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VULNERABILITY TO RISK AND LEVEL OF INFORMATION CONCERNING FEATURES OF HEALTH CARE PLANS (A STUDY OF CONSUMER INFORMATION)

by
Nicholas Dan Richie

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Medical Care Organization)
in The University of Michigan
1972

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INTRODUCTION

The present medical care system in the United States offers many ways of obtaining what may well be relatively similar services. There are at least three attributes of the system responsible for this variation: 1) the various types of organization of physician practice; 2) the various types of health care facilities -- and their "social location"; and 3) the various mechanisms of payment for medical care. In spite of the resulting variety, there may be instances where choices are limited because of unavailability of certain services, facilities, or payment mechanisms in a given geographic area. In addition, there are occasions when individual choice must give way to "group decisions". However, when an individual truly does have a choice, and is not situationally constrained, he may be faced with the task of deciding from among a number of alternative modes of providing medical care for himself and his dependents. Such actions of choice in the health field most likely depend, in part, on "information" -- and the variety of health insurance plans available today provides an opportunity for examining, for instance, the differential spread of information concerning features of health care plans, as well as some of the variables with which this spread of information may be associated. It was to this latter concern that this research was directed.

CHAPTER I. STATEMENT OF THE PROBLEM

A. General Medical Care Context

As was stated above, there are at least three attributes of the medical care system responsible for the resulting variety one finds in examining the system. In regard to the first attribute -- the various types of organization of physician practice, one classification identifies four major types of practice: 1) solo; 2) "cooperative" or "partnership"; 3) group; and 4) bureaucratic.[1]

Solo practice is the practice of medicine by a general practitioner or specialist, in an office of his own -- which represents a substantial investment in equipment and overhead expenses. The physician in such a setting is often aided by nursing, paramedical and clerical assistants, and affiliated with a hospital, to which he has access, for the provision of services which cannot be technically, or best, handled in his office. The physician in such a setting assumes a great deal of individual responsibility for the cost, availability, and quality of his services -- thus maintaining a high degree of professional autonomy. This type of practice has tradition-

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[1]Bernard R. Blishen, Doctors and Doctrines, Toronto: University of Toronto Press, 1969, 51-68.

ally been the most prevalent in the United States.

"Cooperative" (or "partnership") practice may be informal or formal. In regard to the informal aspect, it may manifest itself through a series of informal arrangements between a number of physicians affecting their referral patterns, recommendations for positions in institutions, promotions, etc. Hall has referred to this informal organization which affects such aspects of medical practice as the "inner-fraternity", exhibiting the features of a secret society or other primary group, and involving close and inclusive relationships.[2] Informal cooperation may reach a quite high level of interaction and cohesion in some "medical arts buildings" or "medical center" office complexes.[3]

An example of cooperative practice which is formalized is the "legal partnership" -- based upon a legal agreement, between two or more physicians, which provides for mutual responsibility to their patients and each other. In such an agreement, the rights, duties and obligations

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[2]Oswald Hall, "Informal Organization of the Medical Profession," Canadian Journal of Economics and Political Science, Vol. 12 (February, 1946), 30-44.

[3]Gerald Katz, "Pilot Study of Medical Practices in Medical Arts Buildings," Public Health Reports, Vol. 81, No. 11 (November, 1966), 1025-1030.

of each party are spelled out, and major decisions affecting the partnership are made by all members.[4]

"Group practice" is a term which covers a wide variety of medical care arrangements, varying in size, mode of practice, structure, location and other factors.[5] A frequently encountered definition of group practice is that provided by the United States Public Health Service in conjunction with its Survey of Group Practice in 1959: "A medical group is here defined as three or more full-time physicians formally organized to provide general medical care, consultation, or diagnosis, with income from medical practice distributed according to some prearranged plan".[6] Even when defined in this manner, such groups may vary in the extent to which the various medical specialties are represented, in regard to their location (hospital-based, medical school-based, clinic-based, etc.), the extent to which the physicians are employed full-time or part-time within the group, the source of ownership and sponsorship (partnership, professional association, corporation,

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[4]Edwin P. Jordan (ed.), The Physician and Group Practice, Chicago: Year Book Publishers, Inc., 1958, 20.

[5]Edwin P. Jordan, "Group Practice," New England Journal of Medicine, Vol. 250 (April, 1954), 558-561.

[6]S. David Pomrinse and Marcus Goldstein, A Preliminary Directory of Medical Groups in the United States -- 1959, Public Health Service Publication No. 817, Washington, D.C.: Government Printing Office, January 1961, p. 1.

foundation, nonprofit corporation, or single ownership), and the mechanisms of payment for care.[7] A particular form of group practice -- known as "prepaid group practice", involves an attempt to organize both the practice and financing of medical care, through a prepayment arrangement for comprehensive care during a given time period. Such arrangements have received considerable attention in recent years due to indications that they may offer a potential solution to certain problems of medical specialization and increased cost of health services, providing an arrangement of optimum care and continuity of service.[8] Under the title of "health maintenance organizations", with an even broader definition, such arrangements are receiving considerable attention at present, both from the Federal administration and members of the Congress,[9,10]

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[7]United States Public Health Service, Promoting the Group Practice of Medicine (Report of the National Conference on Group Practice), Washington, D.C.: GPO, October 19-21, 1967, 21-22.

[8]Avedis Donabedian, A Review of Some Experiences with Prepaid Group Practice, Ann Arbor, Michigan: Bureau of Public Health Economics, Research Series #12, School of Public Health, University of Michigan, 1965.

[9]Paul M. Ellwood, et. al., "Health Maintenance Strategy," Medical Care, Vol. 9 (May-June 1971), 291-298.

[10]Congressional Record, Proceedings and Debates of the 92nd Congress, 1st Session, "The Health Maintenance Organization Act of 1971 -- HR 11728," Speech of Hon. William R. Roy of Kansas in the House of Representatives, Thursday, November 11, 1971, Washington, D.C.: GPO.

The fourth major type of physician practice in this classification is the bureaucratic, referring to the practice of medicine by physicians (either on a full-time or a part-time basis) in such organizations as universities, hospitals, military facilities, Public Health Service facilities, Veterans Administration facilities, etc.

The above classification is an over-simplified one (intended only to present an over-view), in that there may be various mixes of elements from each of these four "types" -- in given situations, and any given physician may be involved in more than one such "type" of practice.

In regard to the second attribute of the system mentioned above -- the various types of health care facilities and their "social location", a "functional differentiation" approach distinguishes between "short-stay hospitals" -- where the average stay is less than thirty days, and "long-stay hospitals" -- where the average stay is longer than thirty days. There are both general and specialized hospitals included in each group, with examples of specialized short-stay hospitals including maternity and pediatric hospitals, and examples of specialized long-stay hospitals including psychiatric, geriatric, TB,

and chronic disease hospitals.[11]

Other medical care facilities include "nursing homes and related facilities" -- where distinctions are made among those facilities providing skilled nursing care, those providing personal care (without nursing) in addition to room and board, and those providing residential care -- primarily room and board.[12] In addition, there are custodial homes for specific groups of individuals -- the deaf, blind, unwed mothers, etc.[13] It should be kept in mind that any given institution may perform several of the above functions in its operation, and may also make provision for out-patient treatment and/or treatment in satellite facilities located away from the central facility.

In terms of "social location", health care facilities are often classified as public, quasi-public, or private.

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[11]National Center for Health Statistics, Development and Maintenance of a National Inventory of Hospitals and Institutions, Public Health Service Publication No. 1000, Series 1, No. 3, Washington, D.C.: GPO, February 1965.

[12]Hugh B. Speir, Characteristics of Nursing Homes and Related Facilities: Report of the 1961 Nationwide Inventory, Public Health Service, Division of Hospital and Medical Facilities, Publication No. 930-F-5, Washington, D.C.: GPO, 1963.

[13]National Center for Health Statistics, op. cit.

"Public" facilities are non-profit institutions, supported by tax dollars on a municipal, county, state or federal level -- or various combinations thereof. Generally, long-stay hospitals are public. "Quasi-public" facilities are also non-profit, but are non-governmental, and sponsored by various voluntary groups in the community (including religious and fraternal groups). They are usually supported by a combination of direct payments by patients and health insurance mechanisms. Most short-stay hospitals are quasi-public. "Private" health care facilities are proprietary, profit-making organizations, with only a small number of hospitals in the United States being included in this category. However, most nursing care and related facilities come under this category.[14]

In regard to the third attribute of the system mentioned above -- the various mechanisms of payment for medical care, one may examine the ways in which physicians are paid, as well as the options open to the individual for payment of care received in health care facilities, as well as from physicians.

One classification lists three principal ways in

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[14]American Hospital Association, Hospitals, Guide Issue, August 1, 1969.

which physicians are paid: 1) fee-for-service, where there is a fee charged for each unit of service; 2) capitation -- where the person served is the unit of remuneration, rather than the medical act of service. Under capitation, the physician is paid a given amount for caring for an individual for a certain period of time; and 3) salary, where the physician is paid for his time, regardless of the number of units of service or persons served. The salary may be based upon full-time or part-time employment.[15]

There are four general ways in which payment is made for health care received by individuals in our society.[16] The first is through the mechanism of "charity", which may be private and supported by individual contributions, or in the form of governmental assistance -- such as support for the Medicaid programs. Often it is necessary to establish "medical indigency" in order to qualify for such benefits. The medically indigent are usually defined as those who are able to meet their basic needs (food, clothing, and shelter) through their own efforts, but who would be unable to meet unexpected or costly medical expense in

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[15]Milton I. Roemer, "On Paying the Doctor and the Implications of Different Methods," Journal of Health and Human Behavior, Vol. 3 (Spring, 1962), 4-14.

