]Godfrey M. Hochbaum, "Reasearch Relating to Health Education," *Health Education Monographs,* No. 8. Society of Public Health Educators, (1960). p. 11.

[62]Elihu Katz, "Communication Research and the Image of Society: Convergence of Two Traditions," *American Journal of Sociology,* Vol. LXV. No. 5, (March, 1960), p. 435-440.

On the other hand, as Katz points out, rural sociologists were deeply concerned with these interpersonal relationships.[63] Therefore, we turn to this body of research which deals with the communication of agricultural technology to the farmer. For this purpose we shall depend heavily upon Herbert F. Lionberger's book, *Adoption of New Ideas and Practices.*[64] Developed through a grant from the National Project in Agricultural Communications, this book reviews the significant research in diffusion of farm information and provides the reader with an annotated bibliography of reports of 100 studies.

The community may be regarded as a communication network. "It is within the organizational context of the community that most interpersonal patterns of communication occur."[65] But the community communication system is structured in several discernible ways. Neighborhoods, where they exist, form concentrated networks of communication; cliques and kinship groups also pattern the flow of information. "In some respects social cliques serve much the same function as neighborhoods in the dissemination of farm information. Both tend to increase the proportion of information-seeking relationships used where information seekers and persons sought are members of the same informal social group."[66] Another way that interpersonal communication networks are structured is along status lines. It is quite apparent that status distinctions exist even in rural communities.[67] The diffusion research has established the influence of status differences upon channels of communication.[68]

These structures within the community produce not only differences in the concentration of communication among members but also differences in the respect for the communicator. That is, information from some persons may be given more weight than from others and this varies within the community from one group to another. In their book, *Personal Influences.* Katz and Lazarsfeld found that "ostensibly private opinions and attitudes are often, in fact, opinions and attitudes which are generated and maintained in interaction with small groups of other people."[69]

Lionberger has used the term "influentials" to "refer to individuals who are alleged to have exercised a determining influence in one or more decisions of other persons."[70] In his own study in Missouri, Lionberger required that a person must be mentioned as having influnced a decision three or more times in order to be termed an "influential."[71]

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[63] *Ibid.*, p. 437.
[64] Herbert F. Lionberger, *Adoption of New Ideas and Practices* (Ames, Iowa: The Iowa State University Press, 1960).
[65] *Ibid.*, p. 73.
[66] *Ibid.*, pp. 79-80.
[67] Art Gallaher, Jr., *Plainville Fifteen Years Later,* (New York: Columbia University Press, 1961), p. 301.
[68] Lionberger, *Op. cit.* pp. 84-88.
[69] Elihu Katz. and Paul F. Lazarsfeld, *Personal Influence.* (Glencoe, Ill: Free Press, 1955), p. 59.
[70] Lionberger, *Op. cit.*, p. 59.
[71] *Ibid*. p. 60.

Here, then, are two models of communication systems in juxtaposition. One is the mass communication system that regards the recipients as so many discrete entities out there receiving its messeges by radio, television and the press. The other is the interpersonal local system made up of complex patterns of individuals that interchange messages and ideas which they constantly modify in the process. Which, then, do we choose as a model for analyzing information about heart disease or anything else? The answer is that a choice is not necessary because these systems interact with one another.

The effective connecting link between the mass communication system and the interpersonal system is more likely than not to be an "influential" or opinion leader. These people are more likely to be exposed to outside influences and because of their respect in the community new ideas are more acceptable through them.[72] Elihu Katz had neatly termed this process the two-step flow of information.[73] "...it may be proposed, that influences stemming from the mass media first reach 'opinion leaders' who, in turn, pass on what they read and hear to those of their everyday associates for whom they are influential."[74] For an elaborated detailed account of "influentials" see Lazarsfeld, Berelson and Gaudet, *The Peoples Choice.*[75]

The role of the technical expert in the communication system is another consideration. The physician occupies a place in the system of health knowledge that is virtually unchallenged. When asked where one would go to obtain information about heart disease, over 60 percent of the sample in the Purdue study,[76] and 57.7 percent of the sample group in the Louisiana study,[77] said the doctor. The Louisiana study pointed out, however, ". . . only 4.8 percent of the interviewees responded that medical doctors had given them their information."[78] The authors of the Purdue study commented that, "often advice given to the individual is contrary to his own beliefs, as in the case of a physician advising retirement, while the man believes than 'quitting work or retiring shortens your life'."[79]

Pratt, Seligmann, and Reader conducted a study somewhat related to the above problem in which they sought to determine the communication of information between physicians and clinic patients.[80] The sample group was found to be rather poorly informed about common diseases. It was observed, that "the patients in our sample participated with the physicians at an extremely low level.

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[72] *Ibid.* p. 61.
[73] Elihu Katz, "The Two-Step Flow of Communication: An Up-To-Date Report on an Hypotheses," *The Public Opinion Quarterly.* Vol. XXI, No. 1, (Spring, 1957), pp.63-64.
[74] *Ibid.*, p. 61.
[75] Paul F. Lazarsfeld and others, *The Peoples Choice.* (4th edition, New York: Columbia, 1954).
[76] Riedel, Eichhorn, and Morris, *Op. cit.* p. 61.
[77] Bertrand, *Op. cit.*, p. 28.
[78] *Ibid.*, p. 11.
[79] Riedel, Eichhorn, and Morris, *Op. cit.*, p. 60.
[80] Lois Pratt, Arthur Seligmann, and George Reader, "Physicians' View on the Level of Medical Information Among Patients," *American Journal of Public Health* Vol. 47, No. 10, (Oct., 1957), pp. 1277-1283.

They seldom requested information from the physician (one-third of the patients never asked a single question on any visit), they seldom requested the physician to do anything, and seldom even made a statement to direct the physician's attention to something."[81]

Regarding the patients' attitudes, it was found that in general, "there was very little conscious demand for a thorough explanation of the illness on the part of the patients; but there was an unformulated, latent need."[82]

The attitudes of the doctors were also deemed important. When asked if they were to always tell patients the full extent of their illness, almost three-fourths of the clinical teaching staff said they would disapprove. "It was further found that physicians were more likely to avoid completely discussion of the prognosis and etiology, than they were to bypass the more immediately practical issue of tests and treatment.

"Patients who were given more thorough explanations were found to participate somewhat more effectively with the physician and were more likely to accept completely the doctor's formulation, than were patients who received very little explanation."[83]

The review of the literature gives us insight into the relationships that may be expected between the heart disease variables and socio-economic variables. We cannot explore all the facets that these studies suggest. The purpose of the next chapter is to delineate the problem more precisely and indicate the approach to it.

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[81] *Ibid.*, p. 1279.
[82] *Ibid.*, p. 1280.
[83] *Loc. cit.*

CHAPTER II

CONDUCTING THE STUDY

Here we shall describe the manner in which the study was conceptualized and undertaken. This includes a statement of the frame of reference with key definitions of terms, the process of constructing an "instrument of observation," the operation of getting the study into the field and, finally, a brief discussion of handling the data.

Frame of Reference

The substantive area we are dealing with is information, beliefs, and sentiments about heart disease. As Benjamin Paul observed, health matters are not the whole of man's concern or even a major part.[1] And the part of the total occupied by heart disease is a great deal less. However, heart disease is the leading cause of death in this country. More information about it is being dispensed through mass media and we should expect this to make an impact upon the individual.

The social system itself may be viewed as a communication system in which channels are intimately associated with the social structure. For this reason, information is not equally available to all persons and the response of persons in different social places is not identical to the same message. Our principal analysis is based upon the assumption that it is possible to identify geographic areas of different socio-economic characteristics. Areas are described on the basis of two principal dimensions, (1) socio-economic level and (2) rural, urban residence. *The general hypothesis is that the "heart variables" will differ in predictable direction according to the socio-economic level and the rural, urban differences of the geographical areas.*

Other factors provide the basis for auxiliary though important analysis. In the case of heart disease, experience with the disease is a situation factor that would seem to make a difference in cognitive elements. Experience may be viewed as ranging from the person having heart disease to members of the household, other relatives, friends and neighbors, or casual acquaintances having the disease. Other situational factors related to communication are such things as possession of one of the mass media such as radio or television; although this in itself is related to socio-economic position and perhaps physical isolation.

Further, we must consider the channels of communication themselves. Students of communication have distinguished between mass media and inter-

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[1]Benjamin D. Paul and Walter B. Miller, editors, *Health, Culture and Community: Case Studies of Public Reactions to Health Programs*, (New York: Russell Sage. 1955).

personal networks. It is now established that these two systems operate mutually; however, there are differentials in the utilization of one mode of communication or the other.[2] Generally it is held that persons in secular situations or in personally isolated situations are more likely to use mass communcation channels. There are also differentials with regard to the impact of messages on the basis of the types of communication channels. Mass media have been found to be effective in introducing ideas; while interpersonal communication has had more impact in evaluation of information.[3]

Finally, it is implicit that we are interested in the relationship of information and meaning about heart disease to direct action concerning heart disease. The assumption that there is a direct relationship is open to question on the basis of research in other health areas.

We consider the principle analysis to be that of comparisons among areas; however, as a secondary analysis, attention is given to correlates of information within areas. In this we seek to answer the question if structural variables are related to information within the areas as well as between them.

Definition of Terms

"The heart variables." From time to time we refer collectively to the dependent variables as the "heart variables." These include: Information about heart disease, beliefs about heart disease, sentiments about heart disease, action concerning heart disease.

Heart disease. The concept, heart disease, proved to be too broad for our purposes and it was broken down into the following components: (1) prevalence, (2) prevention, (3) treatment, (4) consequences, (5) prognosis.

Information about heart disease. This concept is regarded as the objective knowledge that a person has about heart disease.

Beliefs about heart disease. Following Charles Loomis, we define beliefs as cognitions held to be true. He points out that, "Obviously, the significance of beliefs for the social scientist is not determined by the objective truth or falsity of the belief."[4] What we defined above as information is seen to be a belief that is placed against an objective test of accuracy. In this study, we examine information and beliefs about prevalence, prevention, treatment, conesquences and prognosis of heart disease.

Sentiments about heart disease. The definition of sentiment also comes from Loomis. Sentiments are feeling-states. "Beliefs are primarily cognitive and represent 'what we know' about the world no matter how we know it; sentiments

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[2]Elihu Katz, "Communication Research and the Image of Society: Convergence of Two Traditions," *American Journal of Sociology*. Vol. LXV, No. 5, (March, 1960), pp. 435-440.

[3]Herbert F. Lionberger, *Adoption of New Ideas and Practices*. (Ames, Iowa: The Iowa State University Press, 1960), p. 32.

[4]Charles P. Loomis, *Social Systems. Essays on Their Persistence and Change*, (Princeton: D. Van Nostrand Co., Inc. 1960), p. 11.

are primarily expressive and represent 'what we feel' about the world no matter how we feel it."[5] The sentiment about heart disease that we examine is worry.

Experience with heart disease. Experience with heart disease is the degree of personal involvement with the disease. In this conceptualization, having the disease one's self is only one way of having direct experience with heart disease. Members of the family, other relatives, friends, and neighbors may bring personal involvement with heart disease.

Action concerning heart disease. Action is an act or step taken with heart disease as the point of reference.

Sociological concepts. These are the concepts used to describe and analyze the data. Information, beliefs, and sentiments are elements of the social system. They have been defined in connection with heart disease.

Social structure. Social structures represent patterns derived in social interaction. Indices of place in the social structure are not the structures themselves; for example, education is an index of place in the social structure. The assumption is that persons of different educational levels have distinguishable interaction patterns and connections with sources of information. Thus persons of high education may possess common information about heart disease that is different from that possessed by persons with low education.

Communication. Communication is the receiving and/or transmitting of information, beliefs, and sentiments.

Channels of communication. These are the means of exchange of information, beliefs, and sentiments. Channels may be unidirectional (mass media) or reciprocal (interpersonal).

Socio-economic level of areas. As used here, the term refers to certain social-structural elements of geographical areas. It has kinship to the term socio-economic status but differs in that it refers to areas rather than individuals. Judgment as to the socio-economic level of an area is made the basis of education, income, and occupation of respondents from that area. Precedent for judging the socio-economic level of geographical areas may be found in Margaret Hagood's Farm Operators' Level of Living Index.[6] In the analysis, the socio-economic level is used as a principal independent variable.

Rural-urban residence: This is another structural aspect of the geographical areas. The hypothesis is that rural interaction patterns produce different information, beliefs, and sentiments about heart disease than urban interaction patterns produce.

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[5] *Ibid.*, p. 13.

[6] U. S. Department of Agriculture, *Farm-Operator Family Level of Living Indexes for Counties of the United States. 1945 1950 and 1954.* Statistical Bulletin No. 204, (March 1957).

Method of Study

The methodological considerations were (1) operationalizing the concepts and constructing a schedule of questions, (2) selecting areas and sampling within the areas, (3) conducting a field operation, (4) processing, analyzing, and reporting the data.

Operationalizing the Concepts and Constructing the Schedules of Questions. The "instrument of observation" was a schedule of questions to be administered in personal interviews.

The purpose of the items in the schedule was to operationalize the concepts in the frame of reference. A single question may provide the operationalization of a concept. For example, the question, "How much do you worry about heart disease?" is an operationalization of sentiments about heart disease. On the other hand, a number of items were combined to provide an index of experience with heart disease.

The construction of a schedule is both a systematic undertaking and an artful one. Items were borrowed from a number of other studies; in this connection, we must indicate our debt to the Louisiana study.[7] A number of unstructured interviews were made in order to get the range of information and tone of beliefs and sentiments. In the process, a large number of items were collected. At this point, we were permissive about the inclusion of questions. Some of the items and ways of asking them were clearly inadequate and were discarded early; others were debated by the study team and retained or dropped on the basis of the case that could be made for them in terms of the objectives of the study. Altogether, the trial schedule did not result from some neat automatic process where right questions emerged as if by magic at the proper place in the schedule. The process was one of borrowing, worrying over, adding to, and casting out. The product of this process was a preliminary schedule which was tested in a pilot study.

The pilot study had several objectives, the most important being a test of the schedule of questions. But it was more than this, and could be better characterized as a trial run of the larger study. For in the pilot study, a small scale field operation was undertaken which involved selecting a sample, systematic interviewing, and data processing. The pilot study also provided some indication of the type of data and type of relationships that might be expected in the larger study.[8]

On the basis of the pilot study some changes were made in the questions and format of the schedule. The schedule that was used in the study appears in Appendix A of this report.

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[7] Alvin L. Bertrand and Clarence A. Storla, *Lay Knowledge and Opinion About Heart Disease in Selected Areas of Louisiana*. (Baton Rouge: Louisiana Agricultural Experiment Station, July, 1955), 31 pp.

[8] Details of the pilot study may be found in the second progress report in this study *Operationalizing the Study of Information and Meaning of Heart Disease*, July 1963.

Selecting the Areas and Sampling Within the Areas. A principal hypothesis of the study was that place in the social structure was related to information, beliefs, and sentiments about heart disease. This proposition could be tested, in part, by using data from a single area classified according to differences in socio-economic variables. Preferable to the sense of the hypothesis, however, would be a test involving populations with quite dissimilar but known socio-economic characteristics. For this reason, we selected areas on the basis of differences in socio-economic characteristics.

The selection of areas was on the basis of data obtained from the U.S. Census, a report of the Metropolitan Population Project of St. Louis,[9] the report of the delineation of *Rural Social Areas in Missouri,*[10] and by consultations with personnel of the Health and Welfare Council of Greater St. Louis and the St. Louis County Health Department. After tentative selections were made in the metropolitan area, a "windshield survey" of these areas was made. One of the writers had extensive knowledge of the rural areas of Missouri and this entered into the selection of those areas.

Five areas were selected for sampling. These were by description:

1. A suburb of St. Louis with a high income, high education, and high occupational status.
2. A working man's area in St. Louis exhibiting considerable population stability, lower middle income, predominantly white.
3. A rural county with a relatively high level of living index representing the commercial farming area of Missouri (rural social area AB).
4. A rural county with a relatively low level of living index representing the Ozark area of Missouri (rural social area D).
5. A negro sample from a non-metropolitan area in southeastern Missouri.

Detailed descriptions of the areas are given in Chapter III.

The Samples. The design of the study called for approximately 100 interviews from each area divided equally between male and female heads of households. The households were to be selected in a random manner.

In the populated centers, the "intersection" method of sampling developed by researchers in the U. S. Public Health Service was used.[11] The method involved the selection of street intersections by random methods and the selection of one or more households at random from each arm of the intersection.

In the open-country part of each of the rural counties, four surveyor township areas (6 miles square) were selected randomly. Within the townships, all houses as they appeared on county highway maps were numbered and the pro-

[9]Metropolitan Population Project, David J. Pittman, Director, *Social Area Indices and Social Types. 1960 by Census Tracts of the St. Louis Standard Metropolitan Statistical Area. Report No. 6.*

[10]Cecil L. Gregory, *Rural Social Areas in Missouri* University of Missouri A. E. S. Research Bulletin 665, (April, 1958).

[11]*Polio Packet-1959* Part V, "Manual for Conducting an Immunization Survey in an Urban Area" pp. V-1—V-38, (U. S. Department of Health, Education and Welfare, Public Health Service, Bureau of State Services, Communicable Disease Center, Atlanta, Georgia).

portion required to represent the open-country households of the county were selected at random.

Interviewers were instructed to interview only male or female heads. Where the intersection method was used, interviewers were instructed to interview male respondents on the north and south arms of the intersection and female respondents on the east and west arms of the intersection. In the open-country, the designation of male and female respondent was made on the map by a symbol. In households where there was no male head or no female, the household head was interviewed even though possibly the sex opposite of the one designated.

Conducting the Field Operation. The field staff consisted of three male interviewers. Two of them were graduate students in sociology and had worked on the preliminary phases of this study. The third was a principal of an elementary school; he was an experienced interviewer having participated in the field phase of a previous study conducted by the Department of Rural Sociology. Before the field phase began, a one-day training session was held with the interviewers. Letters of identification were provided by the Department of Rural Sociology and by the St. Louis County Health Department. Schedules were to be returned each week at which time they were checked in the office for omissions, illegible writing, and other faults. Immediate editing had two advantages: first, the interviewer sometimes could recall the situation that led to an omission or read an unreadable word; second, and probably more important, close editing could help identify consistent interviewing errors before they had gone too far.

The interviewers began June 10, 1963, in St. Louis County and in Daviess County. Two interviewers worked in St. Louis County and then moved to the south St. Louis area while the third interviewer completed Daviess County. Then all three interviewers worked in Shannon County and upon completion moved on to New Madrid. The specification of a representative number of male and female heads required a considerable number of call-backs, especially in the metropolitan areas. The metropolitan areas also produced a larger number of refusals than the rural areas.

Processing, Analyzing, and Reporting the Data. After editing the schedules, certain summary indexes were prepared. These included a general information score, a specific information score, a heart disease experience score, a mass communication index, an interpersonal communication index, and an action score. With the exception of the experience score, the items that were used in these indexes were tested for scalability by means of the Guttman scaling technique.

The information from the interviews was then placed on IBM punch cards from which frequency tables and cross tabulations were made. The punch cards also furnished information for the electronic computation of chi-squares and correlations used in the analysis.

The analytical framework for comparison of areas is the principal technical innovation in this report. The rationale and description of its use is presented in Chapter III.

CHAPTER III

COMPARISON OF THE AREAS—A FRAMEWORK FOR ANALYSIS

It is a cliché among adult educators that you must know your audience. Like most clichés it is essentially true and, like most, the word often stands for the deed. Our task is to identify the socio-economic characteristics of some of the audiences that the health educator encounters in disseminating information about heart disease. We shall also examine the level of information of several potential audiences and the channels of communication utilized by them.

The samples, when taken together, do not represent the state in miniature. Rather, five separate areas within the state have been sampled; each has residential, social, and economic characteristics which can be identified and each represents substantial parts of the population. It is argued that the health educator does not confront the state as a whole with a particular message in a particular educational campaign, but deals with situations circumscribed in place and time. Therefore, information about identified groupings may be more useful than summary figures for the state.

Since we have chosen this approach we must be careful not to generalize to the state or to combine figures for the five areas as we seek to determine the relationship of such variables as education and age to information. On the debit side, to keep the areas separate multiplies the analysis and makes it difficult to present the data in a succinct manner. In a sense, the analysis tends to produce tedium in exchange for population identification which seems to be fair exchange.

Given this approach, it is necessary to identify the areas in both a descriptive way and an analytical manner. The former will give us some basis for the latter. The areas were deliberately chosen to produce samples different in socio-economic characteristics. We are not therefore going to express surprise that socio-economic differences did exist (we would have indeed been surprised if they had not).

A general description of the five areas is presented, followed by a comparison of selected socio-economic characteristics from the samples drawn and then the development of an analytical framework for comparing the areas.

Area I. Kirkwood is a well established suburban city located a few miles west of St. Louis. It was founded about a hundred years ago by a group of St. Louis businessmen as a planned residential area. Kirkwood remains essentially a residential community although it now has a well developed business area. The

commuting character of the area can be observed first-hand any weekday at the rush hour along Lindbergh Boulevard (main artery to St. Louis) where cars stand bumper to bumper.

Kirkwood is an area of substantial incomes; the median family income in 1960 was $8,753. Occupations tend to be predominately white-collar and education high. There were fewer than one in 30 Negroes among the population in the city in 1960. The population increased by over 10,000 from 1950 to 1960 and was 29,421 in 1960.

Area II. This area is referred to in this study as South St. Louis and that designation, or simply the "South side," is common in St. Louis. The actual sample was taken from an area having as its borders Minnesota Avenue and Jefferson Avenue on the west and east, and Keokuk Street and Pestalozzi Street on the south and north.

The area was originally settled by Germans; and although there was some evidence of this background, it has been considerably diluted by other groups. In the sample interviewed, there were several recent rural migrants, but there were no Negroes. The physical appearance of the residences was similar, being characteristically two or four family brick dwellings. These were generally well kept and appeared substantial. There were commercial pockets interspersed in the area. The "corner tavern" was characteristic and served as a gathering place.

Occupations were predominately blue-collar; ranging from laborer through craftsman. A number of industries were within easy distance. We may think of this area as a substantial working class area.

Area III. A sample was selected from Daviess County to represent a population that was rural and whose economy rested primarily on commercial agriculture. Daviess County is located in the northwest part of the state; in 1960, it had a population of under 10,000; the population had declined by over 1500 from the 1950 census. There was no urban place in the county, but there were a number of small trade centers.

The county may be generally described as a good agricultural area. Indexes such as the value of farm products sold and the farm-operator level of living index placed Daviess County above the state average. The 1960 census reported the median family income of the county as $2,725. This rather low figure can be accounted for, in part, by the large number of older people; the median age was 42.1 years and about 20 percent of the population was 65 and over (compared with a median age of 31.6 and about 7 percent of the population 65 or over in Kirkwood). There was a negligible non-white population in the county.

Gregory, in his analysis of the rural social areas of Missouri, has emphasized that the area in which Daviess County is located had entered fully into the commerical agricultural world and that the values of the people in this area were much like those of any other sector of an urban oriented society.