[16]Blishen, op. cit., 64-65.

addition to these basic needs.

Another mechanism is the provision of services, rather than funds, to citizens in need, either through private means or governmental (state hospital services, veterans hospital services, etc.).

A third method is payment by the individual, out-of-pocket, for services rendered to him, either by physicians or in health care facilities.

A fourth mechanism is that of health insurance, in which case a premium related to the cost of service is involved. Health insurance may be private, quasi-public, or public. Private health insurance includes that provided by commercial insurance companies (profit-making); quasi-public includes that provided by Blue Cross-Blue Shield plans (non-profit); while public health insurance includes that provided by the Federal government in the form of Medicare benefits.[17]

As can be seen from the brief discussion presented above, the present health care system in the United States

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[17]Jerome L. Schwartz, Medical Plans and Health Care, Springfield, Illinois: Charles C. Thomas, Publisher, 1968, p. 10.

is a complex one, involving a number of alternatives for obtaining what may be relatively comparable services, and for paying for such services. While it may be of interest to conduct research on factors related to the choices made by individual consumers in regard to any or all of the various alternatives mentioned above, the present research project focused upon choice of health care plans, and factors with which such choice might be associated.

At the present time, through one or more of a variety of health care plans which have evolved over the years, a very large proportion of the population in the United States is covered for some hospital and/or surgical expenses. Enrollment figures vary, depending in part on how the data were collected, analyzed, and by whom. In addition, since some persons have duplicate coverage, it is common to obtain totals which exceed 100% when one sums the percentage of persons covered by each of the major categories of health insurance coverage.[18]

As a result of a household interview survey, the National Center for Health Statistics estimated that at the

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[18]Health Insurance Institute, Source Book of Health Insurance Data: 1971-72 (New York: 277 Park Avenue, 10017), p. 15.

end of 1968, 80% of the civilian population under 65 years of age had at least some hospital coverage, and 77% had at least some coverage of surgical services (the benefits covered are discussed below). Since most persons age 65 or over have broad insurance coverage through the Federal government's program of health insurance for the aged (Medicare), interest in this survey focused on those under age 65.[19]

The latest governmental figures, which deal with the year 1969, are not based directly upon a similar household interview survey, but rather upon projections of the 1968 figures (given above), derived from percentage changes from 1968 to 1969 in estimates of net coverage reported by the Health Insurance Institute (an association of the nation's insurance companies).[20] This report estimates that in 1969, 81.3% of the civilian population under 65 years of age had at least some hospital coverage, and 78.8% had at least some coverage of surgical services.[21] The Health Insurance Institute reported that at the end of 1970, according to its calculations, approximately 89%

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[19]Louis S. Reed, "Private Health Insurance -- 1968: Enrollment, Coverage, and Financial Experience," Social Security Bulletin, Vol. 32 (December, 1969), p. 19.

[20]Marjorie Smith Mueller, "Private Health Insurance in 1969: A Review," Social Security Bulletin, Vol. 34 (February, 1971), p. 3.

[21]Ibid., p. 4.

of the civilian resident population had some kind of hospital expense insurance, and approximately 83% were also insured for some surgical expenses.[22]

Such gross statistics may be misleading, however, for a number of deficiencies in the various health care programs available at present continue to exist. Some of these deficiencies have been enumerated by O.W. Anderson and his associates, who conducted three surveys, at five-year intervals, on the relationship between medical costs and voluntary health insurance. We know as a result of their work, and that of the National Center for Health Statistics, that these deficiencies include: 1) the fact that a significant, though small, proportion of the population remains not covered -- often because they are unemployed (most people subscribe through employees' organizations), unskilled, self-employed, or sporadically employed; 2) not all medical needs are supplied by insurance -- the cost of drugs, office calls, dental services, and opthalmological services are frequently not included; 3) utilization of the service often requires at least some payment to physicians on an out-of-pocket basis, which some individuals cannot afford; 4) the fact that coverage is geared mainly to pro-

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[22]Health Insurance Institute, op. cit., p. 15.

vide for costs related to hospitalization, and may lead to excess hospitalization and lack of emphasis on preventive services and ambulatory care; 5) the fact that there are limitations on coverage, such as limits on the number of hospital-days covered, limits on collecting from more than one source when co-insured, compulsory deductible payments, and maximums on the amount which one can collect per illness or time period.[23,24,25,26] In addition, in a recent appraisal of health insurance coverage, Reed and Carr also point to a general lack of coverage for catas-

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[23]Odin W. Anderson and Jacob J. Feldman, Family Medical Costs and Voluntary Health Insurance: A Nationwide Survey, New York: McGraw-Hill, 1956.

[24]Odin W. Anderson, Patricia Collette, and Jacob J. Feldman, Changes in Family Medical Care Expenditures and Voluntary Health Insurance: A Five Year Resurvey, Cambridge, Massachusetts: Harvard University Press, 1963.

[25]Ronald Andersen and Odin W. Anderson, A Decade of Health Services: Social Survey Trends in Use and Expenditure, Chicago: University of Chicago Press, 1967.

[26]National Center for Health Statistics, Family Hospital and Surgical Insurance Coverage, United States, July 1962-June 1963, Public Health Service, Publication 1000, Series 10, No. 42, Washington, D.C.: GPO, 1967.

trophic illness, mental illness, care in extended care facilities and nursing homes, and home health services.[27]

Partly in response to such deficiencies, as well as a growing gap between the potential and the performance for personal health services due to the rapid growth of medical knowledge and technology, a number of proposals for a national health program of broader scope have led to new Federal health legislation to support additional public health programs, construction of hospitals and other facilities, manpower development, etc. The picture is particularly confusing and unstable at present due to the rash of proposals for National Health Insurance which are presently being considered. These include: 1) The Health Security Act -- drafted by the Committee for National Health Insurance and sponsored chiefly by the United Auto Workers and the AFL-CIO; 2) The National Health Insurance Partnership -- proposed by President Nixon in his Health Message to Congress on February 18, 1971; 3) Medicredit -- drafted by the American Medical Association; 4) National Health Care Act -- endorsed by the Health Insurance Institute of America; 5) Ameriplan -- drafted by

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[27]Louis S. Reed and W. Carr, The Benefit Structure of Private Health Insurance, 1968, Social Security Administration, Office of Research and Statistics, Report No. 32, Washington, D.C.: GPO, 1970, 106-109.

a special committee of the American Hospital Association; and 6) proposals put before Congress by individual Congressmen, including Senator Jacob Javits of New York and Senator Russell Long of Louisiana.[28,29]

Thus, at the present time, there are a number of alternative health care plans in existence in the United States, varying in sponsorship, purpose, range of benefits, administration, locus of control, organization, cost, etc.[30] The consumer who is "free" to choose his health care plan without having it imposed upon him through group purchase, majority vote, etc., is faced with the task of choosing from among these various plans that plan which will best meet his medical care needs, at a price he can afford to pay. Fundamentally, this problem is related to the general area of consumer choice, although there are likely to be a distinctive system of elements in the situation which are indigenous to the issue of medical care per se.

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[28] U.S. Department of Health, Education, and Welfare, Elliot L. Richardson, Sec., "A Study of National Health Insurance Proposal -- A Report to Congress," March 1971. (Mimeographed).

[29] 92nd Congress, 1st Session, "Analysis of Health Insurance Proposals Introduced in the 92nd Congress," Printed for the Use of the Committee on Ways and Means, Washington, D.C.: GPO, August 1971.

[30] Odin W. Anderson and Jacob J. Feldman, op. cit., 89.

B. Consumer Choice Behavior

Glock and Nicosia have provided a summary of social science research on consumer choice behavior,[31] which begins with the observation that social scientists have adopted two fundamental approaches in their study of the consumer. The first approach concentrates on understanding the behavior of individual consumers or consuming units (called "micro-behavior" or "consumer behavior"), and the second approach deals with the behavior of the mass of consumers (called "macro-behavior" or "consumption behavior"). The study of consumer behavior is seen to encompass the efforts expended to describe and explain the consumer's act of choice either at a given point in time, or through time (the center of inquiry is always on the decisions of the individual or individual unit). In contrast, the study of consumption behavior is concerned with describing and explaining the behavior of aggregates of consumers or consuming units, again at a given point in time, or through time (the subject matter parallels at the aggregate level that of consumer behavior at the individual level). Sociology is seen by Glock and Nicosia as relevant to the study of both kinds of behavior: to con-

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[31]Charles Y. Glock and Francisco M. Nicosia, "The Consumer," in The Uses of Sociology, Paul F. Lazarsfeld, William H. Sewell, and Harold L. Wilensky (eds.), New York: Basic Books, 1967, 359-390.

sumer behavior insofar as the individual's social context influences his decision processes, and to consumption behavior insofar as the society's system of beliefs and values and norms, as well as its institutional structure, help to shape the behavior of the mass.

The authors identify three research traditions in the study of consumer behavior. The first is called the "descriptive" (or distributive, taxonomic) tradition. Descriptive studies are those which state, for example, how many units of a certain brand are sold, who buys what, where, etc. This tradition provides basic information necessary to production, distribution, and other decisions, but is essentially atheoretical, and not of particular interest to us here. The second tradition, which is called "prescriptive", has been largely inspired by a concern with problems of everyday policy and conduct of public and private firms. This tradition has produced studies designed to assess consumer responses to specific stimuli, predominantly those which can be manipulated (package design, price, distribution, etc.). This approach does not explicitly postulate the existence of a consumer decision-process beyond the simple association between a stimulus and a response. It operates on the notion that, all other things being equal, the taste and appearance of a product, shape of its container, way it's advertised, etc., can exert

leverage on the consumer's decision to act. Thus, the research task is to amass the capacity of one of these stimuli to produce a desired response. This tradition virtually ignores the interplay between different stimuli and its effects on consumer action. It also overlooks the subject's economic, social and psychological characteristics as mediating influences on his response to specific stimuli. The third tradition -- called the "explanatory" tradition -- has been motivated by a more basic interest in understanding how the consumer comes to make decisions. Here the role of the social sciences (economics, psychology, sociology, anthropology) has been of great significance, and consequently, this tradition is of greater concern to us -- in view of the problem at hand.

The "explanatory" tradition derives from an image of the consumer as acting in response not to a single stimulus, but to a great network of them interacting over time. The research task, therefore, is to specify both the stimuli relevant to the act of choice and the process of their interaction which leads to the choice. The ultimate goal implicit in this conception of consumer behavior is a process paradigm which would comprehensively delineate the form, structure, and operation of the consumer decision-process.

Glock and Nicosia summa ize three such explanatory paradigms which have been proposed. The first is the "Lazarsfeld Paradigm", which postulates that any act of choice involves an interplay among three broad sets of variables -- predispositions, influences, and product attributes. "Predispositions" refer to all the characteristics an individual brings with him when he is exposed to a stimulus, when he executes an act of choice, and when he experiences the consequences of this choice. Predispositions, then, would include the individual's personality, and all the beliefs, values and norms relevant to product attributes. The effects of such social and personality variables on consumer action have been the subject of much research which indicates that these variables significantly influence a wide range of consumer acts. "Influences" are the external stimuli -- both personal (for example, a salesman) and impersonal (such as mass media)-- which become internalized by the individual, while "product attributes" refer to the characteristics and properties of the product. This paradigm thus postulates that the product attributes and influences (external variables) interact with the consumer's predispositions (internal variables) thereby determining consumer action.

A second approach is the "Katona Paradigm". Like Lazarsfeld, Katona postulates three broad sets of variables

which bear on consumer behavior -- enabling conditions, precipitating circumstances, and attitudes. "Enabling conditions" are exemplified by income, assets, ability to borrow, etc. -- which set limits on the consumer's purchasing capability. "Precipitating circumstances" are also external variables, and either produce a problem resolvable by means of a purchase, or trigger the resolution of an existing problem or need -- such as learning about a new product. "Attitudes" are seen by Katona as intervening variables through which the first two sets of variables must filter before they can influence the act of choice. Katona sees attitudes as a subset of the person's attributes, while precipitating circumstances and enabling conditions are two subsets of the attributes of his environment. Thus, the Katona and Lazarsfeld paradigms share a social psychological viewpoint that behavior is the result of the interplay between an individual and his environment.

A third approach -- dealing with "clinical" paradigms -- draws its inspiration from clinical psychology and has become popularly known as "motivation research". The underlying assumption is that human behavior can be largely interpreted in psychological terms, but such paradigms differ in their specific attempt at interpreta-

tion. According to the clinicians, the key to understanding consumer action lies in the needs, drives, motives and cognitive structures of the individual. Thus, they differ from Katona and Lazarsfeld in their almost exclusive concentration on the study of the individual's attributes. In addition, they differ methodologically in their greater reliance on projective techniques, unstructured interviews, and other clinical procedures -- consequently collecting qualitative information in depth from small samples, rather than collecting standardized information from larger ones. Despite the implicit assertion that psychological factors are singularly important in consumer action, Glock and Nicosia point out that the clinical paradigms almost always include the environment as a basic determinant of motivation and cognition, and point to the formulations of Fromm, Sullivan, Kardiner and others, which explicitly emphasize social and cultural factors. At least, motivation researchers must have as a referent a particular product or set of products.

An example of research in medical care, which has been based in the "explanatory" tradition discussed above, is the series of research studies on choice of health care plans which was conducted in Detroit, Michigan, and more

recently in Cleveland, Ohio, by Metzner and Bashshur.[32] While the authors have reported on various aspects of this research, one particular variable has received attention from them in several of their publications. This variable is one of "vulnerability to risk", signifying a greater likelihood of incurring medical expense and less likelihood of meeting it for and by oneself and others. In Detroit, for instance, they found indications that demand (expressed verbal desire) for health insurance coverage appeared to be associated with at least three phenomena: physiological susceptibility, social responsibility for others, and lack of social support -- which might collectively yield a measure of "vulnerability to risk". Thus, the highest demand for benefits was among widowed, separated and divorced persons -- particularly those with children under eighteen years of age.[33] And in a later report, persons who were more "vulnerable" were more likely to recall having had a choice of health care plans at an earlier date, than those who were not as vulnerable -- suggesting that vulnerability may be a basic factor underlying the

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[32]For an extensive listing of their work in this area, consult the bibliography at the end of this paper, under the names of both authors.

[33]Rashid L. Bashshur and Charles A. Metzner, "Demand for Health Insurance Coverage in a Metropolitan Population," Public Health Reports, Vol. 83 (January, 1968), 84.

differential spread and recollection of information about a dual choice of health insurance plans.[34]

As with any other research finding, the potential generalizability of this concept (vulnerability) is of particular interest. Therefore, one might look for associations between "vulnerability to risk" and other variables. Implicit in the concept of vulnerability to risk are a number of assumptions about the psychological effects of vulnerability upon a person. Thus, the person who perceives himself as physiologically susceptible to illness, has responsibility for the welfare of dependent children, and who has to meet such responsibility without the assistance of a spouse, is expected to be particularly anxious regarding medical care and its cost. It is further assumed that such anxiety would be a motivating force which is likely to encourage the individual to take deliberate action to make his position less anxiety-provoking, or which is likely to "sensitize" him to any relevant material which might help decrease this anxiety. A carefully controlled and detailed analysis would probably uncover varying combinations of these two factors, operating in conjunction with others not yet identified.

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[34]Rashid L. Bashshur and Charles A. Metzner, "Vulnerability to Risk and Awareness of Dual Choice of Health Insurance Plan," Health Services Research, Summer 1970, 106-113.

At any rate, an individual who finds himself in the position of vulnerability described above, would be expected to be motivated to find a health care plan which best meets his medical care needs (and those of the individuals for whom he is responsible) -- if in fact he is free to choose from among alternative plans and not forced into a particular plan by majority vote or some other mechanism of group choice. Since the choice between alternative health care plans can best be made on the basis of information about features of the various plans, one would expect the vulnerable person, anxious over his position and motivated to deliberately seek such information and/or highly "sensitized" to such information even when it is encountered indirectly, to have more information about features of health care plans than persons who are less vulnerable to risk.

One way of illustrating these assumptions diagrammatically is to present them in terms of Kurt Lewin's field theory. Such a presentation is not meant to indicate a blanket endorsement of Lewin's approach. It is recognized that there are at least three grounds upon which his theory has been criticized, namely: 1) that it was not fully developed at the time of his death, resulting in a certain vagueness and lack of precision in relation to

some of the concepts; 2) that he borrowed concepts from several branches of mathematics (topology and vector analysis) and often used and defined them in ways which differed from their original meaning; and 3) that some of his concepts apparently had different meanings and definitions in different contexts, resulting in a lack of consistency of definition.[35] However, despite these deficiencies, it would appear that field theory offers a schematic way of illustrating the psychological processes being assumed in this discussion of the association between vulnerability to risk and level of information concerning features of health care plans, and to the extent that it helps clarify matters, it will have served its purpose.

Lewin's basic construct is the "life space", defined as "the person and the psychological environment as it exists for him".[36] Generally, the life space is represented by an oval-shaped diagram, such as Figure 1.

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[35]Morton Deutsch, "Field Theory in Social Psychology," Handbook of Social Psychology, Gardner Lindzey and Elliot Aronson (eds.), Reading, Massachusetts: Addison-Wesley Pub. Co., 1968, p. 423.

[36]Kurt Lewin, Field Theory in Social Science, New York: Harper and Brothers, 1951, p. xi.