Area IV. A sample of households was selected fom Shannon County. This county is located in the southeastern part of the state in the area generally re-

ferred to as the Ozarks. It had a population of about 7,000 in 1960, having declined by more than 1,000 since 1950. As is characteristic of the Ozark area, there was virtually no non-white population in the county (the census reported three non-whites). There was no urban place in the county and the county seat had fewer than 1,000 population. There were several small centers in the area.

The area is hilly and agriculture generally is not productive. On agricultural economic indexes, the county is below the state average. Historically, the lumber industry has been important in this area and is still a source of employment. Also, there is some tourist business; although, tourism in this area had not been well developed. Some residents are also employed in St. Louis where they may commute by the week or even the season. Census figures show that almost 15 percent of the employed males in Shannon County work outside the county (compared with 7 percent of those in Daviess County). The median family income in Shannon County was $2,565 in 1960 which is not greatly different from the income in Daviess County. It was pointed out that Daviess County had a relatively old population; this was not so true for Shannon County where the median age was 31.3 and the proportion 65 or over was 11.6 percent; the latter figure is almost exactly the state average.

Gregory in his analysis of social areas has characterized this area as being relatively isolated and as not having entered fully into the urbanized society. Compared with Daviess County, he views Shannon County as representing a more folk-type society. Gregory and others have recognized that isolation is breaking down in these areas.[1] A recent study of another Ozark area in Missouri showed the changes that are taking place, and they are all toward greater involvement in the larger urban society.[2]

Area V. This was a sample of Negroes selected from residents of three towns in southeast Missouri. The places were New Madrid, Lilbourn, and Portageville where the Negro populations constituted approximately 25, 15, 10 percent, respectively, of the total population. The area is known as the bootheel of Missouri. It is an agriculture area of high production; cotton is an important crop along with soybeans and wheat. With the extensive mechanization of agriculture, share cropping has declined and there has been a heavy migration of farm laborers from the area. Those that remain have had their occupational patterns disrupted so that now work in agriculture tends to be day labor and sporadic. There is a heavy concentration of welfare cases among this group, especially in Aid to Dependent Children.

The economic level of Negroes in the area was generally low as was the educational level. Their occupations tend to be menial and often seasonal; laborers and service workers predominate. Housing tends to be poor and segregated.

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[1]Cecil L. Gregory, *Rural Social Areas in Missouri*. University of Missouri A.E.S. Research Bulletin 665 (April, 1958) p. 32-36.

[2]Art Gallaher, Jr., *Plainville Fifteen Years Later* (New York: Columbia University Press, 1961), especially Chapter 7.

Socio-Economic Characteristics of the Samples Compared

The comparisons made here are from data obtained in the interviews in the five areas. They should reflect the general differences of the areas--and they do.

Household Composition. Household heads tended to be younger in Area I than in any of the other areas; more than one-half the household heads in the sample were under 45 years of age and only 10 percent were 65 years old or older. The oldest age pattern was in Area III where about one-fourth of the sample was under 45 years and one-third was 65 or older. This sample reflects well the concentration of older people in the northern part of the state, especially in small towns.[3] Respondents in the sample from Area V were heavily represented in both the youngest and oldest categories with a depression in the middle category.

Age may be related to information about heart disease in several ways. Most obviously, age and education tend to be negatively related and if education is related positively to information, age may show a negative relationship. On the other hand, if it is reasonable that age is related to experience with heart disease (either own experience or experience of family members or acquaintances), and

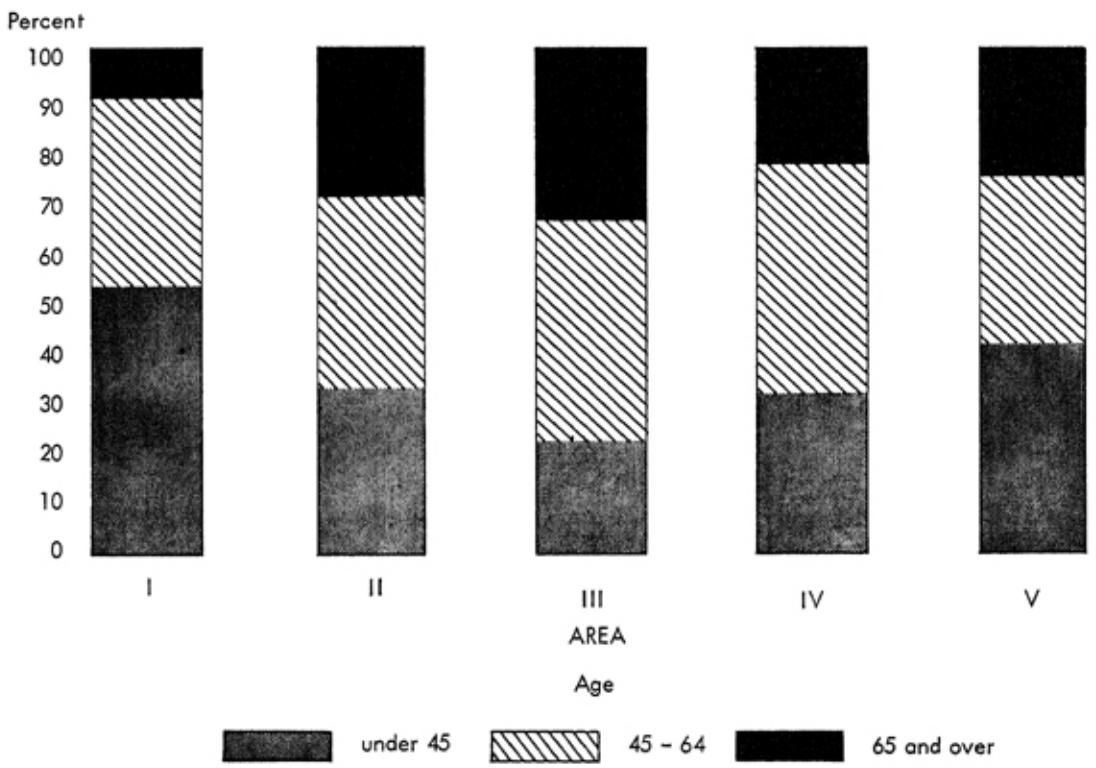


Figure 3-1. Percentage distributions of age of respondents in five areas of Missouri

[3]It should be pointed out that a selection of household heads exaggerates the number in older population categories since older households are more likely to be composed of a single member.

that if experience is positively related to information about heart disease, then a positive relationship between age and information would be expected.

The age of the household head is also an index of the place in the family cycle which in turn is related to household size. The maximum household size is likely to be reached in the under 45 age group; the one-member household is associated with old-age. The youngest sample (Area I) had the largest number of families with three or more members, indicating children at home; there were only four one-member households in this area. Area IV also had few one-member households and was second only to Area I in number of households with three or more members. Areas II and III had the fewest households with three or more members and except for Area V had the largest number of single-member households. Area V had the largest number of single-member households (20), but also had a substantial number with three or more members and far exceeded any other area for the numbers with six or more members.

The interviewing procedure tended to give a true representation of the sex distribution of households heads. If there had been a male and female head in each household, the samples could have been expected to yield equal numbers of males and females. In each area, there were more females than males in the samples, but they were fairly evenly balanced with the exception of Area V where two-thirds of those interviewed were females. With the exception of Area V, the households were predominately headed by married couples. In these areas, the deviation from this pattern of greatest numerical consequences was by widows; fewer were single or divorced/separated. Area V was quite different on this; only 42 of the households were headed by married couples; 39 were reported as headed by widows which may in some cases be a euphemism for the divorced/separated category which was reported for 13 households. This indicates that the matriarchial family observed so often among Negroes in urban areas had its counterpart in small-town Negro households.

Status Indexes. Education, occupation, and income are widely used indices of social status. On these, the areas varied widely, with Areas I and V so greatly different that the high and low categories hardly overlapped. For example on education, 56 percent in Area I had more than a high school education while only two percent did in Area V; in Area V, 85 percent had no more than an eighth grade education, which was true of only seven percent in Area I. And the differences were even more extreme than these figures show, for one-fourth of those in Area I had at least a college education while about the same proportion in Area V had under four years of schooling, The other three areas were different from both Area I and V, located between them, but were not radically different from one another. Area IV tended to have a larger proportion in the lowest education category but no fewer in the highest. For all three areas, the modal education category was eight years or less with from one-half to two-thirds so located.

There was a similar pattern among the areas on income. Almost half of

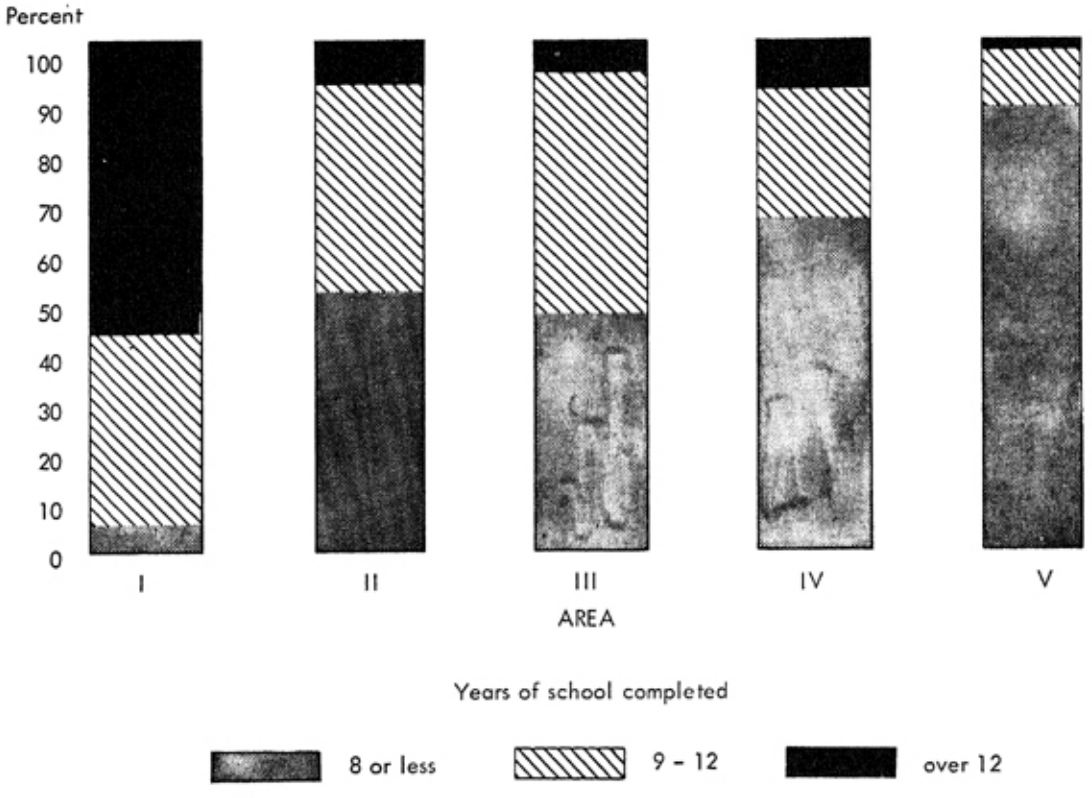


Figure 3-2. Percentage distributions of education of respondents in five areas of Missouri

those in Area V reported an income of under $1,000 and nine-tenths reported an income under $3,000. No one in Area I reported an income in the lowest category and only four persons in the second, while over one-third reported an income of $10,000 or more and for one in five it was $15,000 or more. The latter category was reported by only one other person in any of the other areas. In Area V, no person reported an income of as much as $5,000. The other areas were between Areas I and V on income. Of the "middle 3," Area II had a substantially higher income pattern with 44 percent over $5,000, which was true of only 14 percent and 18 percent in Areas III and IV, respectively. Areas III and IV were not greatly different; the low income in Area III may be partly accounted for by the older population in this sample.

Occupations of the five areas reflect and are reflected in the other status variables.[4] Three-quarters of those in Area I were white collar workers (over one-fourth in the professions); nine percent in Area V were white collar workers. Almost one-half of the workers in Area V were laborers, 15 percent were services workers, about 12 percent were farmers and only a few were in the operative and craftsmen categories. In the other three areas there was not much difference on a white collar, blue collar division but within the blue collar cate-

[4]Households were classified according to the occupation of the male head of the household. If there was no male head the occupation of the female head was used. If the male head was retired or not working the principal occupation when employed was used.

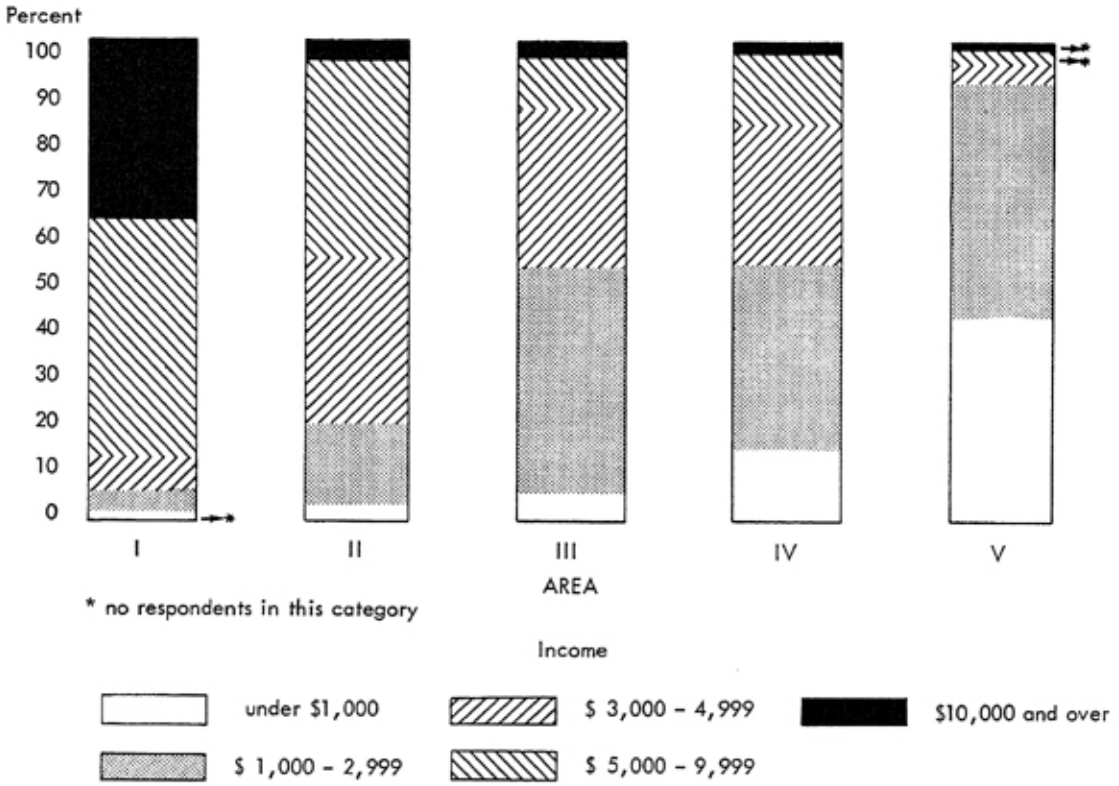


Figure 3-3. Percentage distributions of income of respondents in five areas of Missouri

gory there were differences. By virtue of area, there were no farmers in Area II and this category constituted the most numerous occupational category in Areas III and IV. There were more craftsmen and operatives in Area II than in any other area and more laborers in Area IV than in any other area except Area V.

On the social status variables, Areas I and V were clearly different from each other and from each of the other three areas. The "middle three" areas were not so clearly different from each other. Area II differed from Areas III and IV on income and specific occupations but these were not so abrupt, and the differences themselves could be partly explained by rural-urban distinctions. Thus, a lower income in a rural area may not be a "real" difference; and occupational distinctions, especially those related to agriculture, are residential rather than status distinctions. As a matter of fact, "farm operator" as a single classification does not fit well into an occupational hierarchy due to the great variation within the category. The educational level of Area III was somewhat above that of Area IV and when it is realized that Area III has an older population this difference becomes even greater.

Residence Difference. The areas were chosen to reflect urban-rural residential differences. Areas I and II were from the same metropolitan area though of course their housing was different. Area I was a suburban locale with single family dwellings, Area II was in the central city with multiple family dwellings.

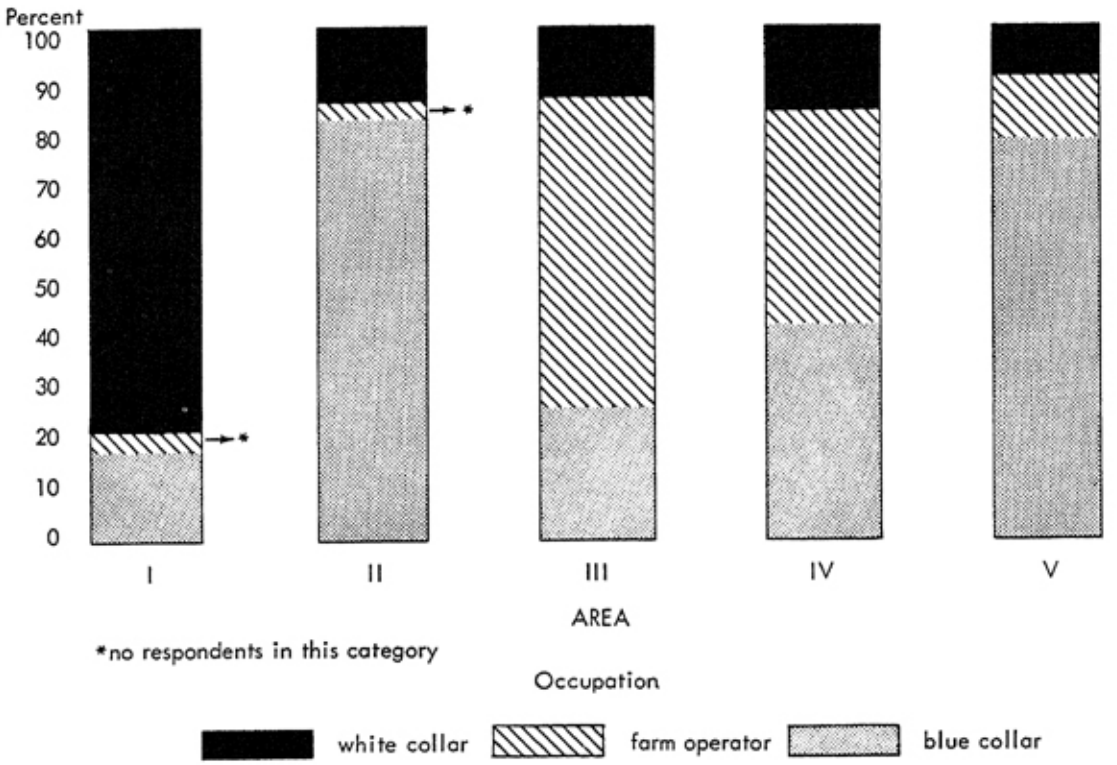


Figure 3-4. Percentage distributions of occupation of respondents in five areas of Missouri

Areas III and IV were rural in that no place of 2,500 was in these counties. Area III was somewhat more densely populated but the arrangement of open-country and trade-center populations in the two areas was quite similar. Area V consisted of a selected segment of three village populations; as such, it does not represent well a rural-urban type.

Culture Areas. Here we may identify Areas III and IV as from different cultural areas of Missouri. This is done on the basis of Gregory's typology of rural social areas of Missouri. He has indicated that Area III is more in harmony with an urbanized society and that Area IV retains more of a folk-society.

Analytical Comparison of Areas

Our analysis is based upon the comparison by area of information, beliefs, and selected other variables about heart disease. Part of our task is to identlfy the social characteristics of these areas so that we may characterize them by a limited number of concepts and thus reduce the large number of indices needed to describe them. In part, our decision on concepts and especially on categorization comes from an examination of the data. We will interpret comparisons on the basis of (1) socio-economic level of the area, (2) rural-urban residential difference. Categorization of areas is as follows: Area I (compared to other areas in this study) is an upper socio-economic level area and urban in residence. Area II is a middle socio-economic level area and urban in residence. Area III

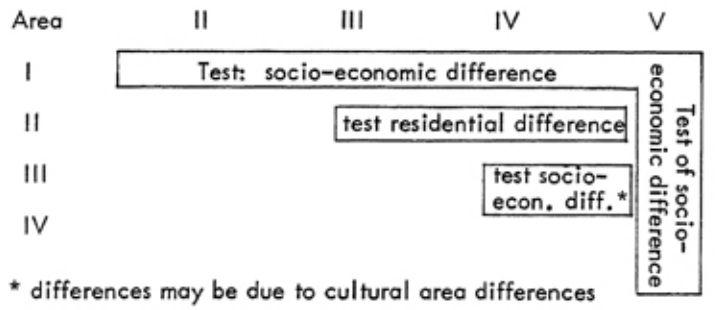
is a middle socio-economic area and rural in residence. Area IV is somewhat lower in socio-economic level than Area III but more like III and II than Area I or V, so is classified as an area of middle socio-economic level and rural in residence. Area V is classified as low in socio-economic level; its residential characteristics are not comparable to other areas since the sample is from a population of the Negro segments of three towns ranging in population from 1,216 to 2,867.

There may be "cultural differences" relating to these areas. To the extent that these are rural-urban differences, we are prepared to interpret this dimension. The differences between Area V and the other areas might be interpreted as "cultural differences" since this sample is made up of Negroes. However, the data make it very clear that there is a wide chasm on the basis of socio-economic variables between this area and others. It would seem that we do not need the subtlety of "cultural" explanations to explain many of the differences found. The simplest explanation is on the basis of socio-economic level and others can very well await the exhaustion of possibilities this offers.

On the basis of socio-economic level differences, then, we predict differences on the "heart variables" between Area I and each of the other areas and between Area V and and each of the other areas. But we should not expect differences among the "middle three" areas. If differences do occur among the "middle three" areas, several explanations may be possible: (1) They may not be equal in socio-economic level. We have shown that this is true to some extent; Area III is generally somewhat higher than Area IV. (2) Residence may make a difference; Area II is different residentially than Areas III and IV. The manner of making this judgment is discussed below. (3) There may be cultural differences. Areas III and IV were taken from different social areas of Missouri and, as has been pointed out, Area III has been described as representing a more urbanized society while Area IV tends toward the folk-society. It is our judgment that differences that exist between Areas III and IV might as well be interpreted as socio-economic differences rather than cultural. On the basis of socio-economic level we would expect the differences in the "heart variables" among these areas to be narrow. Also, if the "middle three" socio-economic level areas do not yield differences on the dependent variables (and at the same time there are differences with clearly different socio-economic areas I and V), this is evidence that minor differences in socio-economic level do not yield differences in the "heart variables."

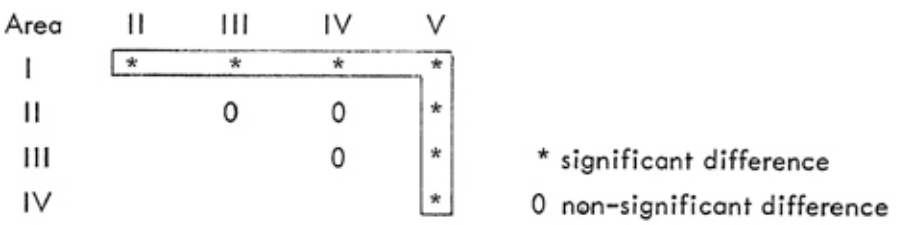
Urban-rural residence as a factor may be judged by comparing Area II (urban) with Areas III and IV (rural). Since these are within the same socio-economic level range, differences that occur may be attributed to residence. If there is no difference between Areas I and II (same residence, different socio-economic status) and at the same time difference between II and III, IV (different residence, same socio-economic level) this is additional evidence that the residential factor is affecting the relationship.