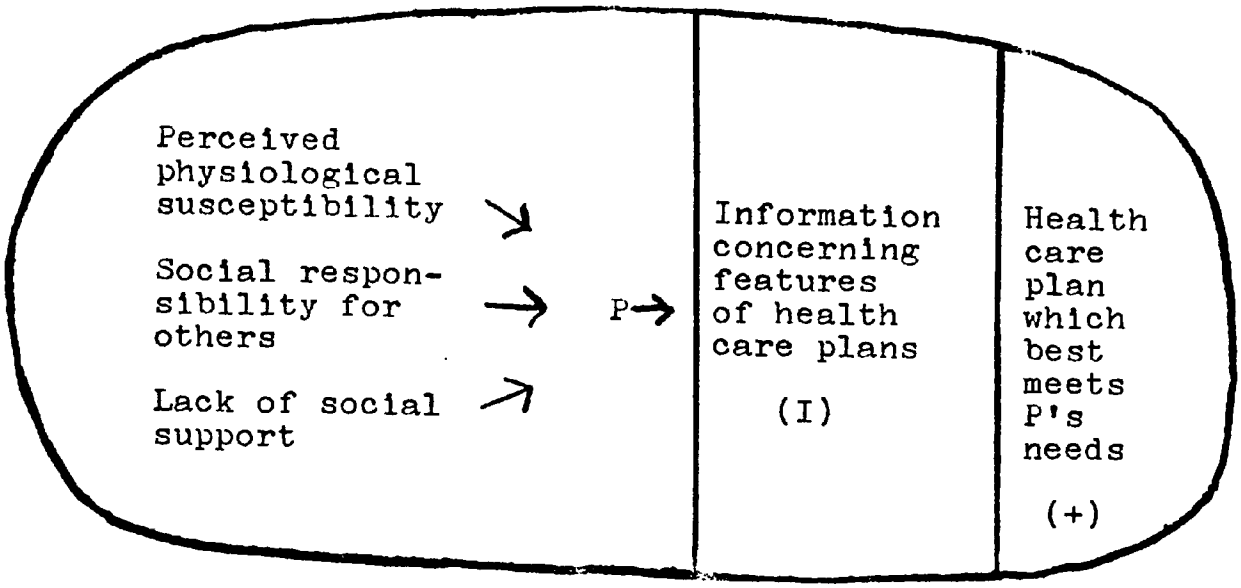


Figure 1. -- Life space of a "vulnerable" person, with undifferentiated "information region".

Located within the life space is the person (P), upon whom various forces are acting. In Figure 1, the forces acting upon P are the three components of vulnerability to risk which were previously mentioned -- perceived physiological susceptibility, social responsibility for others, and lack of social support. While these three "components" may be associated with one another in various ways, since there is no theoretical basis for proposing otherwise, it was decided to check the simplest approximation to the relationship -- namely, that the components are equal and additive. The arrows directed at P are called "vectors" in field theory and represent forces operating in a certain direction. Since the

length of the arrow (vector) indicates the strength of the force, and since we are assuming the three components to be equal, the three arrows are of equal length.

The result of these forces upon P is to create "tension" (a form of imbalance), whereby P becomes motivated to take some action that will restore a condition of equilibrium or homeostasis. In the case of the person in Figure 1, one way of relieving some, if not all, of the tension precipitated by perceiving oneself in such a position of "vulnerability", would be to find a health care plan which is capable of meeting one's needs (assuming one's health care plan is not chosen by group decision, but rather on the basis of individual choice). Thus, in Figure 1, the region representing "health care plan which best meets P's needs", has what Lewin calls a "positive valence" (+), indicating that it is an object which is capable of satisfying P's needs, and toward which he is attracted. And the arrow radiating from P, in the direction of that region, indicates that he is desirous of moving toward that goal. The region between P and his goal represents a barrier which must be penetrated in order to achieve the goal. Stated quite simply, in order for P to intelligently make a choice from among alternative health care plans, in order to find the one which best meets his needs, he must have information about the

features of the various plans. In a complex, real-life situation, there may be several paths which can be taken in order to achieve a given goal. Lewin postulates, however, that often there is a "preferred" or "most favored path". In Figure 1, it is assumed that the "most favored path" to choosing a health care plan which best meets one's needs, is that involving the acquisition of information concerning features of health care plans, upon which such a decision can be based.

Now, whether a vulnerable person in such a position deliberately goes out and seeks such information, or whether being "vulnerable" sensitizes him to such information so that he is more likely to recognize it when he comes upon it unexpectedly, or whether this sensitivity contributes to informal or incidental learning about health care plans -- cannot be stated with certainty. However, one would expect the over-all effect in this situation to be such that the vulnerable person (in this state of psychological tension) is more likely to have information concerning features of health care plans than the person who is less vulnerable.[37,38]

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[37]Kurt Lewin, A Dynamic Theory of Personality, New York: McGraw-Hill, 1935.

[38]Kurt Lewin, Principles of Topological Psychology, New York: McGraw-Hill, 1936.

According to Lewin, as learning occurs, a given region of the life space, which is at first homogeneous, becomes increasingly differentiated.[39] Thus, as P learns more and more about features of health care plans, one would expect the region representing "information concerning features of health care plans" to be more correctly represented as it is in Figure 2.

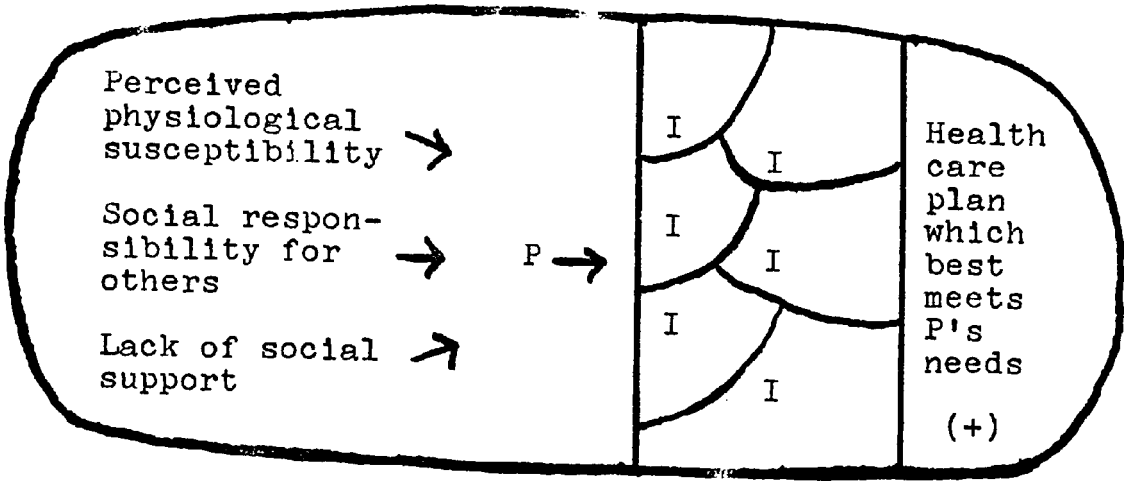


Figure 2. -- Life space of a "vulnerable" person, with differentiated "information region".

Implicit in this theory is the notion that as learning occurs, P begins to distinguish between various aspects and features of health care plans, and puts some type of structure around them, in a way which is meaningful to him. The importance of this notion for present

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[39] Ibid., p. 155.

purposes will be seen more clearly in Chapter II, where the operationalization of the variable "information concerning features of health care plans" is discussed. It will be seen, at that time, that the data were, in fact, examined in order to discover the extent to which respondents put a particular kind of structure (in the form of clusters) around a large number of information items concerning features of health care plans.

The above discussion places an emphasis upon motivation as an important factor in an individual's obtaining information concerning features of health care plans, in an attempt to find a plan which best meets his needs. Such an approach to research problems in medical care has become increasingly popular in recent years, as Rosenstock has pointed out in a general discussion on the subject,[40] and Hochbaum's work provides an interesting example of its application to the problem of participation in medical screening programs, in particular.[41]

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[40] Irwin Rosenstock, "What Research in Motivation Suggests for Public Health," American Journal of Public Health, Vol. 50 (March, 1960), 295-302.

[41] Godfrey M. Hochbaum, Public Participation in Medical Screening Programs, U.S. Department of Health, Education and Welfare, Public Health Service, Pub. No. 572, Washington, D.C.: GPO, 1958.

C. Purposes of the Research and Hypotheses

As mentioned in the Introduction, the general intention of this research was to examine the differential spread of information concerning features of health care plans, as well as some of the variables with which this spread of information might be associated. Specifically, the first objective (A) of this research was: To determine the extent to which persons having different levels of vulnerability to risk also have different levels of information concerning features of health care plans. In view of the above discussion regarding the concept "vulnerability to risk", the corresponding hypothesis (A) may be stated as follows: The greater the vulnerability to risk, the greater the level of information concerning features of health care plans.

An immediate problem which comes to mind involves the operationalization of the concept "vulnerability to risk", since it has been indicated that previous work has pointed to the likely presence of at least three "components" of vulnerability. These three "components" of vulnerability may be viewed as follows:

a = perceived physiological susceptibility
(concern over health)

b = social responsibility for others
(has dependent children)

c = lack of social support
(unmarried at present)

a' = absence of perceived physiological susceptibility
(not concerned over health)

b' = lack of social responsibility for others
(no dependent children)

c' = has social support
(married at present)

It should be evident that the three components of vulnerability to risk have been defined here in rather gross fashion, which does not control adequately for differences in quality and quantity. For example, "perceived physiological susceptibility" is defined as the person's having indicated that he is concerned and worried about his health, with no measure of the extent or degree of his concern. "Social responsibility for others" is defined as having dependent children, with no control over the fact that persons with dependent children differ in the extent to which they feel responsible for their dependent children, and the extent to which they actually assume such responsibility. "Lack of social support" is defined as not being married at present, and thus fails to account for

the differences in quality from one marriage to another, and the fact that a given individual may receive very little "social support" from his spouse, while a given unmarried person may have a relationship with another human being which provides a great deal of "social support". A finer operationalization of this variable is difficult here because of limitations in the available data. However, future work concerned with the concept of vulnerability should attempt to obtain a measure which makes more reliable distinctions among persons who are to be located in the various levels of vulnerability to risk.