The comparisons between areas may be represented schematically as follows:



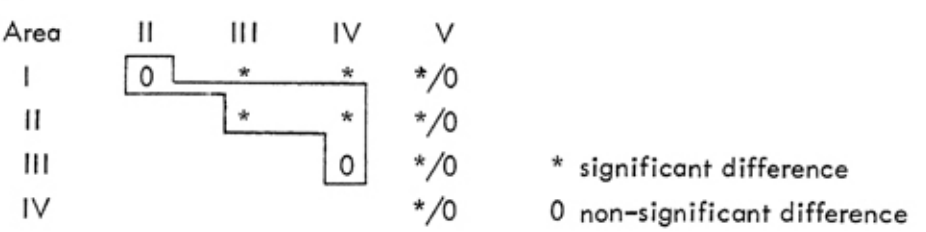
Examples of Patterns and Their Interpretations

Example I



In Example I, comparisons based on socio-economic level differences of areas were significant. That is, Area I was different from all other areas and Area V was different from all other areas. At the same time, there were no significant differences among the "middle three" socio-economic level areas. The pattern also indicates that residential differences were not operating to a significant degree.

Example II



The pattern in Example II would indicate that rural-urban residence was a factor in the differences among areas. The principal support for this interpretation is the comparison of Area II with Areas III and IV where residence varies but socio-economic status remains quite constant.

There are other possible combinations of significant and non-significant relations. For example, all combinations might be significant in which case we could conclude that both of the principal structural factors were effective. Or,

on the other hand, none of the comparisons might be significant, offering non-support for the hypothesis of relationship of structural relationships to the "heart variables." We may, however, use these patterns as models for interpreting the data. By observing the whole pattern, insight into the factors operating in any one case may be gained. If a pattern recurs, there is evidence of the stable effect of the structural elements examined. This, then, provides a comparative framework to interpret differences between areas on the basis of two principal structural dimensions; namely, socio-economic level, and rural, urban residence.

CHAPTER IV

SO THIS IS HEART DISEASE—A COMPARISON OF FIVE AREAS

What do people report as their experience with heart disease and, further, what beliefs and feeling do they express about heart disease? These are the questions to be considered in this chapter. We emphasize description here, but also analyze the data on the basis of the five areas. To do the latter, each distribution in the five areas was compared with every other distribution using a chi square test as the criterion for difference. As was stated in the previous chapter, we hypothesized an order of difference among the areas. Differences between Area I and other areas were interpreted as differences of socio-economic level; the same interpretation was made for differences between Area V and the other areas. Differences between Area II on the one side and Areas III and IV on the other were interpreted as residence (rural-urban) differences, and finally, differences between Areas III and IV were first of all socio-economic differences but could possibly be interpreted as culture-area differences.

Experience with Heart Disease

This is not a prevalence study, but personal experience with heart disease is reasonably associated with information, beliefs, and feelings about the disease. Experience with heart disease is itself a variable thing ranging from self-affliction to none at all. In addition to self or family experience with heart disease, it may be experienced through friends, neighbors, and other associates. And who can say that the illness of a public figure such as President Eisenhower was not as personal an experience to many as the affliction of a personal acquaintance?

It must be emphasized that these were self-reports and were not checked for accuracy. In the Purdue study where self-reports were checked, considerable inaccuracy was found in reporting both false positives (over-reporting) and false negatives (under-reporting). On the basis of additional information from the questionnaire, it was found that a number of self-reports were suspect. We looked rather carefully at Area IV where an unusally large number of respondents reported "ever having heart disease." Among them were a number that appeared to be questionable cases. Two said they no longer had heart disease. One of them had been told that she had a heart murmur when she was young; the other had had rheumatic fever and a doctor had warned her about a rheumatic heart condition. Several had high blood pressure which they associated with heart disease. And several were warned about weight and heart conditions at an earlier time and have carried that information with them through the years. For exam-

ple, one respondent was warned about weight 27 years ago when her first baby was born. Another was examined four years ago for another ailment and was found to have high blood pressure. Still another young man was told during a high school check-up that he had an "enlarged heart" and that he should come in for a check-up once in a while. Another said that the doctor had told him he had leakage of the heart, but it appeared not to affect his activities in any way. Another "heart murmur" by a young woman probably should go into the questionable category.

The point to be made is that self-reports are not an accurate indication of incidence of heart disease. The question we wish to examine is whether self-reported experience has any relationship to information and beliefs about heart disease. This is quite a different matter and rests upon the assumption that if one believes something to be true, his behavior reflects this belief. Therefore, the hypothesis is that if a person believes he or another relative, friend or associate has heart disease, he will be more receptive to information about the disease and, therefore, will have more information.

Most people reported some direct experience with heart disease either in their immediate family, among other relatives, or among friends and associates. In Areas I, III, and IV, those with no direct experience were clearly in the minority (12.5, 3.0, 6.0 percent, respectively). In Area II about one-fourth and in Area V over one-third reported no direct experience. In Area II the greatest difference from other areas was the reporting that fewer "friends and neighbors" had heart disease. This was possibly due to the more impersonal relations in this urban area. Both of the urban areas (Areas I and II) reported larger proportions of "other associates" having heart disease. These were principally work associates and reflect the greater fragmentation of social relations in urban areas. Respondents in the two general rural areas (Areas III and IV) reported knowing a higher proportion of friends and neighbors with heart disease than did respondents in other areas; although, Area I was not far behind.

The Experience Score. An arbitrary score for experience with heart disease was devised in the following manner.

Points	*Category*
7	self
6	spouse/children
5	parents/siblings/in-laws
4	other relatives (grandparents/grandchildren/nieces/ nephews/uncles/aunts and others)
3	friends/neighbors
2	other associates
1	none

The range of possible scores was 1 to 27. The distribution of experience scores by area is shown in Table 4-1. The larger number in the highest score-category in Area IV results from the larger number of self-reports of heart dis-

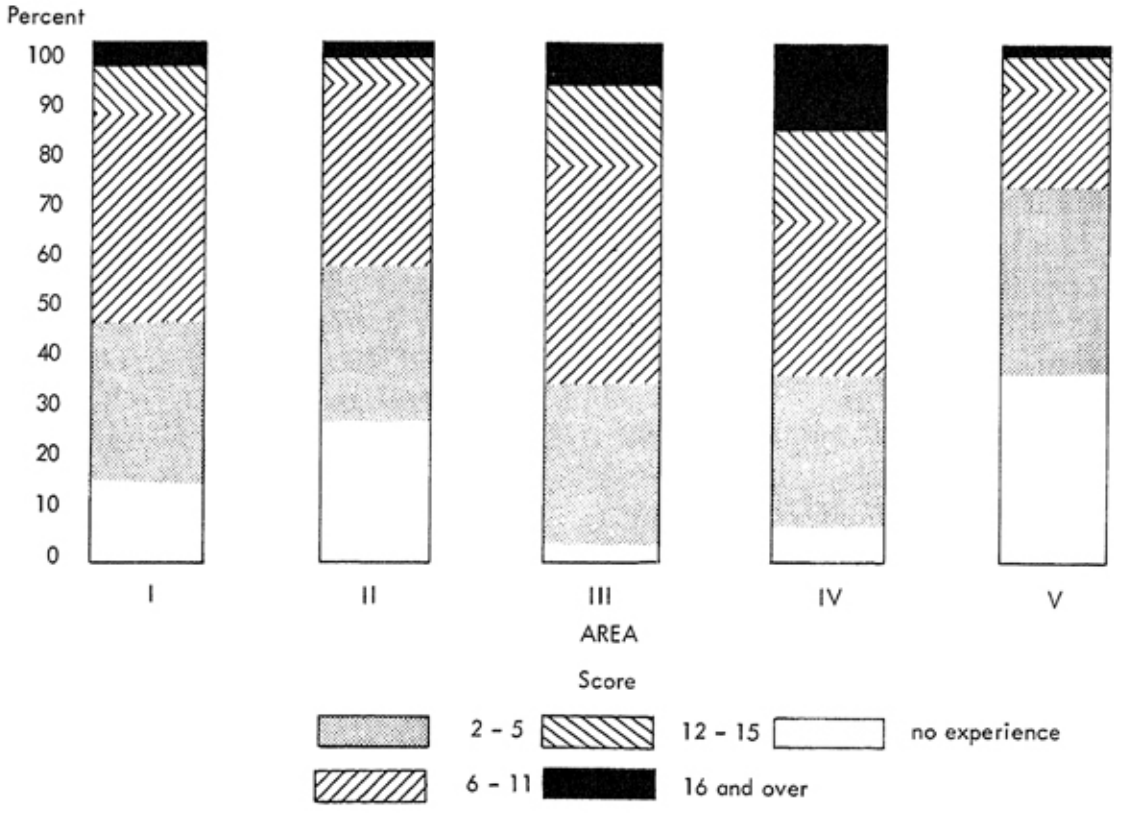


Figure 4-1. Percentage distributions of experience-with-heart-disease scores in five areas of Missouri

TABLE 4 - 1: HEART DISEASE EXPERIENCE SCORE: BY AREA

Score	Area				
	I Percent (N=96)*	II Percent (N=100)	III Percent (N=100)	IV Percent (N=100)	V Percent (N=99)
1 (no exp.)	12.5	26.0	3.0	6.0	37.4
2 - 3	11.5	17.0	10.0	8.0	19.2
4 - 5	20.8	15.0	20.0	21.0	14.1
6 - 8	17.7	18.0	19.0	12.0	12.1
9 - 11	25.0	15.0	22.0	17.0	7.1
12 - 15	7.3	5.0	17.0	17.0	8.1
16 and over	5.2	4.0	9.0	19.0	2.0

* 2 had insufficient data

ease by respondents. In Area III, age was a factor in the relatively large number of respondents with high experience scores.

Beliefs About the Nature of Heart Disease

Is heart disease one or many kinds of disease? In all areas, except Area V, a substantial majority chose the latter response. However, the proportion that could name a specific type of heart disease was considerably less and differed for the several areas (Area I, 75 percent; Area II, 46 percent; Area III and IV, 38 percent; and Area V, 19 percent. Among the types mentioned most often were: coronary, coronary thrombosis, hardening of the arteries, rheumatic fever and rheumatic heart disease, leakage of the heart and leakage of valves, enlarged heart, and high blood pressure. Some highly technical terms (such as mitral stenosis and tetralogy of Fallot) were offered, but only by one respondent. Angina and angina pectoris were technical terms offered by a number of respondents.

When asked if they knew any warning signals, a majority in each area said that they did—ranging from 91 percent in Area I to 56 percent in Area V. With few exceptions, those who said they knew a warning signal could name at least one judged by expert opinion to be reasonably accurate. The warning signal cited most often was shortness of breath; next was pains in the chest area. Other "signals" mentioned fairly often were dizziness, fainting and black-outs, fatigue, pains in arm and pains in left arm, heart beats too fast, and indigestion.[1]

While most of the respondents said they knew warning signals of heart disease and could name one or more, substantial proportions in each area thought that it, often or very often, struck suddenly without warning (Table 4-2). These of course are not inconsistent beliefs and are not without empirical foundation.

TABLE 4 - 2: PERCENTAGE REPORTING HEART DISEASE STRIKES SUDDENLY WITHOUT WARNING: BY AREA

	Area				
	I Percent (N=98)	II Percent (N=100)	III Percent (N=100)	IV Percent (N=100)	V Percent (N=99)
Almost never	7.1	1.0	16.0	4.0	6.1
Sometimes	28.6	38.0	52.0	30.0	38.4
Often	35.7	31.0	24.0	33.0	18.2
Very often	27.6	24.0	8.0	29.0	30.3
Don't know	1.0	5.0	----	3.0	7.1
No answer	----	1.0	----	1.0	----

[1]This list was very similar to the list in the Louisiana study.

Information About Prevalence of Heart Disease

Did people know that heart disease is the leading cause of death? Respondents were asked to rank four diseases (heart disease, cancer, tuberculosis, polio) from high to low as the cause of death. With the exception of Area V, heart disease or cancer was ranked first by virtually all the respondents. In all areas, except V, more ranked heart disease first than cancer. Respondents in Areas I and III were best informed on this; 72 percent and 67 percent, respectively, ranked heart disease first. In Areas II and IV the respective percentages were 50 and 57. In Area V, 27 percent ranked heart disease first and 50 percent ranked cancer first. Also in this area first rank was given to tuberculosis by 11 percent and to polio by 5 percent (7 percent made no first ranking).

A series of questions was asked regarding characteristics of persons who were more likely to contract heart disease (Table 4-3). Respondents were asked to choose in turn between: fat and thin, men and women, young and old, farmers and city people, manual workers and office workers. For each pair a third choice suggested was that "it makes no difference."

Fat or Thin. There was general awareness among respondents that body weight is connected with heart disease. The differences among the areas were not great and did not suggest a strong pattern of socio-economic status differences nor rural urban differences.

Young or Old. The same kind of consensus was present regarding age. Not many in any area believed that the young were more likely than the old to contract heart disease, but there were substantial and almost equal proportions in each area reporting that age made no difference. This may result from educational efforts pointing out that heart disease is not confined to any one age group; also, knowledge of the invalidism or death of a young person from heart disease may have a greater impact than for an older person. People may be over-educated on this from an accuracy stand-point, but probably not from a motivational stand-point. On another question, it was revealed that most of the respondents realized that children can have heart disease, but believed it was not a likely occurrence. At the same time, when asked at what age heart disease was most likely, the middle and later ages were checked. Upon comparing the areas, a rural, urban difference seems to be present with a higher proportion of the urban respondents reporting older persons were more likely to get heart disease.

Men or Women. It was also generally believed that men were more likely than women to get heart disease. In this, respondents in Area I were most positive; those in Area V least sure. In none of the areas were there many who thought that women were more susceptible than men, but there were fairly high proportions in each area that thought sex made no difference. The comparison of areas indicated that socio-economic level of the area was associated with the responses to this question. It has been pointed out to us that responses by those in Area V were probably as correct for their own area as those in Area I were for their

TABLE 4 - 3: WHAT TYPE OF PEOPLE ARE MOST LIKELY TO HAVE HEART DISEASE, BY AREA?

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
Weight										
Fat	83.7	69.0	84.0	79.0	70.7	I	*	0	0	*
Thin	----	1.0	1.0	1.0	2.0	II		*	0	0
No. Diff.	16.3	22.0	11.0	16.0	24.2	III			0	*
Don't know	----	8.0	4.0	4.0	3.0	IV				0
Age										
Young	3.1	3.0	10.0	5.0	9.1	I	0	*	0	0
Old	44.9	55.0	31.0	41.0	43.4	II		**	*	0
No. Diff.	51.0	40.0	56.0	48.0	43.4	III			0	0
Don't know	1.0	2.0	3.0	6.0	4.0	IV				0
Sex										
Men	87.8	67.0	59.0	64.0	31.3	I	**	**	**	**
Women	----	7.0	9.0	3.0	16.2	II		0	0	**
No. Diff.	11.2	22.0	25.0	20.0	39.4	III			0	**
Don't know	1.0	4.0	7.0	13.0	13.1	IV				**

Residence										
Farmers	----	2.0	24.0	17.0	21.2	I	0	**	**	**
City People	86.7	73.0	28.0	31.0	26.3	II		**	**	**
No Diff.	9.2	16.0	41.0	37.0	36.4	III			0	0
Don't know	4.1	9.0	7.0	15.0	16.2	IV				0
Occupations										
Manual Laborers	7.1	23.0	30.0	31.0	26.3	I	**	**	**	**
Office Workers	76.5	35.0	27.0	28.0	24.2	II		*	0	0
No Diff.	12.2	30.0	40.0	27.0	28.3	III			*	**
Don't know	4.1	12.0	3.0	14.0	21.2	IV				0

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

area because among nonwhite populations there is usually little difference between sexes in prevalence of heart disease.

On this series of questions, there seemed to be a set of beliefs that were held by substantial proportions of respondents in each of the areas. Although there was some variation among responses by area, these beliefs had reached a consensus that may be regarded as the level of "common sense." They were also generally accurate when compared with objective information. The generality of this information is not only confirmed by the high level of accuracy among areas of demonstratively different socio-economic situations, but also by comparison with the Louisiana study where both time and place were different, but response patterns of similar items (weight and age) were within the same range.

On the following two questions the correct response is not so clear even among experts; the statistical differences are not great and qualifications are many.

Farmers or City People. The response pattern to this question showed clearly a rural, urban difference. Respondents in the two metropolitan samples were in high agreement that city people were more likely to contract heart disease. Those in rural areas were most likely to say that it didn't make any difference; if they did choose, it was about evenly divided between city and farm people

Manual Laborers or Office Workers. On this question, Area I stands alone as different from all the rest. Respondents in Area I were in agreement (76 percent) that office workers were more likely to get heart disease. In the other areas, there was a fairly even division among the categories: laborers, office workers, and no difference. It will be remembered that Area I was predominately an area of white-collar workers; while respondents in the other areas were predominately blue-collar workers.

In both of the previous questions, there appeared to be a difference in responses according to the occupational and locational character of the area. The belief that the city office worker was more susceptible to heart disease was highest in Area I (metropolitan, white-collar) and eroded as one moved from the area in which that type of population was concentrated. But even in the rural areas composed of largely blue-collar workers (including farm operators) the belief was quite widely held that city residents and white-collar workers were more likely to get heart disease than farmers and manual workers.

Information About Technical Terms

Information about the relationship of age, sex, and weight to heart disease has been referred to as general information and indeed it was information generally known to respondents from a wide-range on the socio-economic band. We now turn to some rather technical information about heart disease. This is not to say that it is more important information for the individual to have. It does, we believe, provide a basis for discriminating between the well-informed and poorly-informed person.

One characteristic of a subculture is that a special language is developed which members handle with facility and which tends to identify the "ins" and exclude the "outs". Technical and scientific fields as subcultures are no exceptions; so the language of science and medicine has at least in part the function of separating these areas from the layman. But words are not confined to their subculture of origin, as evidenced by such terms are stoolpigeon,[2] bunco, goon, and bull, which most of us recognize as underworld jargon.

With the keen interest of the public in health matters, it is not surprising that a large number of health and medical terms have escaped their special-group origins to the public domain. What might be called the "Readers' Digest" lament is common among physicians; that is, the feeling that the public receives information about health that should be reserved to the profession.

Escaped technical terms are the basis for the following analysis. It is assumed that lay persons who can identify and use technical terms about heart disease with some accuracy are better informed about the disease than those who do not have this facility. It is not suggested that efforts should be made by health educators or others to make people generally aware of these terms. It may be that because such efforts have not been systematically made that these terms provide a useful index of level of information about heart disease. By way of parallel, it may be judged that grade school children who have not learned by rote the order of presidential succession, but who do know the order, are more likely to have a working knowledge of American history than those who have memorized the names in order with rhymes.

To assess the information of technical terms, respondents were asked if they had ever heard of the following: electrocardiogram, cholesterol, hypertension, arteriosclerosis, and coronary thrombosis. If the response was "yes" to the question, they were asked to tell what the term meant. There were three possible responses to the latter question: (1) although reporting having heard the term, he could not elaborate further, (2) he would define the term incorrectly, (3) he would answer with some degree of accuracy. To distinguish between answers that were correct and those that were not, expert medical opinion was sought. Each response was placed on a separate 3 x 5 card and an expert judge placed the cards in five piles ranging from incorrect to substantially correct. We later combined categories to correct, partially correct, and incorrect.

There were three additional items of a technical nature that were asked in a slightly different manner. These inquired if (1) high blood pressure, (2) rheumatic fever, and (3) hardening of the arteries were connected with heart disease. If the response was "yes," the respondent was asked to tell how it was connected with heart disease. The responses to the latter part of the question were handled the same way as the previous technical terms were; that is, they were submitted

[2]Lester V. Berry and Melvin Van Bork, *The American Thesaurus of Slang* (Second Edition) December 1952, Thomas Y. Crowell Co. New York. This thesaurus lists 82 underworld terms for informers in addition to "stoolpigeon." The word, stoolpigeon, now has standard dictionary status.

to an expert for classification and then categorized as correct, partially correct, and incorrect. For both sets of items, the "no answers" were those who responded positively to the first part of the question but could not describe the term or relationship further. In this sense a "no answer" may be placed in the incorrect category.

Electrocardiogram. Of the technical terms selected, electrocardiogram was the most familiar. The pattern of responses among the areas was similar to the other technical terms in that respondents in Area I had high technical information compared with the other areas and respondents in Area V had relatively low technical information. The proportions that said they had not heard of an electrocardiogram ranged from 1 percent in Area I to 68 percent in Area V. In the "middle three" areas a substantial majority had heard of an electrocardiogram. Eighty-three percent of the respondents in Area I were able to describe an electrocardiogram with sufficient adequacy to be judged at least partially correct. This was so for smaller majorities in Areas II, III, and IV. Only a few in Area V were able to give a partially correct answer. The pattern of relationships between the five areas is shown in Table 4-4. It fits precisely the analytical pattern that we said would indicate differential responses on the basis of socio-economic levels of the areas.

Cholesterol. If it seems that the world is made of cholesterol to many of the readers of this report, it may be that their social position has intervened. Almost everyone in Area I had heard of the term and almost two-thirds could identify it further. In the other areas, the proportions knowing the term dropped sharply. Area II was second high but only one-third could identify the terms. In Areas III and IV almost two-thirds had not heard the term cholesterol, and only about one-fifth could identify it further. And, finally, in Area V almost 90 percent reported they had not heard the term and only a few could identify it. Two factors seem to be working to produce difference in response patterns. Respondents in the urban areas tend to have more information (compare Area II with Areas III and IV), and the differences in socio-economic level of the areas are also working.

Hypertension. Hypertension, a technical term for high blood pressure, was also variously identified among the areas. While fairly large proportions had heard the term in all areas, there was a large number of incorrect and "no answers" to the second part of the question. A common erroneous description of hypertension was "nervousness." Respondents in Area I had the highest proportion of correct and partially correct answers (45 percent), followed by Area II (16 percent), Area III (13 percent); Area IV (12 percent), and Area V (5 percent). The pattern of differences indicated the responses differed on the basis of the socio-economic levels of the areas.

Arteriosclerosis. Another technical term that has come into the lay-language to some extent is arteriosclerosis (hardening of the arteries). Almost one-half of

TABLE 4 - 4: INFORMATION OF TECHNICAL TERMS, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
Electrocardiogram										
Correct	7.1	2.0	1.0	----	----	I	**	*	**	**
Part. Cor.	75.5	57.0	66.0	55.0	6.1	II		0	0	**
Incorrect	9.2	14.0	10.0	12.0	3.0	III			0	**
Never heard of it	1.0	10.0	15.0	24.0	67.7	IV				**
No answer[1]	7.1	17.0	8.0	9.0	23.2					
Cholesterol										
Correct	14.3	2.0	4.0	3.0	----	I	**	**	**	**
Part. Cor.	56.1	31.0	16.0	14.0	3.0	II		*	**	**
Incorrect	13.2	10.0	14.0	10.0	2.0	III			0	**
Never heard of it	4.1	36.0	61.0	61.0	89.9	IV				**
No answer[1]	12.2	21.0	5.0	12.0	5.1					
Hypertension										
Correct	22.4	9.0	11.0	10.0	1.0	I	**	**	**	**
Part. Cor.	22.4	7.0	3.0	2.0	4.0	II		0	0	*
Incorrect	35.7	38.0	24.0	19.0	9.1	III			0	*
Never heard of it	2.0	26.0	49.0	53.0	68.7	IV				0
No answer[1]	17.5	20.0	13.0	16.0	17.2					

Table 4 - 4 (Cond't.)

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
Arteriosclerosis										
Correct	40.8	17.0	14.0	12.0	2.0	I	**	**	**	**
Part. Cor.	6.1	2.0	5.0	7.0	1.0	II		0	0	**
Incorrect	13.3	13.0	8.0	3.0	9.1	III			0	**
Never heard of it	9.2	41.0	60.6	61.0	74.7	IV				**
No answer[1]	30.6	27.0	13.0	17.0	13.1					
Coronary Thrombosis										
Correct	7.1	----	----	4.0	----	I	**	**	**	**
Part. Cor.	62.2	36.0	40.0	30.0	9.1	II		0	0	**
Incorrect	10.2	13.0	16.0	7.0	4.0	III			0	**
Never heard of it	2.0	28.0	35.0	42.0	77.8	IV				**
No answer[1]	18.4	23.0	9.0	17.0	9.1					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at 5 percent level

**= significant at 1 percent level

[1] "No answer" indicates that although the respondent had heard of the term he could not identify it further.

the respondents in Area I could identify the term with some degree of accuracy; Areas II, III and IV had identical proportions (19 percent) of respondents answering this question at least partially correct; although, a larger proportion in Area II reported that they had heard of the term. Inter-area comparisons of the responses showed differences on the basis of socio-economic level.

Coronary Thrombosis. As with the other technical terms reported, respondents in Area I were better able to identify the term, coronary thrombosis, (69 percent) than were respondents in Area II (36 percent), Area III (40 percent), Area IV (34 percent), or Area V (9 percent). The same pattern of inter-area differences in responses held for this term as for the other technical terms, indicating that the socio-economic levels of the areas were consistently related to information about technical terms.

As was pointed out above, the following items are somewhat different in form. They are in a way more general and probably permit more guessing in the responses.

Is high blood pressure connected with heart disease? The majority of respondents in each area thought it was. This is the item in the series on technical information which had the least difference in response pattern among the areas.

Is rheumatic fever connected with heart disease? Rheumatic fever was thought not to be connected with heart disease by about 1 in 10 in Area I; 1 in 4 in Areas II and III; and 1 in 3 in Areas IV and V. Identification of the connection with some accuracy was highest in Areas I and III (57 and 56 percent) followed by Area II (34 percent), Area IV (33 percent), and Area V (7 percent).

Is hardening of the arteries connected with heart disease? A higher proportion of respondents in Area I could identify the connection between hardening of the arteries and heart disease with some correctness (56 percent) than respondents in other areas. This was followed by respondents in Area IV (42 percent), Area III (36 percent), Area II (28 percent), and Area V (19 percent). The pattern of differences among the areas approached the analytical pattern of socio-economic level differences.

Taken together the response patterns of these last three items were not as clearly related to the socio-economic level differences of the areas as were the response patterns for the previous technical terms.

Information Scores

Selected items of information that have been discussed previously were combined into two summary information scores. One was called the general information score; the other was designated the specific information score. In each case the items were tested for scalability utilizing the Guttman scaling methodology.[3] The advantage of establishing scalability is that it provides some confi-

[3]Samuel A. Stouffer, *et al. Studies in Social Psychology in World War II, Vol. 4, Measurement and Prediction*, Princeton University Press, Princeton, New Jersey 1950, Chapters I, II and III.

TABLE 4 - 5: HOW IS EACH OF THE FOLLOWING CONNECTED WITH HEART DISEASE?

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N= 99)	Area	II	III	IV	V
High Blood Pressure										
Correct	1.0	----	1.0	----	----	I	*	0	0	0
Part. Cor.	45.9	32.0	40.0	38.0	36.4	II		0	0	0
Incorrect	14.3	10.0	5.0	10.0	16.2	III			0	0
Not Conn. H. D.	17.3	24.0	25.0	28.0	22.2	IV				0
No answer[1]	21.4	34.0	29.0	24.0	25.2					
Rheumatic Fever										
Correct	2.0	----	----	2.0	----	I	**	0	**	**
Part. Cor.	55.1	34.0	56.0	31.0	7.1	II		**	0	**
Incorrect	13.3	9.0	4.0	13.0	9.1	III			**	**
Not Conn. H. D.	8.2	26.0	22.0	31.0	33.3	IV				**
No answer[1]	21.4	31.0	18.0	23.0	50.5					
Hardening of the Arteries										
Correct	18.4	4.0	2.0	----	----	I	**	**	*	**
Part. Cor.	37.8	24.0	34.0	42.0	19.2	II		0	*	0
Incorrect	8.2	13.0	9.0	9.0	2.0	III			0	**
Not Conn. H.D.	17.3	32.0	29.0	18.0	39.4	IV				**
No answer[1]	18.3	27.0	26.0	31.0	39.4					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

[1] "no answer" indicates that although the respondent said there was a connection between heart disease and the condition he could not identify it further.

dence that we are dealing with a single dimension of information. Although the items were tested for scalability they were not scored in the usual way. Instead, they were given a point for each item of information and an additional point was given to each respondent in order to eliminate zero scores. For a perfect scale pattern, this simplified scoring procedure would yield the same results as the usual Guttman scoring method.

The scores then are not, strictly speaking, Guttman scale scores, but the Guttman analysis was used to establish the cumulative nature of the items or their unidimensionality. The scores summarize the areas of general information and specific information. In addition to the comparisons by area here, these scores will be used as the basis for later analyses that would be prohibitive in terms of space if individual items were used.

The General Information Score. The items of general information were the relationship of the prevalence of heart disease to: (1) age, (2) sex, and (3) weight. These items provided a three-point scale reproducible at the .90 level. In two of the areas (II and V), however, the coefficient of reproducibility was below .90.

General information scores in Table 4-6 show a fairly high awareness of the relationship of these factors to heart disease. In all areas, at least half of the respondents knew two out of three of these items of general information. The difference among areas was not great, with only Area V showing much difference with other areas. As was pointed out, when reviewing the items that make up this score, we have here information that reaches the high consensus of common sense.

Specific Information Scores. The items utilized in the specific information score were the identification of: (1) electrocardiogram, (2) coronary thrombosis, (3) cholesterol, (4) arteriosclerosis, and (5) hypertension. These items provided a 5-point scale that was reproducible at the .93 level; the range was .95 to .89 for the areas. The items did not provide a satisfactory scale for Area V because of the small number of correct or partially correct responses in that area on these items. Uneven distributions were found to a lesser extent within other areas. To a considerable extent, the variation on these items is between areas rather than within them which is the very thing we observe using single items.

When the specific information scores are considered by area, it is clear that Areas I and V occupy extreme positions (Table 4-7). In Area I, more than two-thirds of the respondents could identify at least half of the terms in the specific information scale (scores 4-6); only 3 percent in Area V could do the same. In Area V, almost 90 percent could not satisfactorily identify a single item (score 1); in Area I, only 4 percent had the lowest score. At the same time, the "middle three" had response patterns that were quite similar. In terms of the analytical pattern, comparison among the areas indicated that specific information was related to differences in the areas' socio-economic level. There appeared to be no differences that could be reasonably attributed to rural, urban differences.

TABLE 4 - 6: GENERAL INFORMATION SCORES BY AREA

General Information Score	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
1	4.1	9.0	7.0	9.0	16.2	I	0	**	0	**
2	15.3	21.0	31.0	20.0	31.3	II		0	0	**
3	43.8	40.0	43.0	49.0	43.3	III			0	0
4	36.8	30.0	19.0	22.0	9.1	IV				**

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

TABLE 4 - 7: SPECIFIC INFORMATION SCORES BY AREA

Specific Information Score	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
1	4.1	24.0	24.0	38.0	87.9	I	**	**	**	**
2 - 3	27.6	52.0	52.0	39.0	9.1	II		0	0	**
4 - 6	68.3	24.0	24.0	23.0	3.0	III			0	**
						IV				**

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

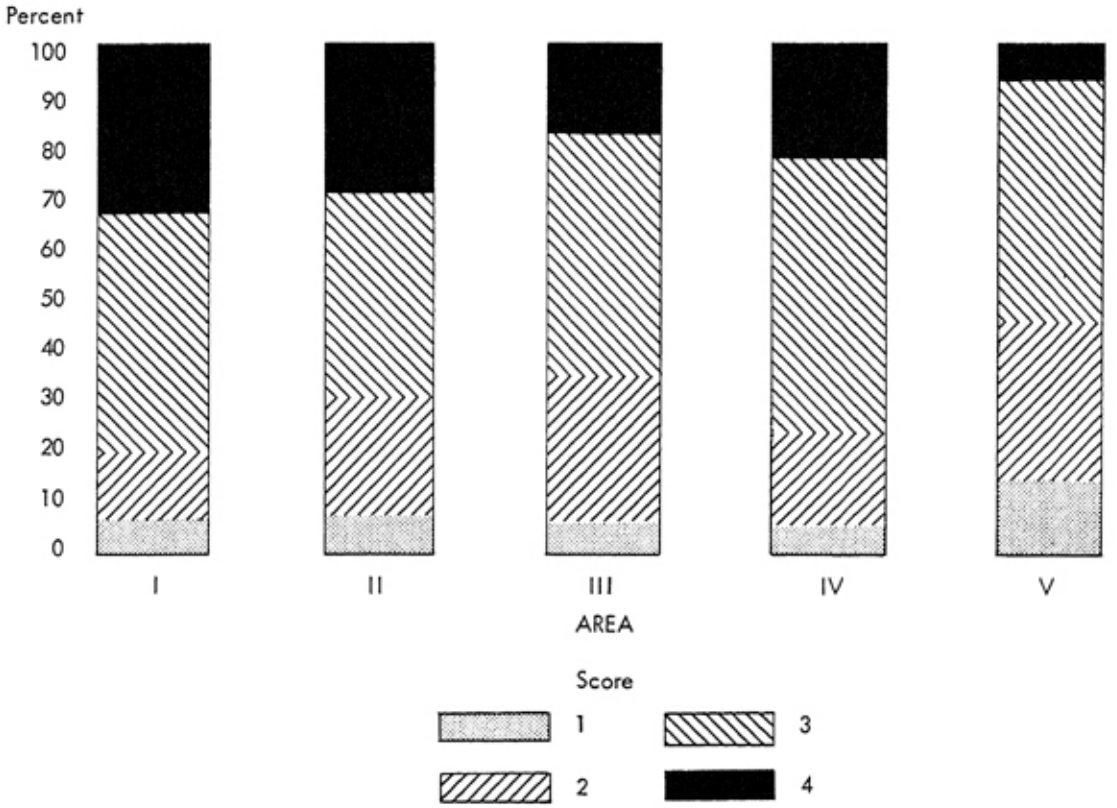


Figure 4-2. Percentage distributions of general-information-about-heart-disease scores in five areas of Missouri

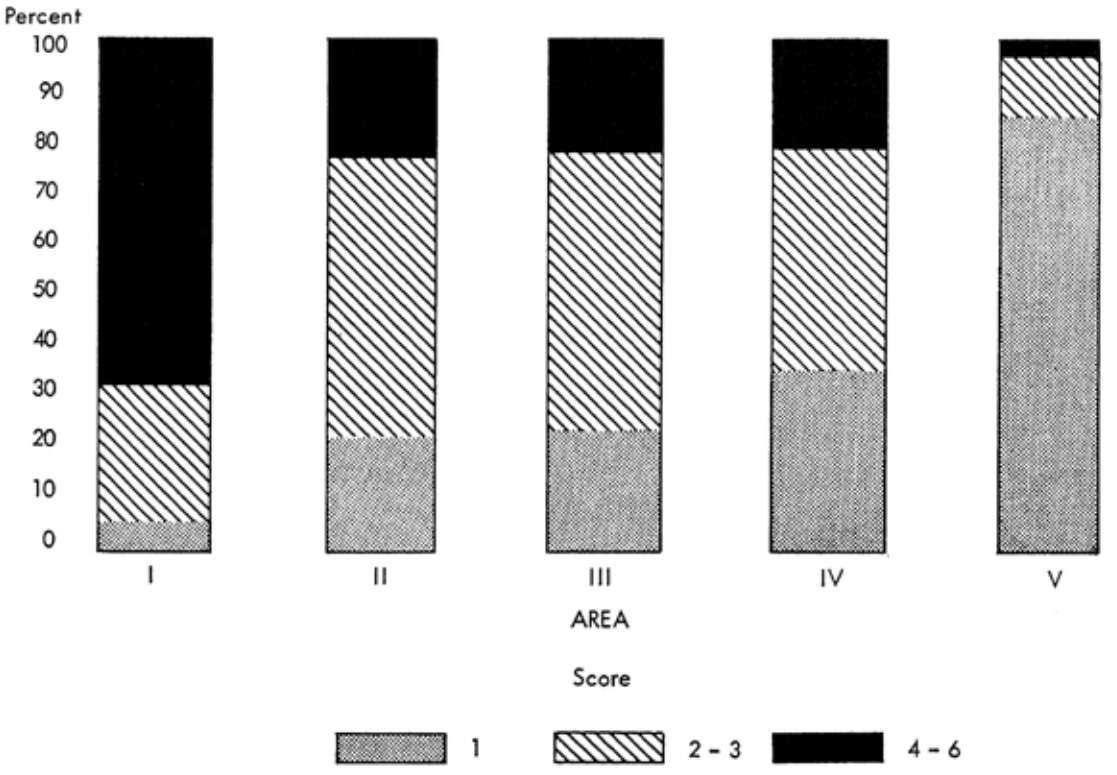


Figure 4-3. Percentage distributions of specific-information-about-heart-disease scores in five areas of Missouri

Information Scores With Age Controlled. It was pointed out earlier that the age distributions of the several areas differed from one another. This suggests the possibility that difference in age is the factor that accounts for the difference among the areas in response patterns to the information items. To examine this, the respondents in each area were divided at 55 years into two age categories and the differences among the areas when age was controlled were examined (Table 4-8, Table 4-9). While we did this for each information item, we will report the details for only the summary information scores. However, we should say that, in general, controlling age did not alter the patterns of differences among the areas. The reduction of numbers due to the division of the samples made it more difficult to reach a level of significance.

TABLE 4 - 8

CHI SQUARE ANALYSIS OF DIFFERENCES IN GENERAL INFORMATION SCORES BETWEEN AREAS WITH AGE CONTROLLED

	Chi Square Analysis							
	Under 55 years				55 years and over			
Area	II	III	IV	V	II	III	VI	V
I	0	0	0	**	0	*	0	*
II		0	0	**		0	0	0
III			0	*			0	0
IV				**				0

0= not significant at 5 percent level

*= significant at 5 percent level

* *= significant at 1 percent level

TABLE 4 - 9

CHI SQUARE ANALYSIS OF DIFFERENCES IN SPECIFIC INFORMATION SCORES BETWEEN AREAS WITH AGE CONTROLLED

	Chi Square Analysis							
	Under 55 years				55 years and over			
Area	II	III	IV	V	II	III	IV	V
I	**	**	**	**	**	**	**	**
II		0	0	**		0	*	**
III			0	**			0	**
IV				**				*

0= not significant at 5 percent level

*= significant at 5 percent level

* *= significant at 1 percent level

The relationships among the areas of the distributions of general information scores are not greatly different when age is controlled. The main variation comes in the difference between Area V and the other areas, the difference being stronger in the younger age group. Overall, the pattern for the two age groups remains what it was for the total group; that is, the variation by area on these items was not great.

The patterns of the differences among areas on specific information when age was not controlled corresponded very closely to the pattern for the age-differentiated groups. For both the younger and older categories, it appeared that differences in patterns of specific information were related to the socio-economic levels of the areas.

Beliefs About Prevention, Treatment, Consequences and Prognosis of Heart Disease

In this section, we shall explore the beliefs about heart disease held by the public. Beliefs are cognitions of what is true or right. The information items examined earlier are special cases of beliefs in that they were placed against objective criteria to determine their accuracy. Some of the following items could be treated as information but this was not done; rather, interest was centered on the meaning that these items had for the respondents.

Beliefs About Prevention. To what extent did respondents believe they could prevent heart disease? Respondents in Area V were most fatalistic about this with almost half choosing the statement: If you're going to get it there is nothing that you can do about it (Table 4-10). A substantial proportion (31 percent) in Area III gave this response. Respondents 55 years or older were not much more likely to give a fatalistic response than those under 55 years. The largest proportion in each area (except Area V) chose the response that "It is quite possible to prevent many kinds of heart disease." The larger proportions having a fatalistic outlook in Areas III and V account for the differences shown in the chi square analysis.

Respondents were also asked whether they thought certain practices would help prevent heart disease. In each case, if the response were positive, elaboration was asked for in an open-ended question.

Diet. There was a high level of belief that dieting was effective in preventing heart disease—from 90 percent in Area I to 64 percent in Area V. The differences in response among the areas did not perfectly match the analytical pattern of differences on the basis of socio-economic level nor on the basis of rural, urban differences although they were closer to the latter pattern.

There appeared to be some qualitative differences among respondents about the type of diet that would be beneficial in preventing heart disease. In Areas I and II, "low fat" diets were mentioned more often than in other areas, while in Areas III, IV, and V the response was more likely to be some variation of "cut

TABLE 4 - 10: BELIEFS ABOUT PREVENTING HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=100)	Area	II	III	IV	V
Which of the following is closest to your own beliefs [about heart disease]?										
Statements are listed below										
a	5.1	4.0	31.0	12.0	47.5	I	0	**	0	**
b	6.1	10.0	2.0	2.0	2.0	II		**	0	**
c	83.7	73.0	67.0	80.0	45.5	III			**	*
d	4.1	6.0	----	3.0	3.0	IV				**
e	1.0	7.0	----	3.0	2.0					

a. If you're going to get it there is nothing that you can do about it

b. There may be some things that you can do to prevent heart disease but it really isn't worth while to try

c. It is quite possible to prevent many kinds of heart disease

d. If a person tries, he can be quite sure that he/she will not get heart disease

e. Don't know

0= not significant at 5 percent level

*= significant at 5 percent level

**= significant at 1 percent level

down" on food or lose weight. Low cholesterol was mentioned by eight respondents in Area I, three in Area II, and one in Area III. Low salt diets were mentioned in each area, most often in Areas II and IV, by nine and 10 persons respectively. The term, calorie, was not used often nor was protein, but these terms occurred most often in Area I. A few references were made to diet foods and 1,000 calorie diets. One person claimed that since he started taking Geritol he could eat pork. The mention of pork, grease and lard was largely confined to the Areas III, IV, and V. It is probable that the difference between a "low fat" diet and the use of less pork, grease, and lard or rich foods denotes more than a semantic difference. The latter is in the folk-health tradition; the former is more of a mass-media expression.

Some prohibitions against fried foods were expressed and several against canned foods; for example "no grease, salt, pepper or canned food." There were suggestions of specific foods like "sweet milk and green beans—not too much bread"; "drink orange juice and pineapple juice." Eating more vegetables was favored by some. One respondent expressed the theory that a person should reduce so that "the stomach doesn't crowd the heart." A few in each area suggested that diet be under the supervision of a physician.

It would appear that most people do not need to be convinced of the preventive character of dieting, but there does seem to be need of more information about diets. Paradoxically, those who are less informed about "low fat," cholesterol, and the like may have a more sound approach to dieting; that for example, "If you're too fleshy, eat less."

Change of Work Habits. Changes in work habits were generally regarded as a means of preventing heart disease; although, the level was not quite as high as for diet. Respondents in Areas I and II were more likely than those in the other areas to say that changes in work habits could prevent heart disease. The chi square analysis in Table 4-11 indicates a rural, urban pattern of differences.

There were also qualitative differences in responses that appeared to be related to socio-economic levels of the areas. In Area I the most common response was, to reduce job tension, anxiety or worry. In other areas, this response was given by some, but the most frequent response was to "get lighter work," "go to easy work from hard labor," "quit heavy lifting" or some other variation of reducing physical labor. Special cases of this response were "stay out of the woods" [meaning logging or chopping wood] and "get out of the fields." The latter response was quite common in Area V and had reference to working in the cotton fields. One respondent said that you should "go from a hot, dirty job to a cool inside job," but added "you have to be qualified for a soft job."

Regular Physical Examinations. This was the item that most respondents agreed was a means of preventing heart disease. The differences that occurred among areas appeared to be related to rural, urban residence—that is, respondents in the rural areas were not quite so likely to endorse physical examinations as a means of preventing heart disease.

TABLE 4 - 11: BELIEFS THAT SELECTED PRACTICES WILL HELP PREVENT HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=98)	IV (N=99)	V (N=99)	Area	II	III	IV	V
Diet										
Yes	89.8	84.0	68.4	76.8	63.6	I	0	**	*	**
No	10.2	9.0	25.5	13.1	16.2	II		*	0	**
Don't know	----	7.0	6.1	10.1	20.2	III			0	0
						IV				*
Change in Work Habits	(N=96)	(N=100)	(N=98)	(N=99)	(N=98)	Area	II	III	IV	V
Yes	82.3	76.0	61.2	63.6	60.2	I	0	**	**	**
No	15.6	18.0	31.6	22.2	19.4	II		*	*	*
Don't know	2.1	6.0	7.1	14.1	20.4	III			0	0
						IV				0
Physical Check-ups	(N=95)	(N=99)	(N=98)	N=99)	(N=97)	Area	II	III	IV	V
Yes	90.5	93.9	77.6	73.7	78.4	I	0	*	**	*
No	9.5	4.0	16.3	12.1	10.3	II		**	**	**
Don't know	----	2.0	6.1	14.1	11.3	III			0	0
						IV				0
Regular Exercise	(N=94)	(N=99)	(N=98)	(N=99)	(N=97)	Area	II	III	IV	V
Yes	85.1	76.8	56.1	63.6	60.8	I	0	**	**	**
No	14.9	16.1	33.7	27.3	22.7	II		**	*	*
Don't know	----	7.1	10.2	9.1	16.5	III			0	0
						IV				0

On the chi square analysis

0= not significant at the 5 percent level *= significant at the 5 percent level **=significant at the 1 percent level

Regular Exercise. The felicity of exercise was also accepted by a majority of the respondents in each area, but in Area III it was a scant majority. There was a difference between the respondents in the two urban areas and those in the rural areas. The idea of additional exercise for a substantial number in the rural areas did not make much sense. They would respond that they got all the exercise they needed in their daily activities.

Types of exercise suggested by respondents did not vary greatly by area. There seemed to be a general belief that any exercise should be done moderately. Walking was the specific type mentioned most often in each area, but a wide range was suggested, including: swimming, golf, gardening, rocking chair, croquet, tennis, calisthenics, weight lifting, fishing, canoeing. In the rural areas, the response was somewhat more likely to be regular work such as "just good old hard work kind," "chopping wood or shucking corn."