As indicated earlier, while these three "components" may be associated with one another in various ways, since there was no theoretical basis for proposing otherwise, it was decided to check the simplest approximation to the relationship -- namely, that the components are equal and additive. Using this approach, one arrives at the four hypothesized "levels" of vulnerability to risk presented in Table 1.

TABLE 1

Four Hypothesized Levels of Vulnerability to Risk

Level 3: abc = highest vulnerability (all 3 components are present)

Level 2: ab'c or abc' or a'bc (2 components are present)

Level 1: ab'c' or a'b'c or a'bc' (1 component is present)

Level 0: a'b'c' = lowest vulnerability (all 3 components are missing)

Thus, what Hypothesis A proposed was that persons at Level 3 in Table 1 should have more information concerning features of health care plans than persons at Levels 2, 1 and 0; those at Level 2 should have more information than those at Levels 1 and 0; and those at Level 1 should have more information than those at Level 0. Implicit in this was the assumption that the three possible combinations (subgroups) in Level 2 were equal to one another, and the three possible combinations (subgroups) in Level 1 were also equal to one another. However, when a preliminary examination of the data was made in order to verify this assumption, it was evident that the subgroups within these levels were not, in fact, operating in an homogeneous fashion. In view of this fact, it was felt that a further examination of this variable was necessary before one could proceed with the assumption that the three "compo-

nents" were equal and additive. Chi-square tests for independence were conducted among the three "components", and the results are reported in Table 2 for both subsamples which were used in the study. These subsamples are identified in the table as "BC-BS" and "CHF", and a description of them will follow later in this chapter.

TABLE 2

Chi-Square Values Among "Components" of Vulnerability

Situation	BC-BS Cases	CHF Cases
Relationship between social responsibility and concern over health, when social support is absent	$X^2_{(1)} = 3.36$	$X^2_{(1)} = .23$
	Accept H_o at 95%	Accept H_o at 95%
Relationship between social responsibility and concern over health, when social support is present	.003	1.12
	Accept H_o at 95%	Accept H_o at 95%
Relationship between social responsibility and social support, when concern over health is absent	43.77	34.87
	Reject H_o at 99.5%	Reject H_o at 99.5%

TABLE 2 -- Continued

Situation	BC-BS Cases	CHF Cases
Relationship between social responsibility and social support, when concern over health is present	5.47 Reject H_o at 97.5%	11.04 Reject H_o at 99.5%
Relationship between concern over health and social support, when social responsibility is absent	1.64 Accept H_o at 95%	.027 Accept H_o at 95%
Relationship between concern over health and social support, when social responsibility is present	1.22 Accept H_o at 95%	.016 Accept H_o at 95%

As can be seen in Table 2, "concern over health" and "social responsibility" appear to be independent, as well as "concern over health" and "social support". However, "social responsibility" and "social support" appear to be related in some fashion. In an attempt to look more close-

ly at this relationship, several other statistics were employed on the data. Goodman-Kruskal's measure of partial association (lambda), which ranges between zero and one, was employed, as well as their coefficient of ordinal association (gamma), which ranges between minus one and plus one.[42,43] The only relationships among the three components which were detected by these statistics are presented in Tables 3 and 4, and indicate that there was a slight positive relationship between two of the "components" (social responsibility and social support) among members of both the BC-BS and CHF subsamples. In view of the fact that the three "components" were not equal and additive, and some lack of independence (which was not totally clear) existed between two of them, it was decided that the most prudent approach would be to assume the three "components" were independent, and test Hypothesis A separately for each "component". This was done with the assumption that further combinations of the "components" could be made later, if the testing of hypotheses on each of them separately suggested alternative ways of

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[42]Leo A. Goodman and William H. Kruskal, "Measures of Association for Cross Classifications," Journal of the American Statistical Association, Vol. 49 (December, 1954), 733-764.

[43]Leo A. Goodman and William H. Kruskal, "Measures of Association for Cross Classifications, III: Approximate Sampling Theory," Journal of the American Statistical Association, Vol. 58 (June, 1963), 310-364.

TABLE 3

Goodman-Kruskal Measures of Partial Association (Lambda) Detected Among the "Components" of Vulnerability to Risk

BC-BS Subsample

Situation	Lambda	95% C.I.	99% C.I.
Predicting social responsibility from social support, given concern over health	.34090	.18512, .49668	.13616, .54564

CHF Subsample

Situation	Lambda	95% C.I.	99% C.I.
Predicting social responsibility from social support, given concern over health	.26126	.14667, .37584	.11066, .41185

TABLE 4

Goodman-Kruskal Coefficients of Ordinal Association (Gamma) Detected Among the "Components" of Vulnerability to Risk

BC-BS Subsample

Situation	Gamma	95% C.I.	99% C.I.
Association between social responsibility and social support	.35555	.26086, .45024	.23111, .48000

CHF Subsample

Situation	Gamma	95% C.I.	99% C.I.
Association between social responsibility and social support	.26126	.14667, .37584	.11066, .41185

examining the data. This approach also assumed that these three "components" would be viewed (at least for the time being) as three "types" or "kinds" of vulnerability, rather than as three equivalent measures of the same kind of "vulnerability". For reasons discussed earlier, it was assumed that concern over health, social responsibility and lack of social support would each lead to a kind of vulnerability, the recognition of which could serve as a motivating force in obtaining information concerning features of health care plans.

Thus, the hypotheses necessary to carry out Objective A now became:

Hypothesis A1: Persons who are concerned or worried that something might go wrong with their health will have more information concerning features of health care plans than those who are not so concerned.

Hypothesis A2: Persons who have social responsibility for others will have more information concerning features of health care plans than those who do not have social responsibility for others.

Hypothesis A3: Persons who lack social support will have more information concerning features of health care plans than those who have social support.

The approach taken here was a highly psychological one (with its emphasis on motivation), which reflected the researcher's interests and inclinations. However, it was not meant to imply that other factors might not be associated with level of information concerning features of health care plans (perhaps even to a greater extent than vulnerability). With this in mind, the available data were examined in order to locate any variables for which there might be reason to expect an association with level of information concerning features of health care plans. Ten such variables were located, and the second objective (B) became: To determine the extent to which differential levels of information concerning features of health care plans are associated with certain variables (other than those constituting "vulnerability"). In addition, if these variables differed in their association with level of information, it was desired to be able to make comparisons among them as to which was more strongly associated with information. The ten independent variables available in the data for this analysis were: level of education, perceived income adequacy, union affiliation, automobile ownership, ethnicity, color, and contact with

four types of communication media. The choice of these variables for inclusion in this study reflects, in part, the fact that a considerable body of literature has been developed which indicates that socio-economic, social, and cultural variations play an important part in preventive health and illness behavior.[44]

Using the above-mentioned variables, the subobjectives to accomplish the second objective (B) may be stated as follows -- To determine the extent to which level of information concerning features of health care plans is associated with:

Level of education (Subobjective B1)
Perceived income adequacy (Subobjective B2)
Union affiliation (Subobjective B3)
Automobile ownership (Subobjective B4)
Ethnicity (Subobjective B5)
Color (Subobjective B6)
Reading newspapers (Subobjective B7)
Watching television (Subobjective B8)
Listening to the radio (Subobjective B9)
Reading mail advertisements (Subobjective B10)

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[44]David Mechanic, "Sociology and Public Health: Perspectives for Application," American Journal of Public Health, Vol. 62, No. 2 (February, 1972), 141-151.

The second hypothesis (B) to be tested, in conjunction with the second objective (B) and its subobjectives, then became: Differential levels of information concerning features of health care plans will be associated with certain variables. These variables, referred to in the subobjectives listed above, and their corresponding subhypotheses, are discussed below. These variables were examined separately because the sample was not large enough to control for all possible correlations and still be able to do a meaningful test. However, it was recognized that they were not likely to be independent of one another, and wherever such a lack of independence is suspected, it is mentioned. However, determining the extent of such interrelations among the variables was beyond the intentions of this research, and there was no easy way to accomplish it with these data because of limitations imposed by sample size.

Educational level was considered potentially relevant because the more highly educated person may, in the course of his formal education, or later in trying to understand the world around him, be more likely to come upon such information or be exposed to it. In the course of acquiring an education the individual is subjected to reading requirements, and out of habit, may continue it later -- with the result of being exposed to more and

better sources of information. This suggests that level of education may be associated with contact with communication media -- in addition to its likely association with income adequacy. Recognizing the lack of independence likely here, but in view of the limitations imposed by sample size, subhypothesis B1 was stated as follows: Persons with a higher level of education will have more information concerning features of health care plans than those with less education.