On the preventive items, there appeared to be differences among the areas on the basis of rural, urban distinctions. The patterns of responses for three of the four items fit exactly the analytical patterns that we had proposed earlier as indicating rural, urban differences. In each case, respondents in the urban areas were more likely to endorse the practice as a preventive measure for heart disease.

Beliefs About Treatment for Heart Disease. In all areas, a substantial majority of the respondents thought that treatment for heart disease was at least somewhat effective ranging from 90 percent in Area II to 68 percent in Area III. Area III had the smallest proportion that thought that treatments were "very effective." Younger respondents (under 55 years of age) in Areas II, III, and IV were more likely to say that treatments were very effective. Age made no difference in Areas I and V. On the chi square comparison, Area III was significantly different from each of the other areas, but no other pairs of areas were significantly different (Table 4-12).

Beliefs About the Consequences of Heart Disease. Two questions were asked about the consequences of heart disease. One dealt with work; the other, more generally, with leading a "normal life" (Table 4-13).

For work—The most pessimistic responses to the question about work were: "In most cases a person who has heart disease [can do some work but must give up active employment] or [is unable to work at all]." Respondents in Areas I and II selected these answers less often (4 percent in each) than those in the other areas (20 to 35 percent). Respondents in Areas I and II were more likely to say that a person can go about his work as before. The pattern of differences among areas indicated that the rural, urban distinction was operating at a significant level.

For leading a normal life—On the question pertaining to leading a "normal life," respondents in Areas III, IV, and V were more pessimistic (more likely to say the chances were less than average or very slight) than respondents in

TABLE 4 - 12: BELIEFS ABOUT TREATMENTS FOR HEART DISEASE: BY AREA

Treatments for heart disease are:	Percentage Distribution Area I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Chi Square Analysis Area	II	III	IV	V
Very effective	45.9	46.0	25.0	39.0	46.5	I	0	**	0	0
Somewhat effective	39.8	44.0	53.0	34.0	26.3	II		**	0	0
Not very effective	7.1	----	11.0	13.0	11.1	III			*	**
Almost never effective	1.0	----	3.0	----	1.0	IV				0
Don't know	6.1	10.0	8.0	14.0	15.1					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

TABLE 4 - 13: BELIEFS ABOUT CONSEQUENCES OF HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
Consequences for work										
A person who has heart disease:										
Can go about work as before	20.4	11.0	1.0	8.0	1.0	I	0	**	**	**
Must slow down	74.5	82.0	76.0	63.0	60.6	II		**	**	**
Can do some work	3.1	4.0	19.0	23.0	27.3	III			0	*
Is unable to work	1.0	----	1.0	3.0	7.1	IV				0
Don't know	1.0	3.0	3.0	3.0	4.0					
Consequences for leading a normal life										
Chances of leading a normal life:										
Very slight	1.0	1.0	6.0	----	10.1	I	0	**	**	**
Less than average	20.4	10.0	47.0	41.0	40.4	II		**	**	**
About average	77.6	86.0	46.0	54.0	41.4	III			0	0
Don't know	1.0	3.0	1.0	5.0	8.1	IV				0

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

Areas I and II. On this question, as with the previous one, there was a rural-urban difference in the response patterns.

Beliefs About Prognosis for Heart Disease. There was high consensus among respondents in all areas as shows in Table 4-14 that heart disease could be controlled, although complete recovery would not be expected. This response ranged from 86 percent in Area III to 65 percent in Area V. Respondents in Areas I and II were somewhat more likely than those in the other areas to indicate that complete recovery was possible. In the chi square analysis of differences between areas, respondents in Area II were significantly less pessimistic than those in other areas and respondents in Area V tended to be significantly more pessimistic.

Sentiments About Heart Disease. Sentiments are states of feeling. The sentiments that are considered here are responses to two questions about worry. The first was: Have you worried about getting heart disease (a) a great deal, (b) quite a lot, (c) some, (d) a slight amount, (e) not at all. A majority in each area (reaching 64 percent in Area II) said that they had not worried about heart disease at all and a strong majority (71 to 84 percent) worried no more than "a slight amount" about heart disease. On the whole, from responses to this question, it did not appear that heart disease was an anxiety producing disease. This view is supported by the study of Robbins who found that although recognizing that heart disease was "very serious" it ranked lowest among diseases as one that they personally worried about. There were no clear differences in responses on the basis of structural differences of the areas.

The second "worry" question places heart disease against other selected diseases. Respondents were asked to rank cancer, heart disease, polio, and tuberculosis from high to low in terms of the one they worried most about getting. There is no doubt that cancer was the most feared disease in each area. The proportions ranking cancer first ranged from 93 to 74 percent. If cancer were not ranked first, it was almost always ranked second. There were few significant differences among the areas on the position of cancer as the most feared disease because of the high consensus that it ranked highest.

In Areas I and II heart disease was given first or second rank more often than it was in the other areas. It was actually ranked last by very substantial proportions in Areas III, IV and V (Table 4-15).

TABLE 4 - 10: BELIEFS ABOUT PREVENTING HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=100)	Area	II	III	IV	V
Which of the following is closest to your own beliefs [about heart disease]?										
Statements are listed below										
a	5.1	4.0	31.0	12.0	47.5	I	0	**	0	**
b	6.1	10.0	2.0	2.0	2.0	II		**	0	**
c	83.7	73.0	67.0	80.0	45.5	III			**	*
d	4.1	6.0	----	3.0	3.0	IV				**
e	1.0	7.0	----	3.0	2.0					

a. If you're going to get it there is nothing that you can do about it

b. There may be some things that you can do to prevent heart disease but it really isn't worth while to try

c. It is quite possible to prevent many kinds of heart disease

d. If a person tries, he can be quite sure that he/she will not get heart disease

e. Don't know

0= not significant at 5 percent level

*= significant at 5 percent level

**= significant at 1 percent level

TABLE 4 - 11: BELIEFS THAT SELECTED PRACTICES WILL HELP PREVENT HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=98)	IV (N=99)	V (N=99)	Area	II	III	IV	V
Diet										
Yes	89.8	84.0	68.4	76.8	63.6	I	0	**	*	**
No	10.2	9.0	25.5	13.1	16.2	II		*	0	**
Don't know	----	7.0	6.1	10.1	20.2	III			0	0
						IV				*
Change in Work Habits	(N=96)	(N=100)	(N=98)	(N=99)	(N=98)	Area	II	III	IV	V
Yes	82.3	76.0	61.2	63.6	60.2	I	0	**	**	**
No	15.6	18.0	31.6	22.2	19.4	II		*	*	*
Don't know	2.1	6.0	7.1	14.1	20.4	III			0	0
						IV				0
Physical Check-ups	(N=95)	(N=99)	(N=98)	N=99)	(N=97)	Area	II	III	IV	V
Yes	90.5	93.9	77.6	73.7	78.4	I	0	*	**	*
No	9.5	4.0	16.3	12.1	10.3	II		**	**	**
Don't know	----	2.0	6.1	14.1	11.3	III			0	0
						IV				0
Regular Exercise	(N=94)	(N=99)	(N=98)	(N=99)	(N=97)	Area	II	III	IV	V
Yes	85.1	76.8	56.1	63.6	60.8	I	0	**	**	**
No	14.9	16.1	33.7	27.3	22.7	II		**	*	*
Don't know	----	7.1	10.2	9.1	16.5	III			0	0
						IV				0

On the chi square analysis

0= not significant at the 5 percent level *= significant at the 5 percent level **=significant at the 1 percent level

TABLE 4 - 12: BELIEFS ABOUT TREATMENTS FOR HEART DISEASE: BY AREA

Treatments for heart disease are:	Percentage Distribution Area I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Chi Square Analysis Area	II	III	IV	V
Very effective	45.9	46.0	25.0	39.0	46.5	I	0	**	0	0
Somewhat effective	39.8	44.0	53.0	34.0	26.3	II		**	0	0
Not very effective	7.1	----	11.0	13.0	11.1	III			*	**
Almost never effective	1.0	----	3.0	----	1.0	IV				0
Don't know	6.1	10.0	8.0	14.0	15.1					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

TABLE 4 - 14: BELIEFS ABOUT PROGNOSIS FOR HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
The most usual result of heart disease is:										
Complete recovery	15.3	11.0	1.0	4.0	3.0	I	*	0	0	**
Control	76.5	82.0	86.0	81.0	64.6	II		**	**	**
Confinement at home	2.0	----	4.0	3.0	7.1	III			0	*
Death in a short time	2.0	----	4.0	5.0	8.1	IV				0
Don't know	4.1	7.0	5.0	7.0	17.2					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

TABLE 4 - 14: BELIEFS ABOUT PROGNOSIS FOR HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
The most usual result of heart disease is:										
Complete recovery	15.3	11.0	1.0	4.0	3.0	I	*	0	0	**
Control	76.5	82.0	86.0	81.0	64.6	II		**	**	**
Confinement at home	2.0	----	4.0	3.0	7.1	III			0	*
Death in a short time	2.0	----	4.0	5.0	8.1	IV				0
Don't know	4.1	7.0	5.0	7.0	17.2					

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

TABLE 4 - 15: SENTIMENTS ABOUT HEART DISEASE, BY AREA

	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
Worry about getting heart disease										
Have you worried:										
A great deal	----	1.0	----	2.0	9.1	I	0	0	0	0
Quite a lot	3.1	2.0	3.0	8.0	5.1	II		*	0	0
Some	21.4	14.0	13.0	8.0	9.1	III			0	*
A slight amount	18.4	15.0	31.0	22.0	14.1	IV				0
Not at all	55.1	64.0	53.0	51.0	57.5					
Don't know	2.0	4.0	----	9.0	5.1					
Worry about getting heart disease among 4 diseases (cancer, heart disease, polio, tuberculosis)										
Ranked h.d. 1	12.2	10.0	6.0	3.0	14.1	I	0	**	**	**
Ranked h.d. 2	51.0	49.0	27.0	36.0	24.2	II		**	**	**
Ranked h.d. 3	15.3	21.0	9.0	22.0	23.2	III			**	**
Ranked h.d. 4	8.2	12.0	52.0	33.0	26.3	IV				*
Don't know	13.3	8.0	6.0	6.0	12.1					
Worry about getting cancer among 4 diseases (cancer, heart disease, polio, tuberculosis)										
Ranked cancer 1	74.5	74.0	87.0	89.0	67.7	I	0	0	0	0
Ranked cancer 2	11.2	16.0	8.0	6.0	21.2	II		0	*	0
Ranked cancer 3	1.0	2.0	2.0	1.0	1.0	III			0	**
Ranked cancer 4	1.0	----	1.0	----	2.0	IV				**
Don't know	12.3	8.0	2.0	4.0	8.0					

On the chi square analysis

0= not significant at the 5 percent level *= significant at the 5 percent level **= significant at the 1 percent level

CHAPTER V

HOW IS INFORMATION ABOUT HEART DISEASE COMMUNICATED

It has been shown that the public has a considerable amount of information about heart disease. The question to be examined here is how is such information communicated? It is generally held that mass media and interpersonal networks of communication are interconnected. The model used to explain the diffusion of agriculture technology in the community suggests that there is often an influential person who is sensitive to "outside" information. Thus develops the 2-step flow of information from outside sources through "influential" to local network. The physician has a special place in the communication of information in that it is his business to be informed in matters of health and his position as authority is virtually unchallenged.[1]

Mass Media

Much information about heart disease is available via the mass media of radio, television, magazines and newspapers. There probably are differences in the messages themselves that originate from these media. Radio and television are unlikely to issue more than "spot" statements; although, more extended impact may be made through dramas as well as documentary accounts. Messages on radio are almost always confined to "public service" spots; on the other hand, magazines and newspapers may provide more lengthy discussions. The medical column in newspapers and the "medicine report" page in news magazines are standard fare. Health stories are common in many women's and family magazines.

There are differences among areas in the availability of the four types of mass media. In Area I, with minor exceptions (2 households reported no television), there was complete availability of these media. In Area V, ¾ of the households did not have subscriptions to daily newspapers or magazines. Daily newspapers were more common in the urban samples than in the rural (Table 5-1).

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[1]As is not the case, for example, for the county agent in the communication of information about agricultural technology.

TABLE 5 - 1: PERCENTAGE OF RESPONDENTS POSSESSING EACH MASS COMMUNICATION MEDIUM, BY AREA

	Area (Number)				
	I (N= 98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)
Radio	98	98	99	85	66
Television	96	94	89	67	69
Subscription to magazine	98	87	89	68	25
Daily paper	98	90	67	57	27

Utilization of the several types of mass media for information about heart disease, of course, followed to some extent the availability of the media to the respondents. However, radio was the medium most generally available and it was least likely to be reported as a source of information about heart disease in three of the five areas. Television was cited most often in three areas (II, IV, V) and magazines in two areas (I, III). Newspapers were in second place in two areas (I, II) and in last place in two areas (IV, V). As can be seen in Table 5-2, the large differences in utilization of the several media by area were for magazines and newspapers—not for radio and television. Information about heart disease, it would appear, would have a better chance of reaching persons in the lower socio-economic levels through audio and visual media than through printed media. This is completely consistent with the educational level of these populations.

TABLE 5 - 2

PERCENTAGE OF RESPONDENTS REPORTING THAT THEY OBTAINED INFORMATION ABOUT HEART DISEASE FROM EACH OF THE MASS MEDIA, BY AREA

	Area				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)
Radio	59.2	67.0	60.0	59.0	56.6
Television	75.5	77.0	69.0	61.0	67.7
Magazines	87.8	66.0	74.0	59.0	23.2
Newspapers	84.7	76.0	64.0	54.0	23.2

Although there were reversals of the media reported most often as sources of information by area, Area I, compared with the other areas, was relatively high on all the media and Area V was relatively low.

The relative importance of the mass media may be judged from responses to the question, "Where have you received *most* of your information about heart

disease?" Of the responses pertaining to mass media sources, reading was mentioned most often by far in all areas except Area V. Television was second and radio was seldom mentioned as the source of most information (Table 5-3).

TABLE 5 - 3

WHERE HAVE YOU RECEIVED MOST OF YOUR INFORMATION ABOUT HEART DISEASE? (THOSE RESPONSES PERTAINING TO THE MASS MEDIA)

	Area (Number)				
	I	II	III	IV	V
Reading	54	34	49	37	7
Television	14	18	20	19	17
Radio	3	2	10	3	7

A summary score of utilization of mass media for information about heart disease (Table 5-4) was established by giving a point for each medium reported as a source of such information (Table 5-1).[2] A point was added to each score to eliminate the zero category. More than half of the respondents in Area I and nearly that many in Area II utilized all the media; this diminished to about one in four in Areas III and IV and to less than one in ten in Area V. There were statistically significant differences between each pair of areas with the exception of Areas I and II. The lower scores in the rural areas appeared to be due principally to a lower utilization of magazines and newspapers.

Interpersonal Sources

Interpersonal sources of information about heart disease refer to informal face-to-face sources. Much of the information exchanged in this manner probably enters the community through the mass media or other contacts with the "outside" in a two-step flow of information. However, at least part of the lay-knowledge is long-standing and from experience. For example, it is probably not difficult to convince people of the relationship of body weight to health because of the observations that have become part of the folk wisdom. The following statements on diet and health were selected from a compilation of famous quotations. Folk-wisdom is reflected in such proverbs and sayings.

"He that takes medicine and neglects to diet wastes the skill of his doctors."

—Chinese Proverb

They are as sick that surfeit with too much, as they that starve with nothing.

—Shakespeare, Merchant of Venice (1564-1616)

[2]The items were tested for unidimensionality by means of the Guttman scaling technique. Coefficients of reproducibility ranged from .92 to .88 with an overall coefficient of .89. The order of items providing the pattern of least errors was not the same for all the areas. The items, however, were scored uniformily.

TABLE 5 - 4: MASS MEDIA UTILIZATION SCORES, BY AREAS

Mass Media Utilization Score	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
1	5.2	9.0	6.0	9.0	14.0	I	0	*	**	**
2	7.3	8.0	11.0	24.0	30.2	II		*	*	**
3	15.3	18.0	20.0	20.0	34.3	III			*	**
4	21.2	18.0	35.0	19.0	13.0	IV				**

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

Much meat, much malady. —*Thomas Fuller (1608-1681)*

In general, mankind, since the improvement of cookery, eat twice as much as nature requires. —*Benjamin Franklin (1706-1790)*

Stop short of your appetite; eat less than you are able. —*Ovid (43 B.C.-AD 18?)*

A little with quiet is the only diet. —*George Herbert (1593-1633)*[3]

Another significant source of information that circulates through interpersonal channels is from people who have heart disease and thus direct contacts with physicians. Most people know someone who is reported to have heart disease. Through them it is probable that much of the information disseminated "is what the doctor said."

Respondents were asked whether they had received information about heart disease from (1) other members of the family, (2) other relatives, (3) friends and neighbors. The proportions receiving information from the several personal sources are found in Table 5-5 together with the proportion of the sources that were reported to have heart disease. This amounted to a very substantial part.

Most interesting of the differences among the areas was the relatively low proportion in Area II (South St. Louis) reporting any interpersonal sources of information. This does not result from less immediate family exchange, but from less information from friends, neighbors, and other relatives. This fits the view of urban society being more impersonal. The other urban sample, Area I, did not show this characteristic, reflecting the suburban setting with more community type interaction. We would have expected interpersonal exchange of information about heart disease to be greater in Area V. It appears from the informational level of respondents in this area that exchange of information really was low; however, questions about interpersonal relations may not have elicited valid responses.

On self-statements by respondents of the frequency that they discussed heart disease with friends and relatives, the patterns of responses among the areas were quite similar; most said "seldom" (from 50 to 62 percent by areas), about 1 in 5 in each area reported "quite often" and a similar proportion said "never."

When queried directly about the content of conversations about heart disease, only a few in each area said that they talked only about the disease itself in medical terms. The largest proportions said that they talked about a person who had the disease. This would include such things as conditions of the person, consequences for his family or employment, age of the person, etc. About half of the respondents in each area said that such things were the bases for their conversations. A smaller proportion ranging from 11 percent in Area V to 44 percent in Area III said they talked about both the disease itself and the person who had it.

A summary score of interpersonal communication about heart disease was established by giving a point for each of the three categories reported as sources

[3]Franklin Pierce Adams, *FPA's Book of Quotations.* (New York: Funk and Wagnalls Company, 1952) p. 273

TABLE 5 - 5: PERCENTAGE OF RESPONDENTS RECEIVING INFORMATION ABOUT HEART DISEASE FROM PERSONAL SOURCES AND THE PERCENTAGE OF THOSE SOURCES REPORTED TO HAVE HEART DISEASE, BY AREA

	Area (Percent)									
	I		II		III		IV		V	
Source	a	b	a	b	a	b	a	b	a	b
Family members	22.4	36.4	27.0	59.3	29.0	37.9	31.0	74.2	11.1	72.7
Other relatives	26.5	57.7	14.0	78.6	32.0	59.4	31.0	80.6	9.1	100.0
Friends and neighbors	34.7	85.3	17.0	70.6	40.0	65.0	33.0	84.4	22.2	63.6
From at least one of above	56.1	----	41.0	----	63.0	----	60.0	----	33.3	----

a. percent of respondents reporting each category as a source of information

b. percent of each source that was reported to have heart disease

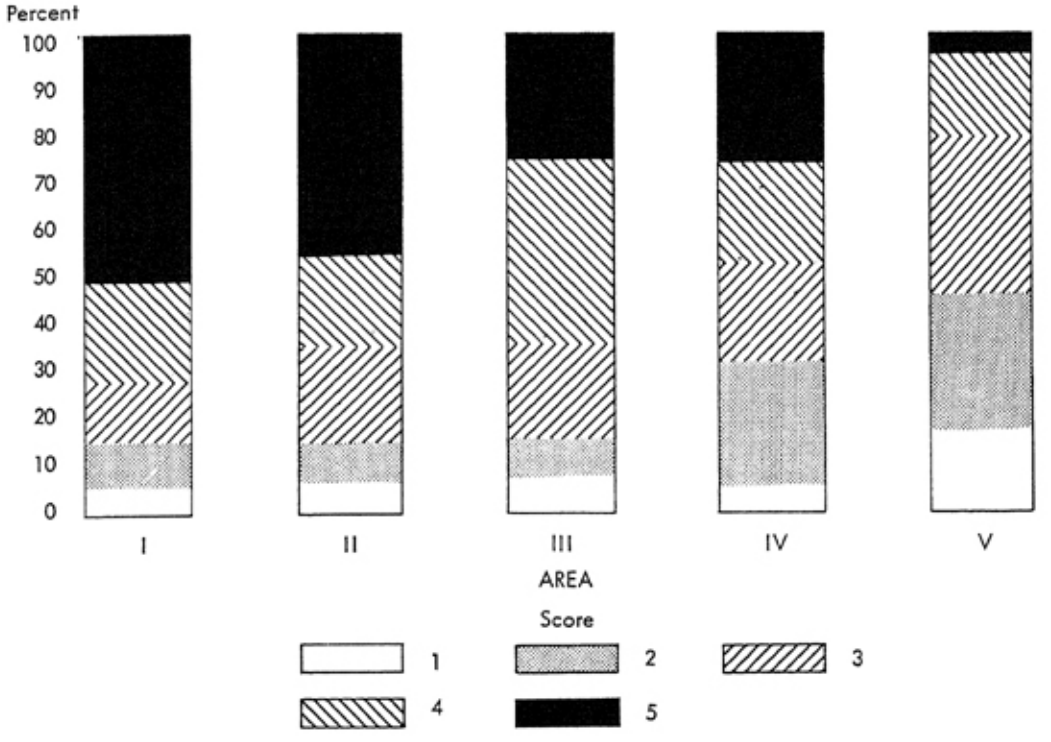

Figure 5-1. Percentage distributions of mass communication scores in five areas of Missouri

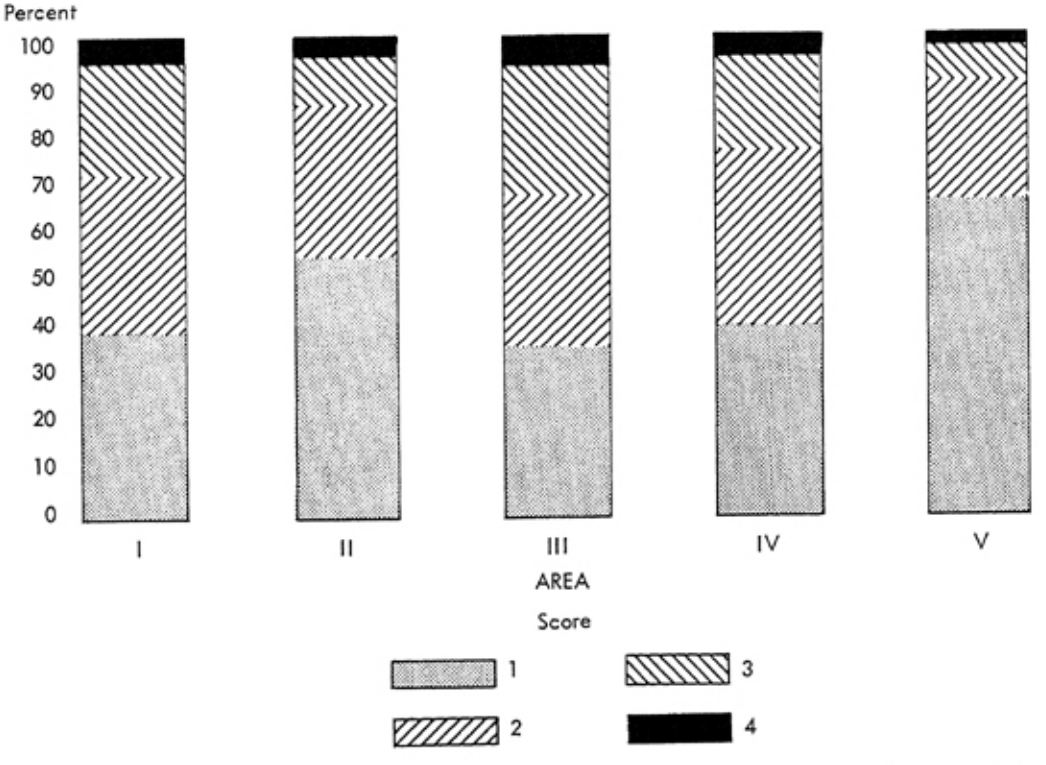

Figure 5-2. Percentage distributions of interpersonal communication scores in five areas of Missouri

TABLE 5 - 6: INTERPERSONAL COMMUNICATION UTILIZATION SCORES, BY AREA

Interpersonal Communication Scores	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
1	45.9	59.0	37.0	40.0	67.7	I	0	0	0	**
2	30.6	27.0	32.0	34.0	23.2	II		**	*	0
3	17.4	10.0	24.0	18.0	8.1	III			0	**
4	6.1	4.0	7.0	8.0	1.0	IV				**

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

of information.[4] An additional point was given to each respondent to eliminate the zero category. The scores by area are presented in Table 5-6.

There appeared to be a rural, urban difference on the basis of the comparison of Area II with III and IV. Area I did not show a significant difference from Areas III and IV even though a different socio-economic level was also a factor in this comparison. It would appear that the suburban Area I had interpersonal communication channels more similar to the rural areas than to the other urban sample.

The Physician

The private physician is both an expert source and communicator of information about health. He is the local person who has direct lines to current information about health matters and his position as authority in these matters is generally accepted. The physician, then, is a key in a network of communication about health matters that extends well beyond the dyad of doctor-patient relations; for as we have seen, much of the interpersonal communication that takes place involves at least one person reported to have heart disease. In such cases, it is likely that the authoritative statements of physicians enter into the exchange. Even in cases when information is once or more removed from the physician, he is likely to be cited as the authority. In this, of course, are the dangers of original misunderstandings and the possible inappropriateness of information in one situation for another. For example, we detected in several of the responses to the question on diets an indication that a low salt diet was viewed as a general preventive for heart disease.

In each area, a substantial proportion of the respondents said that they had received information about heart disease from a physician. The number was almost the same in each area (43 to 46 percent), except Area V (32 percent).

More important in terms of judging the authoritative position of the physician was that the physician was the predominant source mentioned when respondents were asked where they would seek more information about heart disease (Area I, 79 percent; Area II, 82 percent; Area III, 87 percent; Area IV, 90 percent; Area V, 78 percent).

Other sources mentioned as places of additional information were: heart association (Area I, 13 percent; Area II, 7 percent; Area III, 5 percent; Area IV, 1 percent; Area V, none); reading; family; friends; and relatives. The county nurse was mentioned by respondents in Area IV and especially in Area V.

Community authorities on heart disease other than the physician (or nurses in Areas IV and V) were seldom mentioned. In this sense, the information diffusion about heart disease was quite different than that for agricultural technology in that for the latter there were a number of local influentials. The difference seems to be that in terms of authoritive information the physician is regarded as the sole arbiter. This is not to say that all local information about heart disease eminates from the physician but that few challenge his knowledge on the matter.

[4]The unidimensionality of these items for each area was tested by means of the Guttman scaling technique. The coefficients of reproducibility ranged from .95 to .90 with an overall coefficient of reproducibility of .92. The scores, themselves, did not represent Guttman scores.

CHAPTER VI

ACTIONS TO PREVENT HEART DISEASE

In this section, actions taken by respondents that might be regarded as preventive to heart disease are considered. Several questions were asked about diet, exercise, physical check-ups and smoking. It was reported earlier that these items were generally thought by the respondent to be related to preventing heart disease.

Dieting. A substantial number in each area had tried to diet at one time or another. The number that successfully remained on a diet was considerably lower. The respondents in Area I were the most likely to have tried to diet; those in Area V least likely. The same areas also had the highest and lowest proportions remaining on a diet. Relatively few of the respondents indicated that they dieted specifically to prevent heart disease. The largest proportion who said they did diet to prevent heart disease was in Area IV (19.0 percent) and this was a fairly high proportion of those who had ever dieted (41.9 percent). This probably resulted from the large number in the area who reported having heart disease.

Regular Exercise. There was clearly a difference between the two metropolitan samples (Areas I and II) and the two general rural areas (Areas III and IV) in the proportions who had ever taken regular exercises. Almost half of the respondents in Areas I and II had at some time taken regular exercise; this was reduced in Area III to 16 percent and Area IV to 27 percent. As was noted earlier, respondents in the rural areas tended to believe that they got enough exercise in their normal activities. Somewhat over one-quarter of those in Areas I and II reported taking exercises at the time of the survey. The proportions diminished to 11, 6, and 15 percent in Areas III, IV, and V, respectively (Table 6-1). Few indicated that the exercise they engaged in was connected with preventing heart disease. Although almost one-fourth of those who engaged in regular exercise in Area III said they did so in connection with heart disease, the total number of individuals was small.

Physical Check-ups. Higher percentages of respondents in the metropolitan areas than in the rural areas said they had regular physical check-ups; although, the proportions were quite high in all areas. These statements were fairly well confirmed by the proportions that reported actually having a physical check-up during the year. Of those who had check-ups, heart disease was said to be a consideration in more cases in the rural areas than in the metropolitan areas. With the exception of respondents in Area V, most reported the check-ups were routine and not because of symptoms of illness.

TABLE 6 - 1: ACTIONS OF RESPONDENTS PERTAINING TO HEART DISEASE

	Area				
	I	II	III	IV	V
Dieting					
Percent who had ever dieted	59.2	44.0	47.0	43.0	37.4
Percent who are presently on a diet	34.7	21.0	18.0	19.0	16.2
Percent of those who had ever dieted who did so to prevent heart disease	13.8	13.6	17.0	41.9	35.1
Regular Exercise					
Percent who had ever taken regular exercise	46.9	47.0	16.0	27.0	35.4
Percent who are presently taking regular exercise	26.5	28.0	11.0	6.0	15.2
Percent of those who had ever taken regular exercises who did so to prevent heart disease	6.5	4.3	25.0	3.7	11.4
Regular Physical Examination					
Percent who have regular physical check-ups	68.4	80.0	40.0	42.0	42.4
Percent who have had check-up during the year	65.3	71.0	53.0	57.0	57.6
Percent of those who had regular check-ups which were connected with heart disease	7.5	7.5	22.5	33.3	23.8

Action Scores. The three items just considered (diet, exercise, and physical check-ups) were combined into an action score. They were tested for unidimensionality by means of the Guttman scaling technique. The items did not form a scale within the usual criterion of a reproducibility coefficient of .90.[1] There were other difficulties in considering these items as comprising a scale. As can be seen in Table 6-1, in certain of the areas, the proportions of two of the action items were quite close. For example, in Area IV they were 42 percent and 43 percent on physical check-ups and dieting, respectively; and in Area V the proportions were 37 percent and 35 percent on dieting and exercise. This means

[1]The overall coefficient of reproducibility was .88 and the coefficient of reproducibility for the 5 areas ranged from .90 to .85.

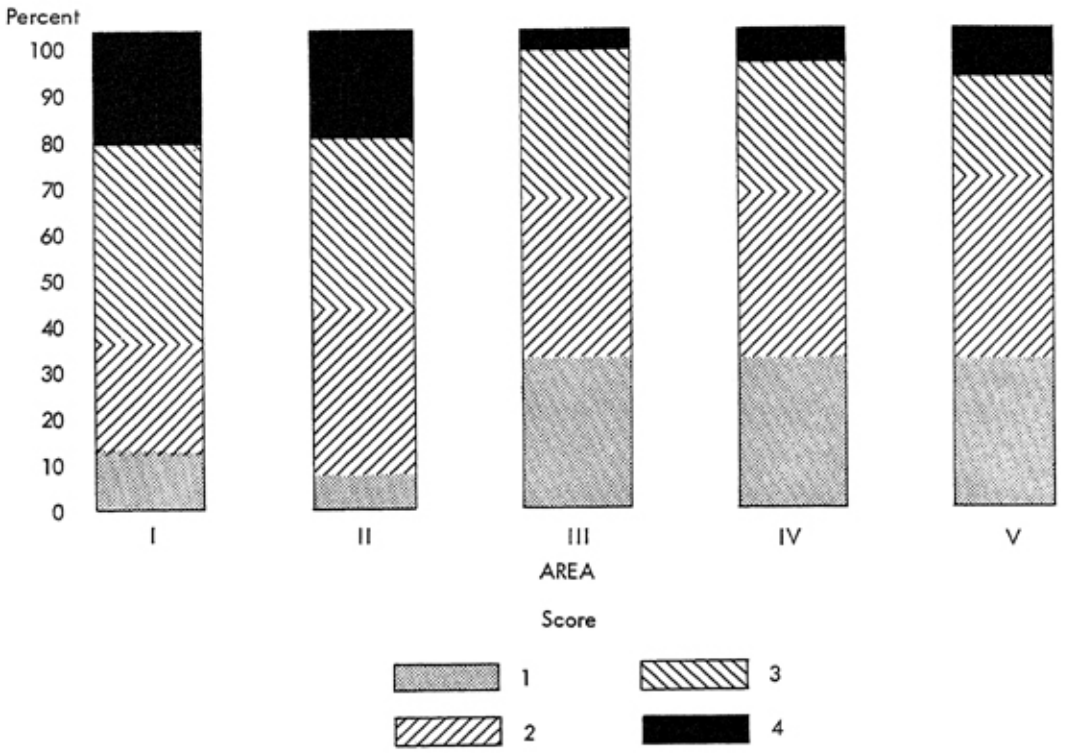

Figure 6-1. Percentage distributions of action scores in five areas of Missouri

that these items come at about the same place on a scale, and for this reason both did not contribute to differentiating among respondents.

In addition to these technical considerations, these items leave something to be desired as an index of actions taken. The activities, while generally regarded as relevant to heart disease by both respondent and expert opinion, could have been engaged in for other reasons. And, on direct questioning, relatively few indicated that these activities were taken specifically to prevent heart disease. On the other hand, as has been pointed out, these activities are pertinent to heart disease and most of the respondents were aware of this. So in spite of the shortcomings, we have combined these three items into an action score. The scores ranged from one (none of the activities) to four (all three of the activities). The distribution by area is in Table 6-2.

There were differences in the action scores by area which appeared to be related to rural-urban residence. Scores of respondents in urban areas tended to be higher. As was pointed out when the individual items were considered, exercise contributed most to this difference with physical check-ups also important. It was found that when respondents were divided on age exactly the same pattern of differences among the areas prevailed for the two age groups as for the total.

On Smoking and Health. Another activity that might be connected with preventing heart disease is to stop smoking. This item was not included with the

TABLE 6 - 2: ACTION SCORES BY AREAS

Action Score	Percentage Distribution Area					Chi Square Analysis				
	I (N=98)	II (N=100)	III (N=100)	IV (N=100)	V (N=99)	Area	II	III	IV	V
1	11.2	8.0	33.0	31.0	30.3	I	0	**	**	**
2	26.5	34.0	35.0	35.0	37.4	II		**	**	**
3	38.8	37.0	28.0	25.0	20.2	III			0	0
4	23.5	21.0	4.0	9.0	12.1	IV				0

On the chi square analysis

0= not significant at the 5 percent level

*= significant at the 5 percent level

**= significant at the 1 percent level

previous ones discussed in the action score because a substantial proportion of the respondents had never smoked and therefore could not have taken the action of stopping.

The Surgeon General's report on *Smoking and Health* has become the document of reference for discussions of the health hazards of smoking.[2] The conclusions of this report could have been confidently predicted from the very compelling research on which it was based. Of interest here is that a large proportion of the respondents in our study agreed with the report. Field work on this survey was completed just prior to the Surgeon General's report. Most of the respondents in each area said that they thought smoking was harmful to health. Furthermore, the variation was not great by area; ranging from 79 percent in Area II to 87 percent in Area IV. The idea that smoking is harmful to health was subscribed to by persons from greatly different backgrounds and representing greatly different socio-economic conditions. It must reach very deeply into the folk knowledge of 20th Century Americans. The reference to cigarettes as "coffin nails" is stark evidence. The idea that smoking will "stunt" growth is common, and the morality issue of smoking is based on the idea that it is harmful to the body.

On the other hand, the idea that smoking is harmful to health did not deter the majority from smoking at some time (although it was not known if they held this belief at the time they began smoking). In each area, substantial proportions of those who had smoked had tried to stop, and in turn a substantial proportion of these reported that they were successful (Table 6-3). Of those who tried to stop smoking, the largest proportion was successful in Area I (62 percent); the smallest in Area V (32 percent).

Although considerable numbers had attempted to stop smoking, few said that it was in "any way to avoid heart disease." We do not know what motives they had. Some other health consideration may have been involved, such as fear of lung cancer, and there might have been some non-health motives such as cost or moral issues.

TABLE 6 - 3: ACTIONS OF RESPONDENTS PERTAINING TO SMOKING

	Area				
	I	II	III	IV	V
Percent who had ever smoked	59.2	70.0	48.0	53.0	60.6
Percent who had ever smoked who had tried to quit	58.6	55.7	68.8	73.6	46.7
Percent who had ever smoked who had successfully stopped smoking	36.2	22.9	33.3	39.6	15.0
Percent of those who tried to stop smoking that did so in order to avoid heart disease	14.7	10.3	12.1	12.8	7.1

[2]U. S. Public Health Service, *Smoking and Health*, U. S. Public Health Service Publication No. 1103, Washington, D. C.

CHAPTER VII

WITHIN AREA RELATIONSHIPS OF HEART DISEASE VARIABLES AND SELECTED OTHER VARIABLES

In the previous chapter, a number of "heart disease variables" were considered on the basis of the five areas which represented different social structure situations. In the following analysis, we will examine relationships within the areas; in this way the effect of the areas will be controlled. Emphasis will be placed upon the relationships of selected socio-economic factors and beliefs about heart disease to specific information and general information about heart disease. More brief consideration will be given to the relationship of selected socio-economic factors to mass communication and interpersonal communication as sources of information about heart disease and to action to prevent heart disease.

In the tables, we have made judgments about the direction of the relationship for the several items. On the socio-economic status factors, we have predicted a positive direction with each of the "heart variables." This is an extension of the general hypothesis that the socio-economic level is related to "the heart variables." Other directions of relationships were predicted on more immediate grounds; for example, the obvious expected relationship of age and heart disease led us to expect information to increase with age. It was expected that women would have more information than men because of their role as guardian of the family's health. On some of the factors, we had no basis for a clear expectation. This was especially true for the "worry" items. Does "worry" lead to greater information, utilization of communication sources and actions? Or, on the other hand, is lack of information a concomitant of "worry"?

Tables were prepared for each relationship within the areas and chi-square tests were computed. Because of the large number of relationships analyzed (there were 5 tables for each relationship representing each of the 5 areas), frequency tables have not been shown in this report, but summary tables of the chi-square analyses are presented. These tables indicate whether or not the relationships were statistically significant, and whether significant relationships were in the expected direction.

Relationship Between Specific Information Scores and Selected Variables

Summary relationships between specific information scores and selected factors are shown in Table 7-1. Sex and age differences were not strongly related to the index of specific information within the several areas. Only in Area II was

TABLE 7 - 1: RELATIONSHIP OF SPECIFIC INFORMATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
1. Sex	I	3.7	1	0	+	
	II	9.3	2	**		+
	III	1.6	2	0		
	IV	0.3	2	0		
	V	0.4	1	0		
2. Age	I	6.8	2	*	+	□
	II	13.2	4	*		□
	III	5.2	4	0		
	IV	6.7	4	0		
	V	1.7	2	0		
3. Education	I	15.4	3	**	+	+
	II	12.9	6	*		+
	III	34.5	3	**		+
	IV	30.4	4	**		+
	V	3.7	1	0		
4. Income	I	3.3	2	0	+	
	II	12.4	4	*		+
	III	11.6	2	**		+
	IV	12.4	2	*		+
	V	5.0	4	0		
5. Occupation	I	9.3	3	*	+	+
	II	4.1	4	0		
	III	1.2	2	0		
	IV	25.2	2	**		+
	V	8.6	1	**		+
6. General information	I	6.0	2	*	+	□
	II	8.8	4	0		
	III	10.4	4	*		+
	IV	14.9	4	**		+
	V	2.8	1	0		

Table 7 - 1 (Con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
7. Experience	I	1.1	3	0	+	
	II	24.0	4	**		+
	III	18.7	4	**		+
	IV	10.1	4	*		+
	V	4.3	4	0		
8. Mass communication	I	6.6	2	*	+	+
	II	5.5	6	0		
	III	18.2	6	**		+
	IV	24.5	6	**		+
	V	11.7	3	**		+
9. Interpersonal communication	I	4.8	2	0	+	
	II	8.8	4	0		
	III	20.8	4	**		+
	IV	12.8	4	*		+
	V	1.1	2	0		
10. Action score	I	10.6	3	*	+	□
	II	2.6	4	0		
	III	7.5	4	0		
	IV	12.1	4	*		+
	V	1.7	3	0		
11. Believe heart disease is the leading cause of death	I	0.8	1	0	+	
	II	5.7	2	0		
	III	0.9	2	0		
	IV	23.7	2	**		+
	V	5.0	1	*		+

Table 7 - 1 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Actual
12. Believe cancer is the leading cause of death	I	0.1	1	0	-	
	II	4.3	2	0		
	III	0.2	2	0		
	IV	17.5	2	**		-
	V	0.9	1	0		
13. Worrying about getting heart disease	I	7.4	2	*	X	+
	II	3.4	2	0		
	III	7.0	4	0		
	IV	6.0	4	0		
	V	9.2	2	**		+
14. Worry about own health	I	2.8	2	0	X	
	II	9.2	4	0		
	III	8.8	4	0		
	IV	7.1	4	0		
	V	3.7	2	0		
15. Fatalistic statements about contracting heart disease	I	0.1	1	0	-	
	II	0.1	2	0		
	III	21.4	2	**		-
	IV	0.3	1	0		
	V	3.6	1	0		

[1]Levels of significance are as follows:
0= not significant
*= significant at .05 level
**= significant at .01 level

[2]Direction:
+= positive
—= negative
□= not linear
X= no direction predicted

sex related to the specific information score; in this case it was in the expected direction. Age was related to the specific information score in Areas I and II. Because of the greater risk of contracting heart disease among older people, we had expected the direction of age to information to be positive; although, we would not have been surprised if it had been the opposite because of the interplay of age, education, and information. The actual relationship between the two variables was not linear in that the middle age category (45-64 years) had the highest proportion with relatively high specific information scores in both of the areas where a significant relationship was found. On checking direction in areas without a significant relationship, it was found that the same non-linear direction held. On reflection, these relationships are not surprising and probably should have been predicted. Middle-age is a critical time for contracting heart disease, and at the same time, the education factor in this group is not so important in limiting information as for those in the older group. The interrelationship of age and education with specific information is considered later.

The social status variables of education, income, and occupation individually appear to be related to the index of specific information. Education is most uniformly related, having significant relationships in four of the five areas and barely missing in the remaining area. The direction was as expected in each area with the higher educated respondents having more specific information about heart disease. It should be mentioned again that the areas themselves represent different places on the educational spectrum so that the relationship between education and specific information can be judged to be sensitive over a wide range of educational levels.

Both income and type of occupation were significantly related to specific information in three of the five areas. The direction of the relationships was positive. In Area V, on occupation, the division was between farm and nonfarm occupations, and it was the nonfarm occupational category that had the higher level of specific information.

Taken together, the status variables appeared to be quite consistently related to specific information scores. This is an extension into the areas of the findings of differences in specific information scores among areas of different socio-economic levels.

Significant relationships were also observed between the mass communication scores and indexes of specific information in four of the five areas (Area II excepted). The mass communication scores represented the range of mass media sources by respondents in obtaining information about heart disease. In addition to separating out those who reported receiving no information from the mass media, the mass communication scores tended to distinguish those who received information from printed sources (newspapers and magazines) from those who received information only from audio-visual sources (radio and television). The greater utilization of printed material can probably be related to education and its accessibility. Also, information about heart disease contained in newspapers

and magazines as compared with radio and television tends to be given in greater detail. This would be needed in order to acquire knowledge about the type of items that make up the specific information index.

The relationship of interpersonal communication scores to specific information scores was significant only in Areas III and IV. It had been observed previously that interpersonal communication scores were somewhat higher in these rural areas, and at the same time, mass communication scores were somewhat lower. In more personal rural situations, interpersonal exchange may be more effective as sources of information than in the more impersonal urban situation.

Specific information was significantly related to general information scores in three of the five areas. In Area II the relationship was not linear in that those with middle range general information were most likely to have high specific information. The failure of the relationship between the two types of information to be higher probably results from the generally high scores on the general information index which allows for little variation.

Experience scores and specific information scores were also significantly related in three of the five areas. The direction was as expected. It might be pointed out that experience seems most important as a factor in specific information where the level of information is neither very high nor very low.

Specific information scores were significantly related to action scores in Areas I and IV. It will be remembered that the action score was based on whether an individual had dieted, taken regular exercises, or had physical checkups. The direction of the relationship was positive in Area IV, but non-linear in Area I. In the latter area, a larger proportion of persons who had taken two preventive acts had higher specific information scores than persons who had taken all three preventive acts. On the other hand, those who had taken one or no preventive acts had lower information scores than those who had taken two or three preventive acts. On the basis of this evidence, we would be unwilling to say that action and specific information were not related (nor that they were). The reason is that we do not have great confidence in the measure of action employed. Other factors possibly related to actions will be considered later.

There were significant relationships between the information that heart disease was the leading cause of death and the specific information scores in only two areas (Areas IV and V). Since these are both information items, we might have expected a more general relationship. On examining Areas I and III for which there was almost no relationship (Area II approached a significant relationship), it was found that they were the areas which had the highest proportions knowing that heart disease was the leading cause of death (75 percent and 68 percent respectively). The lack of relationship was probably due in part to lack of variation in these areas on this item.

It was expected that those who rated cancer as the leading cause of death would have less specific information about heart disease. There was a significant relationship in only one area which was in the expected direction.

In two areas, those who reported that they worried at least to some extent about getting heart disease tended to be better informed on the specific information items. We had not predicted a direction on this item. There were no significant differences when the question as to worry about own health was considered.