Income adequacy, as perceived by the respondent, was assumed to be a motivating force -- particularly for those who see their income as less than adequate -- for seeking information on health care plans, in an attempt to obtain as much "protection" against medical costs as is possible, since they are likely to be perceived as difficult to meet without insurance coverage. Because of the suspected association between income adequacy and level of education, automobile ownership, and contact with communication media, one is again dealing with variables not likely to be independent. However, in view of the limitations posed by sample size, subhypothesis B2 was stated as follows: Persons who perceive their income as less adequate for meeting their needs will have more information concerning features of health care plans, than those who perceive their income as more adequate.

The relationship implied in the above statement is not likely to be linear, and for that reason, perceived income adequacy was not included as a component of vulnerability to risk, even though perception of one's income as "less than adequate" may be as much of a motivating force to encourage the individual to seek adequate health care protection as any of the three "components" previously discussed. Perceived income adequacy was not included as a component of vulnerability to risk since previous work by Metzner and Bashshur has indicated that when financial security is at a very low level, a preoccupation with matters of immediate survival may take precedence over health insurance. Among such persons, their chances of economic security may be so small as to contribute to a "fatalistic" attitude, a "giving up", so to speak, of any attempt to protect themselves against an economic threat that is perceived as "inevitable".[45]

The same problem, of course, may exist in relation to any or all of the above "components" of vulnerability to risk. That is, an individual may be so concerned over his health, his responsibility for dependent children, and hav-

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[45]Rashid L. Bashshur and Charles A. Metzner, "Vulnerability to Risk and Awareness of Dual Choice of Health Care Plan," Health Services Research, Summer 1970, p. 112.

ing to meet this responsibility without the support of a spouse, that he may be "overwhelmed" to the point of "giving up", and fail to see any relief for his problem through the mechanism of health insurance. Since evidence of this happening is not currently available, as it is for the income adequacy variable, vulnerability to risk -- as defined above -- still bears examination. As mentioned before, however, future work on "vulnerability" should aim at a more refined analysis and definition of its components, and with such refinement, one may be able to include some form of perceived income adequa y as a component. At any rate, subhypothesis B2 (above) affords the opportunity to examine the association between perceived income adequacy and level of information concerning features of health care plans, and as will be seen under Hypothesis C (below), the relationship between vulnerability and information level, controlling for perceived income adequacy, was also examined.

Since many health insurance plans have been arranged and presented to employees by labor unions, it was assumed that union affiliation might increase one's chances of exposure to information about such plans. Thus, subhypothesis B3 was stated as follows: Persons who are affiliated with a labor union will have more information concerning

features of health care plans than those who are not so affiliated. This was, however, a rather gross measure, as the majority of the respondents (81%) were affiliated with unions, and represented a very heterogeneous grouping of blue collar workers, professionals, etc.

The focus on automobile ownership assumed that an individual who has the means to travel around freely was more likely to acquire various pieces of information concerning features of health care plans and their facilities, than those whose mobility was more limited. However, auto ownership was likely to be associated with income adequacy and its correlates, so once again one was dealing with variables not expected to be independent. However, in view of limitations imposed by sample size, subhypothesis B4 was stated as follows: Persons who have an automobile will have more information concerning features of health care plans, than those who do not.

Ethnicity was considered a potentially relevant variable because the ethnic group is likely to be a communication mechanism for both health values and information. King has pointed out that ethnic taboos concerning various aspects of illness and its treatment may prevent members

of the group from obtaining certain kinds of information.[46] And Graham points out that since ethnic background implies homogeneity within the group as to dietary, hygiene, educational, religious and other customs -- as well as values, attitudes and sources of information, ethnic differences may be expected to be relevant variables where matters of health are concerned, if ethnic groups in fact differ in these areas.[47]

The data upon which these hypotheses were tested contained information on ethnicity which was classified in two ways. First, there was a breakdown of those respondents who were born in the United States and those who were foreign-born. In view of the common experiences assumed for persons born within the United States -- including general facility with the English language and familiarity with "American" customs, values and institutions -- a test of this variable, stated as subhypothesis B5 was: Persons who were born in the United States will have more information concerning features of health care plans, than those who were born outside the United States.

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[46] Stanley H. King, "Social Psychological Factors in Illness," in Handbook of Medical Sociology, Howard E. Freeman, Sol Levine, and Leo G. Reeder (eds.), Englewood Cliffs, New Jersey: Prentice-Hall, 1963, p. 110.

[47] Saxon Graham, "Social Factors in Relation to Chronic Illness," Ibid., p. 78.

The data from the Cleveland study also classified the responses of those who were foreign-born into a number of broad categories -- Northwest Europe, Central Europe, Eastern Europe, Southern Europe, Near East and Middle East, Asia, Pacific Area, the Americas, and Africa. A frequency count, using the original data, indicated that 12% of the CHF members and 8% of the Blue Cross-Blue Shield members were foreign-born.[48] When one looked at the frequency count for the various geographical areas listed above, one found that there were no respondents in the study who were born in some of the regions, and in others, the percentage was so low as to make statistical testing difficult and unreliable.[49] In view of these problems with the sample, it did not appear meaningful or reliable to attempt a further breakdown of the ethnicity variable for hypothesis testing.

Color is a variable which is commonly examined in the course of social research, and research in the field of medical care is no exception. Health trends of the non-

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[48]Charles A. Metzner, Rashid L. Bashshur, Stanley E. Flory, Gary W. Shannon, Nancy L. Batzer and Judith A. Miner, Public Acceptance of Prepaid Group Practice: A Study of Choice of Health Care Plans, Ann Arbor, Michigan: Bureau of Public Health Economics, Department of Medical Care Organization, School of Public Health, University of Michigan, June 1969, p. 137.

[49]Ibid., p. 139.

White population -- in relation to infant and maternal mortality, overall death rates, adequacy of care, utilization of services, etc., have been a frequent object of investigation. On the whole, the health problems of the Black minority in the United States are considerably more serious than those of Whites. The Black is America's principal marginal worker, and as such is likely to suffer from the many disabilities that this entails: poorer housing, less adequate diet, less sanitary surroundings, more employment of married women, and greater economic insecurity.[50,51] In addition, the "marginal" social role Blacks have traditionally played in American society -- outside the mainstream of many activities engaged in by the White majority, may be expected to be related to factors previously mentioned as likely to be associated with level of information concerning features of health care plans.

A specific example of the exclusion of Blacks from having equal access to health care facilities, in Cleveland, was reported by Bashshur, Shannon and Metzner, who found

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[50]Committee on Medical Care Teaching (eds.), Readings in Medical Care, Chapel Hill: University of North Carolina Press, 1958, p. 81.

[51]National Center for Health Statistics, Differentials in Health Characteristics by Color: U.S. July 1965-June 1967, Public Health Service Pub. No. 1000, Series 10, No. 56, October 1969, Washington, D.C.: GPO.

evidence that while hospitals rarely discriminate overtly on the basis of color, some hospitals in Black areas admit very few Blacks in proportion to the actual population mix, causing the average distance traveled by Blacks to the hospital to be greater, on the average, than if they had equal access to all hospitals.[52] Another source of information on hospital discrimination is the review which was compiled by Nash and Gregg.[53] At any rate, in line with such phenomena, subhypothesis B6 was stated as follows: Persons who are White will have more information concerning features of health care plans than those who are Black.

Since much information -- regarding issues related to health as well as other phenomena -- is disseminated via the communication media (newspapers, television, radio, mail advertisements), contact with such media may affect the level of information one has concerning features of health care plans. Again, contact with communication media was suspected to be associated with level of education and its correlates. However, in view of limitations

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[52]Rashid L. Bashshur, Gary W. Shannon, and Charles A. Metzner, "Some Ecological Differentials in the Use of Medical Services," Health Services Research, Spring 1971, p. 67.

[53]Robert M. Nash and Ronald D. Gregg, "Discrimination and Its Effects on Hospital Effectiveness," Medical Care Review, Vol. 25 (November, 1968), 853-888.

imposed by sample size, the following were proposed:

Subhypothesis B7: Persons who read newspapers regularly will have more information concerning features of health care plans, than those who do not.

Subhypothesis B8: Persons who watch television regularly will have more information concerning features of health care plans, than those who do not.

Subhypothesis B9: Persons who listen to the radio regularly will have more information concerning features of health care plans, than those who do not.

Subhypothesis B10: Persons who read mail advertisements regularly will have more information concerning features of health care plans, than those who do not.