It was expected that those who took a more fatalistic view of the likelihood of contracting heart disease would have less specific information about it. Subscription to the following statements was taken as evidence of a fatalistic view: "If you're going to get it there is nothing you can do about it" and "There are some things you can do to prevent heart disease, but it really isn't worthwhile to try." A relationship between a more fatalistic view and specific information occurred only in Area III; it might be noted it approached the significance level in Area V. These were the only areas where as many as 15 percent of the respondents subscribed to these views.

It appeared from this analysis that the level of specific information was quite sensitive to the status variables and also to the utilization of mass communication sources for information about heart disease. Utilization of interpersonal sources of information was more closely related to specific information in the rural areas. The experience score was significantly related in three of the five areas.

We wanted to further analyze the relationship of education, experience, and age to the specific information score. In the previous analysis, education and experience were found to be related in a majority of the areas. While age was significantly related to specific information in two of the areas, it was correlated with education in the following manner: Area I, $r = -.20$; Area II, $r = -.48$; Area III, $r = -.38$; Area IV, $r = -.33$; Area V, $r = -.35$. The final point of this analysis is to consider the relationship of each of these factors to specific information when the other two are held constant.

First the zero order correlations of the three variables with specific information are presented in Table 7-2.

TABLE 7 - 2: CORRELATION COEFFICIENTS OF SPECIFIC INFORMATION WITH EDUCATION, AGE, AND EXPERIENCE BY AREA

Variable	Expected Direction	Area I	Area II	Area III	Area IV	Area V	All Areas
Specific information scores and education	+	.31	.32	.47	.65	.38	.64
Specific Information scores and age	+	-.07	-.16	-.13	-.20	.04	-.17
Specific information scores and experience scores	+	.23	.37	.36	.17	.00	.26

The relationship for education is strongest, but in Areas I, II, and III, the relationship between experience and information is significant. The correlation coefficients between age and specific information are low in all areas.

A partial correlation analysis indicated that substantially the same relationships held between the specific information score and each independent variable when the other two were held constant. The relationship of education and specific information remained high. Another observation made from these correlation tables was that when all areas were combined (last column), the relationship between education and specific information was considerably higher than it was in any single area except Area IV. This reflects the different positions of the areas on the education spectrum and indicates that this factor is working both between the areas and within them. In the final row in Table 7-3 are multiple correlation coefficients which indicate the relationships of the three independent variables (education, age, experience) taken together with specific information.

TABLE 7 - 3: PARTIAL AND MULTIPLE CORRELATION COEFFICIENTS OF SPECIFIC INFORMATION WITH EDUCATION, AGE AND EXPERIENCE BY AREA

Variables	Area I	II	III	IV	V	All Areas
r = 12.34*	.32	.24	.40	.64	.42	.62
r = 13.24	-.10	.01	.02	.03	.19	.04
r = 14.23	.29	.33	.32	.25	.05	.24
R = 1.234**	.41	.44	.55	.68	.42	..67

* This partial correlation reads: The relationship of education and specific information when the effect of age and experience are held constant. Specific information = 1, Education = 2, Age = 3, Experience = 4.

** This multiple correlation reads: The relationship of specific information and the variables education, age, and experience taken together.

The Relationship of General Information Scores and Selected Variables

The same type of chi-square analysis was carried out for general information scores using the same variables used in the analysis of specific information. The summary of the analysis is found in Table 7-4.

The main conclusion from these data is that, in general, within the areas, the selected variables were not significantly related to the general information scores. The one variable in which the relationship was significant in three of five areas was "worry about own health." The direction in two of the three areas was nonlinear in that those who worried rarely about health tended to have higher general information scores than those who reported not worrying at all or those who worried more. In each of the three areas, however, the low general information scores were most heavily concentrated among those who reported not worrying at all.

TABLE 7 - 4: RELATIONSHIP OF GENERAL INFORMATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
1. Sex	I	2.0	2	0	+	
	II	0.5	2	0		
	III	3.2	2	0		
	IV	0.6	2	0		
	V	2.5	1	0		
2. Age	I	0.4	2	0	+	
	II	2.8	4	0		
	III	5.6	4	0		
	IV	7.0	4	0		
	V	1.4	2	0		
3. Education	I	4.2	6	0	+	
	II	11.3	6	0		
	III	0.5	4	0		
	IV	3.9	2	0		
	V	2.2	2	0		
4. Income	I	0.7	4	0	+	
	II	1.6	4	0		
	III	11.4	4	*		+
	IV	18.1	4	**		+
	V	1.5	2	0		
5. Occupation	I	8.4	6	0	+	
	II	5.7	4	0		
	III	0.6	4	0		
	IV	8.3	4	0		
	V	10.8	4	*		+
6. Specific information	I	6.0	2	*	+	□
	II	8.8	4	0		
	III	10.4	4	*		+
	IV	14.9	4	**		+
	V	2.8	1	0		

Table 7 - 4 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Actual
7. Experience	I	2.3	4	0	+	
	II	1.3	2	0		
	III	3.7	4	0		
	IV	0.2	4	0		
	V	2.0	2	0		
8. Mass communication	I	6.5	4	0	+	
	II	1.4	2	0		
	III	6.5	4	0		
	IV	9.3	4	0		
	V	0.9	2	0		
9. Interpersonal communication	I	4.4	4	0	+	
	II	6.4	4	0		
	III	2.8	4	0		
	IV	7.6	4	0		
	V	4.0	2	0		
10. Action score	I	2.2	2	0	+	
	II	4.7	2	0		
	III	6.4	4	0		
	IV	3.9	4	0		
	V	1.2	2	0		
11. Believe heart disease is the leading cause of death	I	3.1	2	0	+	
	II	3.7	2	0		
	III	0.4	2	0		
	IV	9.2	2	*		+
	V	0.6	1	0		
12. Believe cancer is the leading cause of death	I	2.3	2	0	-	
	II	2.3	2	0		
	III	0.3	2	0		
	IV	8.2	2	*		-
	V	1.9	1	0		

Table 7 - 4 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
13. Worrying about getting heart disease	I	1.2	4	0	X	
	II	7.4	4	0		
	III	1.6	4	0		
	IV	2.5	4	0		
	V	0.5	2	0		
14. Worry about own health	I	8.8	4	0	X	
	II	14.2	4	**		+
	III	13.1	4	*		□
	IV	25.4	4	**		□
	V	0.7	2	0		
15. Fatalistic statements about contracting heart disease	I	0.6	1	0	-	
	II	3.5	1	0		
	III	2.0	2	0		
	IV	2.1	1	0		
	V	0.9	1	0		

[1]Levels of significance are as follows:

0= not significant

*= significant at .05 level

**= significant at .01 level

[2]Direction:

+= positive

-= negative

□= not linear

X= no direction predicted

In explaining the lack of relationship between general information scores and other variables, we observe first of all that on the whole the responses on general information were not differentiated by area. This seems to be carried over to the within-area relationships. The second observation is that responses to the items in the general information score had a rather high level of consensus to the point of being "common sense" items. Such information may not depend so much on status factors and mass communication sources or even experiences with heart disease, which were factors to which specific information was found to be sensitive. The nonrelationships are important findings then, in that they support the idea that these items really are "common knowledge" among the population.

The more elaborate correlation analysis used in the relationships of specific information and selected variables was not carried out for general information, because it was not likely that it would produce additional information.

In the following sections, an abbreviated selection of variables is presented in relationship to mass communication as a source of information about heart disease, interpersonal communication as a source of information about heart disease, and action with heart disease as a referent. Emphasis is placed on the socioeconomic variables. A more detailed analysis is presented of the relationship between action and certain statements of belief about heart disease.

The Relationship Between Mass Communication Scores and Selected Variables

Summary relationships between mass communication scores and selected variables are shown in Table 7-5. We can say, in general, that the relationships were not significant. For the status variables (education, income, and occupation), there were significant relationships in Areas IV and V. It was observed before that the mass communication scores and level of specific information were significantly related in four of the five areas. Our between area analysis suggests that utilization of mass media was related to rural, urban differences, a factor which was not tested within areas.

The Relationship Between Interpersonal Communication Scores and Selected Variables

Summary chi-square relationships between interpersonal communication scores and selected variables are shown in Table 7-6. This factor was not related to the status variables. The only one of the selected variables to which interpersonal communication seemed to be generally related within the areas was experience with heart disease. These two items may not be independent measures for we noted before in Chapter V that a majority of the persons from whom the respondents get information about heart disease also were reported to have heart disease. And as will be remembered, the experience score consists of not only the experience of the respondent himself, but also that of family, relatives, friends, and associates.

TABLE 7 - 5: RELATIONSHIP OF MASS COMMUNICATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Actual
1. Age	I	0.9	2	0	X	
	II	7.8	4	0		
	III	8.8	4	0		
	IV	3.9	4	0		
	V	0.2	2	0		
2. Education	I	1.3	1	0	+	
	II	2.5	2	0		
	III	4.6	2	0		
	IV	11.8	2	**		+
	V	7.4	1	**		+
3. Income	I	0.6	2	0	+	
	II	4.7	2	0		
	III	3.0	2	0		
	IV	12.0	2	**		+
	V	13.3	1	**		+
4. Occupation	I	0.8	2	0	+	
	II	1.7	2	0		
	III	4.8	2	0		
	IV	12.1	2	**		+
	V	10.3	1	**		+
5. General information	I	6.5	4	0	+	
	II	1.4	2	0		
	III	6.5	4	0		
	IV	9.3	4	0		
	V	0.9	2	0		
6. Specific information	I	6.6	2	*	+	+
	II	5.5	6	0		
	III	18.2	6	**		+
	IV	24.5	6	**		+
	V	11.7	3	**		+

TABLE 7 - 6: RELATIONSHIP OF INTERPERSONAL COMMUNICATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
1. Age	I	2.4	4	0	X	
	II	2.5	4	0		
	III	10.0	4	*		+
	IV	0.8	4	0		
	V	0.6	2	0		
2. Education	I	0.1	2	0	+	
	II	2.2	2	0		
	III	3.3	2	0		
	IV	1.6	2	0		
	V	0.2	1	0		
3. Income	I	0.9	1	0	+	
	II	0.5	2	0		
	III	1.4	2	0		
	IV	0.4	2	0		
	V	0.0	1	0		
4. Occupation	I	4.1	2	0	+	
	II	2.4	2	0		
	III	1.0	2	0		
	IV	0.7	2	0		
	V	1.2	1	0		
5. Specific information	I	4.8	2	0	+	
	II	8.8	4	0		
	III	20.8	4	**		+
	IV	12.8	4	*		+
	V	1.1	2	0		
6. General information	I	4.4	4	0	+	
	II	6.4	4	0		
	III	2.8	4	0		
	IV	7.6	4	0		
	V	4.0	2	0		

TABLE 7 - 5: RELATIONSHIP OF MASS COMMUNICATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Actual
1. Age	I	0.9	2	0	X	
	II	7.8	4	0		
	III	8.8	4	0		
	IV	3.9	4	0		
	V	0.2	2	0		
2. Education	I	1.3	1	0	+	
	II	2.5	2	0		
	III	4.6	2	0		
	IV	11.8	2	**		+
	V	7.4	1	**		+
3. Income	I	0.6	2	0	+	
	II	4.7	2	0		
	III	3.0	2	0		
	IV	12.0	2	**		+
	V	13.3	1	**		+
4. Occupation	I	0.8	2	0	+	
	II	1.7	2	0		
	III	4.8	2	0		
	IV	12.1	2	**		+
	V	10.3	1	**		+
5. General information	I	6.5	4	0	+	
	II	1.4	2	0		
	III	6.5	4	0		
	IV	9.3	4	0		
	V	0.9	2	0		
6. Specific information	I	6.6	2	*	+	+
	II	5.5	6	0		
	III	18.2	6	**		+
	IV	24.5	6	**		+
	V	11.7	3	**		+

Table 7 - 5 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Actual
7. Experience	I	0.8	4	0	+	
	II	4.7	4	0		
	III	0.9	2	0		
	IV	0.5	2	0		
	V	2.3	2	0		
8. Interpersonal communication	I	6.2	4	0	+	
	II	1.3	2	0		
	III	0.8	2	0		
	IV	5.1	4	0		
	V	0.1	2	0		
9. Action score	I	7.3	4	0	+	
	II	3.6	4	0		
	III	6.6	4	0		
	IV	11.3	4	*		+
	V	3.4	2	0		

[1]Levels of significance are as follows:

0= not significant

*= significant at .05 level

**= significant at .01 level

[2]Direction:

+= positive

-= negative

⊓= not linear

X= no direction predicted

TABLE 7 - 6: RELATIONSHIP OF INTERPERSONAL COMMUNICATION SCORES AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
1. Age	I	2.4	4	0	X	
	II	2.5	4	0		
	III	10.0	4	*		+
	IV	0.8	4	0		
	V	0.6	2	0		
2. Education	I	0.1	2	0	+	
	II	2.2	2	0		
	III	3.3	2	0		
	IV	1.6	2	0		
	V	0.2	1	0		
3. Income	I	0.9	1	0	+	
	II	0.5	2	0		
	III	1.4	2	0		
	IV	0.4	2	0		
	V	0.0	1	0		
4. Occupation	I	4.1	2	0	+	
	II	2.4	2	0		
	III	1.0	2	0		
	IV	0.7	2	0		
	V	1.2	1	0		
5. Specific information	I	4.8	2	0	+	
	II	8.8	4	0		
	III	20.8	4	**		+
	IV	12.8	4	*		+
	V	1.1	2	0		
6. General information	I	4.4	4	0	+	
	II	6.4	4	0		
	III	2.8	4	0		
	IV	7.6	4	0		
	V	4.0	2	0		

Table 7 - 6 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
7. Experience	I	30.2	2	**	+	+
	II	6.8	2	*		+
	III	9.8	2	**		+
	IV	21.9	2	**		+
	V	4.2	2	0		
8. Mass communication	I	6.2	4	0	+	
	II	1.3	2	0		
	III	0.8	2	0		
	IV	5.1	4	0		
	V	0.1	2	0		
9. Action score	I	3.6	2	0	+	
	II	7.3	2	*		+
	III	5.3	4	0		
	IV	3.4	4	0		
	V	0.0	2	0		

[1]Levels of significance are as follows:

0= not significant

*= significant at .05 level

**= significant at .01 level

[2]Direction:

+= positive

-= negative

□= not linear

X= no direction predicted

The Relationship of Action Scores and Selected Variables

Within the areas, statistical relationships were notably nonsignificant between the action scores and selected variables (Table 7-7).

Further analysis was carried out to determine if any relationship existed between action scores and beliefs about heart disease. In this, we followed the leads of work done by Hochbaum and Rosenstock, Heinzelmann, and others as reported in the review of the literature.

The following items in combination were found to be related to participation in a tuberculosis mass screening program:[1]

1. *Accepts the possibility that he can contract tuberculosis.*
2. *Accepts the fact that he might not be aware of having contracted tuberculosis.*
3. *Believes that he would benefit from early diagnosis.*

A similar set of cognitions operated in the acceptance of Asian influenza vaccine,[2] and for the utilization of prophylactic measures among college students with a history of rheumatic fever.[3]

These cognitions were similar to the three used in the present study:

1. *Believed in the possibility of contracting heart disease without knowing it.*
2. *Believed in the possibility of preventing heart disease.*
3. *Believed in the effectiveness of treatments for heart disease.*

It was hypothesized that the action scores would be directly related to the cognitions above to which a person subscribed. Table 7-8 shows the relationships for each area.

There was a significant relationship between the three cognitions and action scores in two areas (Areas I and IV). In Area II the proportions subscribing to the three cognitive items were almost identical for those given high and low action scores. In Areas III and V, while the relationships were not significant the direction was as predicted.

The conclusion was that the belief cognitions were not directly and consistently related to the action scores. It was not established if and how they might contribute to action indirectly through interaction with other variables. In any case, it appeared that cognitive items of this kind were much better predictors of such behavior as participating in detection or immunization programs than for verbalized actions that might be regarded as preventive for heart disease. Why is this so? The most obvious reason is that behavior in the detection and immunization programs was specific to the program; that is, there was something to do and it could be determined whether the person did it or not. On the other hand, as we observed earlier, the action scores dealt with behavior that might or might not have been engaged in specifically to prevent heart disease. And, as a matter of fact, with the exception of physical check-ups, there is not complete

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[1]Godfrey M. Hochbaum, *Public Participation in Medical Screening Programs*, U. S. Public Health Service Publication No. 572, p. 8.

[2]Irwin M. Rosenstock, "Public Acceptance of Influenza Vaccination," *The American Review of Respiratory Diseases*. February 1961, p. 172.

[3]Fred Heinzelmann, "Factors Influencing Prophylaxis Behavior With Respect to Rheumatic Fever: An Exploratory Study" *The Journal of Health and Human Behavior*, Summer 1962, pp. 74-75.

TABLE 7 - 7: RELATIONSHIP OF ACTION SCORE AND SELECTED VARIABLES

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
1. Sex	I	4.5	2	0	X	
	II	0.7	2	0		
	III	1.1	2	0		
	IV	2.7	2	0		
	V	0.0	2	0		
2. Age	I	0.6	2	0	+	
	II	1.8	4	0		
	III	0.6	4	0		
	IV	2.6	4	0		
	V	9.2	4	0		
3. Education	I	0.0	1	0	+	
	II	0.6	1	0		
	III	1.3	2	0		
	IV	4.3	2	0		
	V	0.6	1	0		
4. Income	I	5.2	1	*	+	-
	II	1.1	2	0		
	III	1.5	2	0		
	IV	2.9	2	0		
	V	1.7	1	0		
5. Occupation	I	0.4	1	0	+	
	II	4.0	1	*		+
	III	0.6	1	0		
	IV	0.1	1	0		
	V	2.3	1	0		
6. General information	I	2.2	2	0	+	
	II	4.7	2	0		
	III	6.4	4	0		
	IV	3.9	4	0		
	V	1.2	2	0		

Table 7 - 7 (con't.)

Variable	Area	X^2	d.f.	Level of Significance[1]	Direction[2] Expected	Direction[2] Actual
7. Specific information	I	10.6	3	*	+	□
	II	2.6	4	0		
	III	7.5	4	0		
	IV	12.1	4	*		+
	V	1.7	3	0		
8. Mass communication	I	7.2	4	0	+	
	II	3.6	4	0		
	III	6.6	4	0		
	IV	11.3	4	*		+
	V	3.4	2	0		
9. Interpersonal communication	I	3.6	2	0	+	
	II	7.3	2	*		+
	III	5.3	4	0		
	IV	3.4	4	0		
	V	0.0	2	0		

[1]Levels of significance are as follows:

0= not significant

*= significant at .05 level

**= significant at .01 level

[2]Direction:

+= positive

-= negative

□= not linear

X= no direction predicted

expert agreement on the efficacy of preventive measures or what they should be. If these beliefs about heart disease had been related to the preventive acts that composed the action score, we could have concluded that even though the action index was gross, these combinations of cognitions affected the actions of respondents regarding heart disease. Since this relationship did not exist, we cannot say the reverse; that is, that the cognitions do not affect the actions taken. We must suspect the action index first and conclude that we have not been able to tap adequately the actions of respondents.

TABLE 7 - 8: THE RELATIONSHIP OF ACTION SCORES AND SELECTED BELIEFS ABOUT HEART DISEASE

Number of Items* subscribed to	Action Scores: Low Percent	Action Scores: High Percent
Area I	(N=37)	(N=61)
None	10.8	----
One	32.4	24.6
Two	32.4	34.4
Three	24.4	41.0
	X^2=6.9, d.f.=2, significant at the 5 percent level	
Area II	(N=42)	(N=58)
None	4.8	5.2
One	11.9	17.2
Two	59.5	58.6
Three	23.8	19.0
	X^2=0.7, d.f.=2, not significant at 5 percent level	
Area III	(N=68)	(N=32)
None	17.6	12.5
One	45.6	28.1
Two	30.9	43.8
Three	5.9	15.6
	X^2=5.1, d.f.=3, not significant at 5 percent level	
Area IV	(N=66)	(N=34)
None	7.6	----
One	33.3	26.5
Two	42.4	29.4
Three	16.7	44.1
	X^2=8.8, d.f.=2, significant at the 5 percent level	
Area V	(N=67)	(N=32)
None	13.4	6.3
One	28.4	31.2
Two	41.8	40.6
Three	16.4	21.9
	X^2=2.9, d.f.=3, not significant at 5 percent level	

*The items used were:

1. Believed in the possibility of contracting heart disease without knowing it.
2. Believed in the possibility of preventing heart disease.
3. Believed in the effectiveness of treatments.

CHAPTER VIII

SUMMARY AND IMPLICATIONS

Many professional people are deeply involved in producing and disseminating information about heart disease. This includes scientists, physicians, health educators, nurses, and others. Much of the communication is within the professional circle itself, but efforts are made to inform the public and the public receives information on this topic whether such efforts are made or not. Of course, all information about heart disease does not eminate from scientific-professional sources and that which does is not transmitted flawlessly. Also recipients of information are not "blank pages" upon which messages are transferred intact; but rather they are complex screens which reject parts of messages outright and modify the remainder through filters of culture, socio-economic situations, and personal experiences.

This study has attempted to show the information, beliefs and sentiments about heart disease held by people in selected areas of the state. It was intended to be a kind of feedback to professional health workers to the question, "What really is out there?" We hasten to say that this is not an evaluation of the effects of health education either in the broad sense or any other sense. It would be naive to suppose that conscious educational efforts could be credited with the vast amount of information and beliefs that is abroad in the land about heart disease; nor should such efforts be held responsible for the twists and turns that such information takes in the belief systems of people. To account for these, we must start deep in the folk-culture and work our way to new fountainheads of popular information in advertisements, popular literature, and other mass media. But neither should one conclude that the public is woefully misinformed or uninformed about heart disease. The public has a great deal of information that is approximately correct, and the folk are wise in ways that may confound the expert. There is some information of high consensus among the public which we often refer to as "common sense." While "common sense" information does not always prove to be right neither does it always prove to be wrong.

In the preceding analysis, we have kept our attenion very close to the data by reporting responses to a series of questions about heart disease. We have tried to place these responses in a frame of reference which identified areas according to their socio-economic characteristics, and examined the "heart variables" on the basis of these several areas. Differences in the areas were described along two structural dimensions, socio-economic level (on the basis of education, income and occupation) and place of residence (rural, urban). The hypothesis was that information, beliefs, sentiments, and actions with heart disease as the referent would be related to the social structure of the areas.

Analyses within the areas were also undertaken. These were concentrated on the relationship of socio-economic status factors to information about heart disease.

We do not intend to repeat the data here; what we would like to do is to review some of the implications. In the writers' opinion, the major finding of the study is that areas identified as being different in socio-economic structure had different response patterns to many of the "heart variables." We were able to identify relationships of the heart variable to both socio-economic level and residential characteristics of the areas. The area identified as having the highest socio-economic level had a different pattern of responses than the other areas on a number of heart variables. The same can be said of the area identified as having the lowest socio-economic level. Equally important, the "middle three" socio-economic level areas had response patterns that on many items were quite similar in spite of the fact that the areas were in different parts of the state and represented both rural and urban locations. Further, the "middle three" areas did not have exactly the same socio-economic level. The identification of socio-economic areas is not a matter of hair-splitting. Rather broad divisions of areas would prove useful. Probably the reason that rather gross divisions are needed to represent differences clearly is that there is a substantial amount of common information and beliefs about heart disease that extends to all areas.

The kinds of differences in responses on the basis of structural differences of the areas were also made clear by the research. The items that we have called technical information were especially sensitive to the differences in socio-economic level of the areas. On item after item of this kind, the area of highest socio-economic level (Area I) and the area of lowest socio-economic level (Area V) showed significant direction-predictable differences from each of the other areas and the "middle three" socio-economic levels showed no significant differences among themselves.

Having commented on differences among areas on responses to items of technical information, what can be said about the level itself—was it high or low? It depended partly on the item under consideration. For example, more people could identify the term, electrocardiogram, than hypertension in each area. The level of technical information in Area V can only be described as low. In Area I there was an understanding of these terms that was substantial. In the other areas, the level was usually somewhere between.

Responses to general information items were not differentiated so clearly by the structural characteristics of the areas. That such information as weight and age were associated with heart disease was well-known and at least superficially did not differ greatly from area to area. We propose that there is a rather widespread underlying set of beliefs about heart disease that have reached the level of "common sense." These include such preventive measures as belief in diet and regular exercise. Responses to these items not only showed similarity over the diverse areas of this study but also were similar to responses obtained in the Louisiana study which differed in time and place. Also to this point it should be noted that the responses to the technical items varied substantially between the Louisiana study and the present study. This indicates that these items were

more sensitive to time and place. We have suggested elsewhere that some of these beliefs have deep roots in the folk-wisdom of 20th Century Americans.

That the general information items were generally known (and thus named) does not detract from their importance as bases for health practices; on the other hand, it does not seem to motivate people to action. The problem facing the health educator is not so much one of making people initially aware of certain of these areas of general information as it is one of informing on details of the practices and stimulating action.

Generally speaking, heart disease did not appear to be an anxiety producing disease. While it was known by a majority of the respondents that heart disease was the leading cause of death, there is no doubt that it was not as threatening as cancer; and as a matter of fact, relatively few reported being worried to any great extent about getting heart disease. Many people believed it was within their province to prevent heart disease; although in Area V a substantial proportion took the fatalistic viewpoint that, "if you are going to get it there is really nothing you can do about it." Diet, exercise, change of work habits and physical examination were generally endorsed as preventive measures. It appeared, however, the information along these lines was quite shallow and unqualified. This is illustrated by responses that a low salt diet was a general means of preventing heart disease. Belief in these preventive measures seemed to be related to the structural dimension of rural, urban character of the areas, with fewer respondents in rural areas endorsing these beliefs.

The treatment, prognosis, and consequence of heart disease were not looked upon with complete gloom either. Treatment was thought to be at least somewhat effective; and while few thought that complete recovery would result after one contracted heart disease, most thought that effective control was likely. That one could go about his normal work (although he must slow down) was subscribed to by a majority in each area, but those in the metropolitan areas were somewhat more optimistic on this point than were those in the rural areas probably reflecting the nature of the work. On treatment, prognosis, and consequences of heart disease, it appeared the public held a fairly optimistic view.

These findings may be in some ways reassuring to the health educator. There appears to be little "panic" about the disease and most people have quite a "sensible" outlook concerning the effectiveness of treatment and the prognosis and consequences of the disease. On these matters, the majority of the people reacted about the way one would want them to.

Are the low anxiety about heart disease and the optimistic outlook on treatment, prognosis, and consequences the reasons for the general lack of preventive actions taken for heart disease? This may be a partial explanation. Part of the explanation may be in the non-specific nature of the preventive measures. While diet, regular exercise, changing work conditions, and regular physical examination were regarded as preventives for heart disease, they are preventives for other health conditions as well. Dieting and regular exercise may be motivated

by other than health considerations. Also, even for more feared ailments for which specific tests and preventives are available, many people do not, on their own, utilize them.

We attempted to learn something of the means by which information about heart disease was communicated to the public. Utilization of the mass communication was clearly related to the more technical information about heart disease but, equally important, it was not related clearly to possession of the more general information. Written materials (newspapers and magazines) were more important sources of specific information than were audio-visual media.

It is tempting to try to transfer the model developed for the communication of agriculture technology to the process of communication about heart disease. This model views the locality as a communication network. The network is structured as the community is structured along the lines of cliques, kinship groups, neighborhoods, formal organizations as well as status and power divisions. Further, certain persons are high recipients of information from outside the community. These persons tend to have high access to others in the community and become influential through the demonstration of the innovation in their own farming operation. Another consideration in the diffusion of information about agricultural technology has been the place of the local representative of the agricultural bureaucracy, most often the county agricultural agent. Most generally the county agent is not cited directly as the source of information but information may be traced back to him through the network and especially through influentials.

There are some obvious similarities between the dissemination of technical agricultural information and communication about heart disease. In both, the mass media and interpersonal communications are sources of information; in health matters, the physician is the local expert in some ways a counterpart to the county agent. But there appears to be some important differences. Technical agricultural information is directed toward the practitioners of a vocation; in some ways, farmers are more like the physicians as objects for the transfer of information. As a matter of fact, there are a number of parallels between the process of farmers adopting hybrid seed corn[1] and physicians adopting a new drug.[2] As a local expert, the physician probably occupies a position quite different from the county agent. The physician's authority in matters of health is hardly challenged. He is cited as a potential source of information more often than any other. While the county agent's contribution to the dissemination of technical agricultural information may be underestimated by local people, the physician's contribution to information about health matters may be overstated. Further

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[1]Bryce Ryan and Neal Gross, *Acceptance and Diffusion of Hybrid Corn Seed in Two Iowa Communities*. Iowa Agricultural Experiment Station Bulletin 372, 1950.

[2]Herbert Menzel and Elihu Katz, "Social Relations and Innovation in the Medical Profession," *Public Opinion Quarterly*. XIX, pp. 337-53.

information given to a person by a physician about a heart condition is not subject to direct transfer to others through the interpersonal network although it is done. Another difference is that local influentials among the lay public do not appear common in dissemination of information about heart disease. One reason is the authoritative position of the physician in health matters. Another is that much of the interpersonal information transferred had at least one party who was said to have heart disease. Many of these persons are beyond local boundaries and because the disease is widespread, the informal sources of information were not highly concentrated. *Aside from the physician, the information about heart disease seemed to be transferred from individual to individual without highly structured local networks of interpersonal communication.*

Finally, information about heart disease appears not to be directed so clearly toward a specific end or activity; on questioning it was learned that much of the talk about heart disease does not involve information about the disease itself, but about the persons who have it, their condition and the like.

APPENDIX

Schedule

"Information and Meaning of Heart Disease
Held By the Public"
Department of Rural Sociology, University of Missouri
in cooperation with
Division of Health, State of Missouri
1963

All information will be held in strict confidence

I. Identification

1. Date: _____

2. Location Area: 1, 2, 3, 4, 5
   Town 1, (name) _____ Open country 2

Interviewer: 1, 2, 3, 4

Reasons for non-Interview
1 -- Refusal
2 -- Not at Home | 1 | 2 | 3 |
3 -- Other, specify _____
_____

II. Background Characteristics

1. Male or Female Head of Household (no other as respondent) M 1 F 2

2. Number of members in Household

No.	Code
1	1
2	2
3-5	3
6 & over	4
N.A.	5

Comments:

3. Married - 1 Divorced or Separated - 4
   Single - 2 N.A. - 5
   Widowed - 3

4. Race W - 1
   N - 2
   O - 3

5. Age of Respondent

Age	Code
-30	1
30-44	2
45-54	3
55-64	4
65+	5
N.A.	6

6. Education
Comments:

Years	Code
0-3	1
4-7	2
8	3
9-11	4
12	5
13-15	6
16 +	7
N.A.	8

7. Occupation of head of household (male) except where there is no male head; if retired, indicate previous principal occupation.

Occupation _____
Comments:

Occupation	Code
Unemployed	0
Professional	1
Farmer	2
Prop., Mgr.,Officials	3
Clerical, Sales	4
Craftsmen	5
Operatives	6
Service	7
Labor(includes farm)	8
Homemaker	9

8. Employment status of head of household (male) except where there is no male head.
Comments:

Status	Code
Unemployed	1
Actively Employed	2
Retired	3
More than one job	4
Invalid	5
Between Jobs	6
N.A.	7

9. Family Net Income

Amount	Code
Under $1,000	1
$1,000-1,999	2
$2,000-2,999	3
$3,000-3,999	4
$4,000-4,999	5
$5,000-6,999	6
$7,000-9,999	7
$10,000-14,999	8
$15,000 +	9
N.A.	0

III. Experience with Heart Disease

1. Have you ever had a form of Heart Disease? Y 1 D.K. 3 / N 2 N.A. 4

2. If yes, do you still have it? Y 1 D.K. 3 / N 2 N.A. 4

3. Was it diagnosed by a doctor? Y 1 D.K. 3 / N 2 N.A. 4

4. If no (to 3), how do you know that you had Heart Disease?

_____

5. Has any other person who lives in your house or who has lived in your home had Heart Disease?

Y 1 N.A. 3 / N 2

a) If yes, relationship? _____

b) Was it diagnosed by a physician? Y 1 D.K. 3 / N 2 N.A. 4

c) If no, how do you know the person had Heart Disease?

_____

6. Has Heart Disease resulted in the death of a member of the Household? Y 1 N.A. 3 / N 2

a) If yes, relationship? _____

7. Have other relatives had Heart Disease? Y 1 N.A. 3 / N 2

a) If yes, indicate relationship? _____

b) How often do you see them? several times a week 1 once a year or less 4 / several times a month 2 D.K. 5 / several times a year 3 N.A. 6

c) Do you ever talk to them about Heart Disease? Y 1 N.A. 3 / N 2

8. Have any of your friends and neighbors had Heart Disease? Y 1 N.A. 3 / N 2

a) If yes, how often do you see them?

several times a week	1	once a year or less	4
several times a month	2	D.K.	5
several times a year	3	N.A.	6

b) Do you ever talk about Heart Disease with them? Y 1 N.A. 3 / N 2

9. Have you ever personally known anyone else with Heart Disease? Y 1 N.A. 3 / N 2

a) If yes, what associations? _____

IV. Communication

1. Where have you received most of your information about Heart Disease?

_____

2. Do you have or subscribe to the following?

Media	Yes	No	N.A.
Radio	1	2	3
TV	1	2	3
Magazines	1	2	3
Daily Paper	1	2	3
Sunday Paper	1	2	3

3. Have you ever received information about Heart Disease from the following?
Comments:

Source	Yes	No	N.A.
Radio	1	2	3
TV	1	2	3
Magazines	1	2	3
Newspapers	1	2	3
School	1	2	3
Heart Ass'n	1	2	3

4. Have you ever received information about Heart Disease from members of the immediate family (household member or offspring) Y 1 N.A. 3 / N 2

a) If yes, who _____

b) If yes, did they have a form of Heart Disease? Y 1 N.A. 3 / N 2

5. Have you ever received information about Heart Disease from other relatives? Y 1 N.A. 3 / N 2

a) If yes, relationship _____

b) Did they have a form of Heart Disease? Y 1 N.A. 3 / N 2

6. Have you ever received information about Heart Disease from friends and neighbors? Y 1 N.A. 3 / N 2

   a) If yes, did they have a form of Heart Disease? Y 1 N.A. 3 / N 2

   b) How often do you see them? several times a week 1 once a year or less 4
   several times a month 2 D.K. 5
   Several times a year 3 N.A. 6

7. Have you ever received information about Heart Disease from a doctor? Y 1 N.A. 3 / N 2

   If yes, what type of doctor? M.D. 1 other(specify) _____ 3
   D.O. 2 D.K. 4
   N.A. 5

8. Is there anyone else besides the doctor that seems to know a great deal about health matters, especially about Heart Disease? Y 1 N.A. 3 / N 2

   a) Who would this person be? _____

   b) What kinds of things does this person know about Heart Disease?

   _____

   _____

9. Which would you be most likely to do:

   a) Discuss Heart Disease quite often with friends and relatives? 1

   b) Seldom talk about Heart Disease among friends and relatives? 2

   c) Never talk about Heart Disease among friends and relatives? 3

   d) No Answer 4

10. When talking with others about Heart Disease do you talk most often about:

    a) The disease itself (medical terms)? 1

    b) A person who had the disease? 2

    c) Both the disease and the person? 3

    d) No Answer 4

11. Has anyone ever warned you about Heart Disease? Y 1 N.A. 3 / N 2

    a) If yes, who? (relationship) _____

    b) What did they warn you about? _____

12. Have you ever warned anyone about Heart Disease in general? Y 1 N.A. 3 / N 2

    a) If yes, who? (relationship) _____

    b) What did you warn them about? _____

13. Can you ever recall talking about Heart Disease in any club or other group to which you belong? Y 1 N.A. 3 / N 2

a) What was mentioned? _____

_____

14. If you wanted to find out more about Heart Disease where would you obtain information? _____

V. Information and Meaning

1. If someone asked you what Heart Disease was, what would you tell them?

_____

_____

2. Do you think that Heart Disease is:

a) One kind of disease? _____ 1

b) Many kinds of disease? _____ 2

3. If Heart Disease is many kinds of disease can you name some of them?

a) _____ c) _____ 1 _____ 3 _____

b) _____ d) _____ 2 _____ 4 _____

0 none

4. What types of people are most likely to have Heart Disease?

a) Fat _____ 1
Thin _____ 2
No difference _____ 3
Don't Know _____ 4
No Answer _____ 5

b) Young _____ 1
Old _____ 2
No difference _____ 3
Don't Know _____ 4
No Answer _____ 5

c) Men _____ 1
Women _____ 2
No difference _____ 3
Don't Know _____ 4
No Answer _____ 5

d) Farmers _____ 1
City people _____ 2
No difference _____ 3
Don't Know _____ 4
No Answer _____ 5

e) Manual laborers _____ 1
Office workers _____ 2
No difference _____ 3
Don't Know _____ 4
No Answer _____ 5

5. Do you think that children under 10 years of age can have Heart Disease?

Y	1	D.K.	3
N	2	N.A.	4

a) If yes, how likely would this be?

a) Very likely _____ 1
b) Quite likely _____ 2
c) Not likely _____ 3
d) Seldom _____ 4
e) Almost never _____ 5
f) Don't Know _____ 6
g) No Answer _____ 7
h) Answer 5 was no _____ 8

6. At what age is a person most likely to have Heart Disease?

a) under 20 _____ 1
b) 20 - 45 _____ 2
c) 45 - 65 _____ 3
d) 65 and over _____ 4
e) No difference _____ 5
f) Don't Know _____ 6
g) No Answer _____ 7

7. Do you think that it is possible to inherit a form of Heart Disease?

a) Very possible _____ 1
b) Quite possible _____ 2
c) Not very possible _____ 3
d) Almost impossible _____ 4
e) Don't Know _____ 5
f) No Answer _____ 6

8. Have you ever heard of an electrocardiogram?

Y	1	N.A.	3
N	2		

a) If yes, can you tell me what it is? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 8) 5

9. Have you ever heard of cholesterol?

Y	1	N.A.	3
N	2		

a) If yes, can you tell me what it is? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 9) 5

10. Have you ever heard of hypertension?

Y	1	N.A.	3
N	2		

a) If yes, can you tell me what it is? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A 4
No (to no. 10) 5

11. Have you ever heard of arteriosclerosis?

Y	1	N.A.	3
N	2		

a) If yes, can you tell me what it is? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 11) 5

12. Have you ever heard of coronary thrombosis? Y 1 N.A. 3 / N 2

a) If yes, can you tell me what it is? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 12) 5

13. Is high blood pressure connected with heart disease? Y 1 N.A. 3 / N 2

a) If yes, can you tell me how? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 13) 5

14. Is rheumatic fever connected with heart disease? Y 1 N.A. 3 / N 2

a) If yes, can you tell me how? _____

_____

_____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 14) 5

15. Is hardening of the arteries connected with heart disease? Y 1 N.A. 3 / N 2

a) If yes, can you tell me how? _____

correct 1
partially correct 2
incorrect 3
N.A. 4
No (to no. 15) 5

16. Can you catch Heart Disease from others (is it contagious)? Y 1 D.K. 3 / N 2 N.A. 4

17. Which of the following diseases are the cause of the greatest number of deaths in the U.S. each year (rank 1, 2, 3, 4)

		1st	2nd	3rd	4th	N.A.
a) T. B.	_____	1	2	3	4	5
b) Cancer	_____	1	2	3	4	5
c) Polio	_____	1	2	3	4	5
d) Heart Disease	_____	1	2	3	4	5
e) No Answer	_____					

18. How likely is it for a person to have Heart Disease without knowing it?

a) Quite possible, lots have it without knowing it 1
b) Possible but not very likely 2
c) If you had it you would know it right away 3
d) Don't Know 4
e) No Answer 5

19. Do you know of any warning signals for Heart Disease? Y 1 N.A. 3 / N 2

a) If yes, would you list some of them?

(1) _____ (3) _____

(2) _____ (4) _____

Does not apply	1
One Kind	2
Two Kinds	3
Three Kinds	4
Four Kinds	5
Five or more	6
None	7

20. Do you think that any of the following would help to keep a person from getting Heart Disease?

a) To go on a diet? Y 1 D.K. 3 / N 2 N.A. 4

If yes, what type? _____

b) To change work habits? Y 1 D.K. 3 / N 2 N.A. 4

If yes, what changes? _____

c) To have regular physical examinations? Y 1 D.K. 3 / N 2 N.A. 4

If yes, of what use would they be? _____

_____

d) To take exercise or participate in other physical activity? Y 1 D.K. 3 / N 2 N.A. 4

If yes, what types of activities or exercise?

_____

21. How often do you think a person should have a regular physical examination?

a) At least every six months	1	e) Every five years (or less)	5
b) At least once every year	2	f) Only when something is wrong	6
c) Every two years (or less)	3	g) Don't Know	7
d) Every three years (or less)	4	h) No Answer	8

22. Treatments for Heart Disease are:

a) Very effective	1	d) Almost never effective	4
b) Somewhat effective	2	e) Don't Know	5
c) Not very effective	3	f) No Answer	6

23. In most cases a person who has had Heart Disease:

a) Can go about his work as before	1	d) Is unable to work at all	4
b) Must slow down but can continue in the same job	2	e) Don't Know	5
c) Can do some work but must give up active employment	3	f) No Answer	6

24. The most usual result of Heart Disease is:

a) Complete recovery	1	d) Death in a short time	4
b) Control of the disease but not complete recovery	2	e) Don't Know	5
c) Confinement to home as an invalid	3	f) No Answer	6

25. If a person had a form of Heart Disease his chances of leading a normal life would be:

a) Very slight	1	e) Don't Know	4
b) Less than average	2	f) No Answer	5
c) About average	3		

26. Heart Disease strikes suddenly without warning:

a) Almost never	1	d) Very often	4
b) Sometimes	2	e) Don't Know	5
c) Often	3	f) No Answer	6

27. Have you worried about getting Heart Disease?

a) A great deal	1	e) Not at all	5
b) Quite a lot	2	f) Don't Know	6
c) Some	3	g) No Answer	7
d) A slight amount	4		

28. Which of the following comes closest to your own belief:

a) If you're going to get it there is nothing that you can do about it _____ 1

b) There may be some things that you can do to prevent Heart Disease but it really isn't worthwhile to try _____ 2

c) It is quite possible to prevent many kinds of Heart Disease _____ 3

d) If a person tries, he can be quite sure that he/she will not get Heart Disease _____ 4

e) Don't Know 5

f) No Answer 6

29. If as a result of Heart Disease you were told by your doctor to greatly restrict your activity would you:

a) Find it impossible to do so? _____ 1

b) Find it difficult to do so? _____ 2

c) Make the best adjustment you could but find it hard to do so? _____ 3

d) Be able to follow his advice without any trouble _____ 4

e) Don't Know 5

f) No Answer 6

30. Do you worry about the possibility of getting: (rank in order)

		1st	2nd	3rd	4th	N.A.
a) Cancer	_____	1	2	3	4	5
b) Heart Disease	_____	1	2	3	4	5
c) Polio	_____	1	2	3	4	5
d) T. B.	_____	1	2	3	4	5

VI. Action

1. Have you ever dieted or changed your food habits in other ways? Y 1 N 2 N.A. 3

   a) If yes, what kind? _____

   _____

   b) Was this in any way to prevent Heart Disease? Y 1 N 2 N.A. 3

   c) Are you presently on a diet? Y 1 N 2 N.A. 3

2. Have you ever taken regular exercises? Y 1 N 2 N.A. 3

   a) If yes, what kind? _____

   _____

   b) Was this done to prevent Heart Disease? Y 1 N 2 N.A. 3

   c) Are you presently taking exercises? Y 1 N 2 N.A. 3

3. Do you take rest periods? Y 1 N 2 N.A. 3

   If yes, is this done to prevent Heart Disease? Y 1 N 2 N.A. 3

4. Did you ever smoke? Y 1 N 2 N.A. 3

   a) If yes, did you ever try to stop smoking? Y 1 N 2 N.A. 3

   b) If you smoked, what did you smoke? did not smoke 1, cigarettes 2, cigars 3, pipe 4, chew 5

   c) If you smoke, how long have you been smoking? (years) _____

   d) If you tried to stop smoking, were you successful? Y 1 N 2 N.A. 3

   e) Was this in any way to avoid Heart Disease? Y 1 N 2 N.A. 3

f) Do you think that smoking is harmful to health? Y 1 D.K. 3 / N 2 N.A. 4

5. Do you have regular physical check-ups? Y 1 N.A. 3 / N 2

a) When was the last time you had a physical examination?

less than 6 months	1	5 years or over	5
6 months to 1 year	2	Don't Know	6
1 year to 2 years	3	No Answer	7
2 years to 5 years	4		

b) If had an examination, was it because you were ill or was it a routine check-up?

Symptomatic	1	Don't Know	3
Routine	2	No Answer	4

c) If had an examination, was it in any way connected with heart disease? Y 1 D.K. 3 / N 2 N.A. 4

6. Do you take any medicines to prevent Heart Disease? Y 1 N.A. 3 / N 2

a) Do you know of any such medicines? Y 1 N.A. 3 / N 2

If yes, can you name any? _____

VII. Persons With Heart Disease Only

1. How did you know that you had Heart Disease? _____

_____

Were you hospitalized? Y 1 N.A. 3 / N 2

2. How long were you hospitalized?

under a week	1	a year or more	4
a week or more	2	N.A.	5
a month or more	3		

3. Do you discuss your Heart Disease with others? Y 1 N.A. 3 / N 2

a) If yes, who (relationship)? _____

_____

4. Do you read more about Heart Disease since you have had it?

a) Much more _____	1	d) Less than before _____	4
b) Some more _____	2	e) Don't Know _____	5
c) No more _____	3	f) No Answer _____	6

5. Do people ask you about your Heart Condition? Y 1 N.A. 3 / N 2

a) If yes, what are they most concerned about? _____

_____

6. Do you like telling other people about your heart condition? Y 1 D.K. 3 / N 2 N.A. 4

a) If yes, what do you tell them? _____

_____

7. What advice would you give your friends and neighbors about staying well?

_____

_____

_____

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