As can be seen from the above discussion, Hypothesis A was concerned with the relationship between the "components" of vulnerability to risk and level of information concerning features of health care plans, while Hypothesis B was concerned with the relationship between certain other variables and level of information concerning features of health care plans. A third objective (C) of the research

was to "combine" the concerns of Hypotheses A and B by examining the relationship between the "components" of vulnerability to risk and level of information concerning features of health care plans, controlling for each of the ten independent variables discussed under Hypothesis B. It was hoped that such an objective might shed some preliminary light on the issue of interaction among the vulnerability variable, information, and each of the other ten independent variables. Thus, the third objective (C) was: To determine the extent to which differential levels of information concerning features of health care plans are associated with vulnerability to risk, when certain other independent variables are controlled for. Since it had previously been decided to view the three "components" of vulnerability independently for the time being, Objective C was more properly stated (for each of the vulnerability "components") as follows:

Objective C1: To determine the extent to which differential levels of information concerning features of health care plans are associated with concern over health, when one controls for:

Level of education (Subobjective C1a)
Perceived income adequacy (Subobjective C1b)
Union affiliation (Subobjective C1c)

Automobile ownership (Subobjective C1d)

Ethnicity (Subobjective C1e)

Color (Subobjective C1f)

Newspaper reading (Subobjective C1g)

Television viewing (Subobjective C1h)

Radio listening (Subobjective C1i)

Reading mail advertisements (Subobjective C1j)

Objective C2: To determine the extent to which differential levels of information concerning features of health care plans are associated with social responsibility, when one controls for:

Level of education (Subobjective C2a)

Perceived income adequacy (Subobjective C2b)

Union affiliation (Subobjective C2c)

Automobile ownership (Subobjective C2d)

Ethnicity (Subobjective C2e)

Color (Subobjective C2f)

Newspaper reading (Subobjective C2g)

Television viewing (Subobjective C2h)

Radio listening (Subobjective C2i)

Reading mail advertisements (Subobjective C2j)

Objective C3: To determine the extent to which differential levels of information concerning features of health care plans are associated with lack of social support, when one controls for:

Level of education (Subobjective C3a)
Perceived income adequacy (Subobjective C3b)
Union affiliation (Subobjective C3c)
Automobile ownership (Subobjective C3d)
Ethnicity (Subobjective C3e)
Color (Subobjective C3f)
Newspaper reading (Subobjective C3g)
Television viewing (Subobjective C3h)
Radio listening (Subobjective C3i)
Reading mail advertisements (Subobjective C3j)

The corresponding Hypothesis (C) to carry out Objective C was stated as follows: Differential levels of information concerning features of health care plans will be associated with vulnerability to risk, when one controls for certain other variables. Since the "components" of vulnerability to risk were to be examined separately due to reasons previously mentioned, Hypothesis C was more properly stated (for each of the vulnerability "components") as follows:

Hypothesis C1: Differential levels of information concerning features of health care plans will be associated with concern over health, when one controls for:

Level of education (Subhypothesis C1a)
Perceived income adequacy (Subhypothesis C1b)
Union affiliation (Subhypothesis C1c)
Automobile ownership (Subhypothesis C1d)
Ethnicity (Subhypothesis C1e)
Color (Subhypothesis C1f)
Newspaper reading (Subhypothesis C1g)
Television viewing (Subhypothesis C1h)
Radio listening (Subhypothesis C1i)
Reading mail advertisements (Subhypothesis C1j)

Hypothesis C2: Differential levels of information concerning features of health care plans will be associated with social responsibility, when one controls for:

Level of education (Subhypothesis C2a)
Perceived income adequacy (Subhypothesis C2b)
Union affiliation (Subhypothesis C2c)
Automobile ownership (Subhypothesis C2d)
Ethnicity (Subhypothesis C2e)
Color (Subhypothesis C2f)
Newspaper reading (Subhypothesis C2g)

Television viewing (Subhypothesis C2h)

Radio listening (Subhypothesis C2i)

Reading mail advertisements (Subhypothesis C2j)

Hypothesis C3: Differential levels of information concerning features of health care plans will be associated with lack of social support, when one controls for:

Level of education (Subhypothesis C3a)

Perceived income adequacy (Subhypothesis C3b)

Union affiliation (Subhypothesis C3c)

Automobile ownership (Subhypothesis C3d)

Ethnicity (Subhypothesis C3e)

Color (Subhypothesis C3f)

Newspaper reading (Subhypothesis C3g)

Television viewing (Subhypothesis C3h)

Radio listening (Subhypothesis C3i)

Reading mail advertisements (Subhypothesis C3j)

D. Population

Between 1967 and 1969, Charles A. Metzner, Rashid L. Bashshur, and others, conducted a study of choice of health

care plans in the Cleveland, Ohio metropolitan area.[54] Individuals in the study subscribed to either a prepaid group practice plan (Community Health Foundation), Blue Cross-Blue Shield, or commercial health insurance. A CHF subsample was drawn from files in the CHF offices, and a non-CHF subsample was selected from files in various offices, such as union offices and other administrative offices -- except for some groups which provided complete lists of their membership for use in the researchers' own offices. The study was restricted to contracting groups having 500 or more members, and both the CHF and non-CHF subsamples were selected in the following manner: An IBM card file listing the major subscriber to the plan, his home address, and some vital statistics, was prepared for selection by first ordering the cards by contracting group, thus providing a simple form of stratification. Because of the possibility of a cyclic effect in these lists which could result in a biased sample if only one random number were used, ten random numbers were used instead, with an interval of selection ten times larger than that of a single random

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[54] Charles A. Metzner, Rashid L. Bashshur, Stanley E. Flory, Gary W. Shannon, Nancy L. Batzer and Judith A. Miner, Public Acceptance of Prepaid Group Practice: A Study of Choice of Health Care Plans, Ann Arbor, Michigan: Bureau of Public Health Economics, Department of Medical Care Organization, School of Public Health, University of Michigan, June 1969.

start. This procedure was believed by the researchers to closely approach unrestricted random selection.

The resulting subsample of persons who belonged only to CHF totaled 304. The subsample of persons belonging only to BC-BS totaled 277. These two subsamples, and questions from that study, were used in the present research.[55]

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[55]The original study contained data collected on a total of 72 more respondents -- 57 of whom were persons belonging to more than one plan, and the remaining 15 held only commercial insurance. The former group of 57 was not used in this study because of confounding due to dual membership, and the latter group of 15 was too small to analyze in a meaningful way.

CHAPTER II. OPERATIONALIZATION OF THE DEPENDENT VARIABLE -- LEVEL OF INFORMATION CONCERNING FEATURES OF HEALTH CARE PLANS

A. Rationale for the Cluster Analysis

The questionnaire used by Metzner and Bashshur in their Cleveland study on choice of health care plans contained a number of questions which attempted to ascertain if the respondent thought that a given feature of health care plans (e.g. the provision of shots and regular check-ups) were provided, in turn, by Blue Cross-Blue Shield, the Community Health Foundation (CHF) -- a prepaid group practice plan in the Cleveland area, and commercial plans (See Appendix A for a list of these questions). The respondents were questioned regarding a total of fourteen different features of health care plans, in relation to whether each of the above three types of plans made provision for them. These questions and the responses to them, were the ultimate source of the dependent variable -- "level of information concerning features of health care plans".

In studying "information", one is generally concerned with its accuracy. After examining the questions and answers relating to these fourteen features of health care plans, it was decided that, due to: 1) the ambiguity of some of the questions, and 2) the difficulty in deciding

whether a given answer were correct or not, it would not be feasible to use accuracy as the criterion for determining the presence or absence of information on the part of a given respondent.

In regard to the first point made above, for example, respondents were asked, "In Blue Cross-Blue Shield do physicians and specialists work as a group?" (Question 14c). The same question was asked regarding CHF and commercial plans, and while some attempt was made to define "group" for the respondents, it was not entirely clear. Therefore, it is not precisely known to what definition of "group" individuals were relating in answering this question. If a rather specific and clear definition of "group practice" had been read to them, and their answers were based on that definition, then some of the ambiguity of the question would have been eliminated.

In regard to the second point, in order to determine the accuracy of responses to the question, "Is there a CHF hospital near you?" (Question 31a) -- or one associated with BC-BS (Question 31b), or commercial plans (Question 31c) -- one would have to compare each respondent's answer with a detailed map which indicated the location of such facilities and each respondent's residence. Even with that approach, the ambiguity of "near you" remains.

Does this refer to a one-mile radius, within ten minutes, or what?

Because of such problems with the ambiguity of some of the questions, and the difficulty in deciding what was a correct answer in some cases, the focus was shifted to whether or not respondents thought they had information on these fourteen features of health care plans, rather than whether their information was correct or not. It was assumed that regardless of the information's accuracy, it was a basis of individual action and decision-making, and consequently, all responses other than "don't know" were taken to signify "having information" on a given item (regardless of its accuracy). A "don't know" response was taken to indicate "not having information" on a given item. Thus, the original data were recoded (See Appendix B), and a work deck produced, indicating whether each respondent did or did not think he had information on each of the fourteen features, for each of the three types of health care plans.

It was recognized that this approach has its shortcomings also, since people who tend to respond with "don't know" may be doing so because they don't care to answer, or on the other hand, if they have responded with "don't

know" to the first few questions, they may become psychologically "set" to continue to respond "don't know" to the whole series. These are frequently encountered problems in survey research, and attempts to overcome them often depend upon the interviewer's skill in motivating the respondent, and probing for more than an apathetic or ambiguous response.

From the above discussion, it is evident that for each respondent, one was dealing with forty-two variables (fourteen items for each of three types of health care plans). In order to operationalize the dependent variable, "level of information concerning features of health care plans", thought was first given to assigning "information scores" to respondents on the basis of the proportion of the 42 items on which each respondent had information. However, this approach was discarded because it assumes equivalence among the 42 items -- an assumption for which there was no basis in fact, and simple sums were likely to be meaningless because of the suspected multi-dimensionality of the problem.

Another approach briefly considered, involved looking at each of the 42 items, and calculating the proportion of respondents who had information on that particular item.

Again, this approach was limited by the fact that simple sums were likely to be meaningless because of the suspected multi-dimensionality of the problem, and generalizations from the data were likely to be severely limited if they were based upon 42 separate calculations, performed on 42 different items -- an approach likely to discount interaction effects.

Assuming that "information" is likely not to be a single entity, thought was next given to separating out the items on the basis of the different kinds of information they "appeared" to be eliciting. By visual inspection, some items appeared to be eliciting information regarding financial aspects of the plans, others appeared to deal with the organization of services, and others with the accessibility of services, etc. However, the idea of dividing the items in this manner was discarded, as it was felt that there was no reliable basis for doing so at the present time.

The problem was finally reduced to one of determining the extent to which, for any given plan or group of respondents, the fourteen different items formed a coherent set, i.e., if having information on one item also meant having information on the other thirteen -- for that particular plan. Thus, operating on the assumption that there

might be several sets, or kinds, of information variables, it was decided to use a technique that was capable of partitioning the 42 variables into homogeneous sets -- if such sets, in fact, existed. It was felt that with homogeneous sets, one would be more likely to find relationships to the variables against which the "information variable" was later to be run. Also, if the items could be sorted into clusters containing high covariance within clusters, and low covariance between clusters, then these clusters would lend themselves more conveniently to subsequent statistical analysis. Conversely, if the items would not cluster, i.e. if the 42 proved to be heterogeneous, there would be no reason to expect the respondents to behave similarly, and further analysis would be rather difficult.

At this point, three cluster analysis procedures were tried, and those results are reported elsewhere.[56] In making the final decision on the approriate coefficient to use as the basis for the cluster analysis, it was desired to employ a coefficient which accounted for inclusion relationships as a part of similarity. It was felt that if one could approximate the inclusion relationship devel-

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[56]Nicholas D. Richie, "A Problem in Finding Empirical Clusters," unpublished class project, MCO 810, Department of Medical Care Organization, School of Public Health, University of Michigan, Ann Arbor, Spring-Summer 1970.

oped by Guttman in developing an ordinal scale[57] -- by considering inclusion as a part of similarity, one would be approximating the "highest" relationship one can achieve with such data. While the third cluster analysis (referred to above) employed such a coefficient, it was ultimately foresaken and a fourth cluster analysis (using Yule's Coefficient of Association -- "Q") was employed instead.[58] This decision was based on the fact that "Q" not only accounts for inclusion relationships, but it is also the coefficient from which Goodman-Kruskal's Gamma is derived. Since it was planned to use gamma in testing the hypotheses, the use of Q as the basis for the cluster analysis therefore lent an element of consistency to the statistical analysis.

The cluster analysis technique eventually used, and reported here, may be briefly described as follows.[59] It will be recalled that there were 14 information items referring to each of three plans -- making a total of 42

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[57]Louis Guttman, "The Basis for Scalogram Analysis," in Measurement and Prediction, Vol. IV., S.A. Stouffer, et. al., New York: John Wiley Science Editions, 1966, 60-90.

[58]G. Udny Yule and M.G. Kendall, An Introduction to the Theory of Statistics, New York: Hafner Publishing Company, 1968, 30.

[59]This cluster analysis technique was prepared for present purposes by Mr. James Landwehr, Department of Statistics, University of Michigan at Ann Arbor.

items, each measured on 1 or 0 ("have information" or "don't have information") for n people. If one calls the 42 variables on the vertical axis X_i, and those on the horizontal axis X_j, then one has a 2x2 table for each pair X_iX_j, with i = 1.....42, and j = 1.....42, as follows:

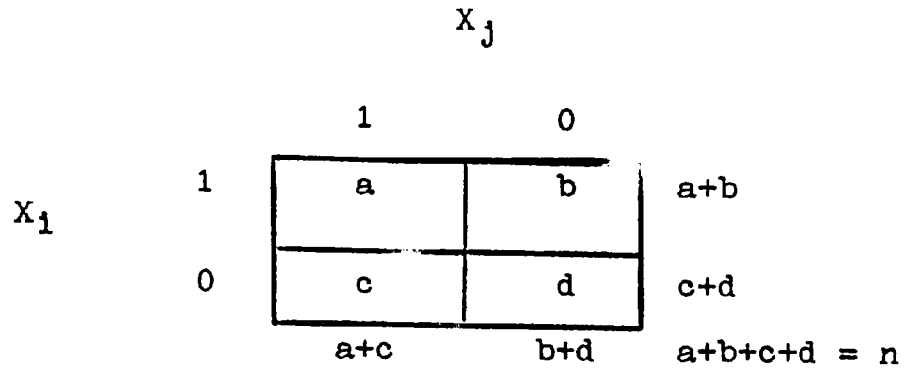


Figure 3. -- Four-cell table for each pair X_iX_j in the similarity matrix.

Yule's Q, which may be expressed as $\frac{ad-bc}{ad+bc}$, was calculated for each pair X_iX_j, and a 42x42 symmetric similarity matrix drawn up containing the Q coefficients. Next, this clustering method involved finding the largest "Q" value in the 42x42 matrix. For example, if it were Q_{ab}, in row a and column b, then variables a and b were merged into a cluster. This left 41 clusters -- the 40 of size 1 for all variables neither a nor b, and the one cluster consisting of the two variables a and b. Next, a 41x41 matrix was formed, representing the similarities between these clusters, and again the largest Q value was located,

merging the respective variables into a cluster (the procedure was repeated, in turn , to form a 40x40 matrix, 39x39 matrix, etc.).

Use of this cluster analysis technique required the elimination of any missing data cells which might be present. The amount and distribution of missing data is presented in Table 5. Since the percentage of missing data never exceeded 2% for any given item, it was felt that one could eliminate the missing data cells by substituting, at random, either "having information" or "not having information", on each item involved, for each respondent involved -- without introducing extensive bias into the study. Since the "interview number" had been assigned in a random fashion, it was thought that it could be used as the basis of such a substitution procedure, without introducing much bias into the study. Thus, if an individual's interview number were an odd one, any missing data on his questionnaire regarding these information items was replaced by a positive response ("have information"). Conversely, if his interview number were an even one, any missing data on his questionnaire regarding these information items was replaced by a negative response ("doesn't have information"). Much later in the study, it was learned that this procedure introduces bias as it assumes a probability of .5 for each information item, and

TABLE 5

Percent of Responses Not Ascertained Per Information Item, by Membership in Plan

Information Item	Percent of Responses Not Ascertained, by Plan Membership	
	CHF	BC-BS
Shots & check-ups provided under commercial plans?		1
MD's work together in BC-BS?	1	
See specialists freely in commercial plans?	1	
Regular MD provided in BC-BS?	1	
Regular MD provided in commercial plans?	2	1
BC-BS MD's receive a fee per visit?	1	
MD's receive a fee per visit in commercial plans?	1	1
Same MD treat all family members in CHF?	1	1
Same MD treat all family members in BC-BS?	1	2
Same MD treat all family members in commercial plans?	1	1
Home visits provided by CHF?	1	
Home visits provided by BC-BS?		1

TABLE 5 -- Continued

Information Item	Percent of Responses Not Ascertained, by Plan Membership	
	CHF	BC-BS
All medical services in one place in BC-BS?	1	
All medical services in one place in commercial plans?		1
One-stop medical service in BC-BS?		1
Can see MD soon in CHF?	1	
Can see MD soon in BC-BS?	1	
Can see MD soon in commercial plans?	1	
Do you have a say in running BC-BS?		2
Do you have a say in running CHF?		2
Do you have a say in running commercial plans?	1	2
MD nearby in BC-BS?		1
CHF hospital located near you?		1
Hospital associated with commercial plans located near you?	1	1

gives the same response to all the missing data cells in a given individual's questionnaire. A better procedure would have been to first determine the probability of a positive response ("p value") for each information item, and then, using a table of random numbers, eliminate the missing data cells on the basis, for instance, of whether the random numbers picked fell below or above the "p value" for the item. At the late date when this problem was ascertained, it was not felt that the amount of work which would be required to correct it was warranted in view of the small amount of bias that was likely to have been introduced into the study by the procedure used. As a potential source of bias in the study, however, it should be mentioned, nevertheless.

After the cluster analysis was completed, criteria had to be established on the basis of which decisions could be made regarding which clusters would be included in the hypothesis testing. The criteria chosen were as follows: 1) that the clusters be mutually exclusive, sharing no items in common, for members of the same health care plan; 2) that only clusters with a measure of reliability of .70 or better be included. The measure of reliability used herein may be defined as "the average of the coefficients among the items within the given cluster". With decreasing internal similarity, one would be less

confident about any statements one might make concerning the clusters, and .70 was considered to be the arbitrary lower limit with which the author could be comfortable; 3) an attempt was made to obtain clusters based on BC-BS responses which included items also appearing in clusters based on CHF responses. Identical clusters were not found among the BC-BS and CHF responses. However, an attempt was made (for purposes of comparison) to find clusters within each subsample which contained items found in clusters, of comparable size, based on responses from the other subsample; 4) an attempt was made to include clusters of varying sizes in the study. By far, the majority of the clusters found were two-item clusters, which did not help much in reducing the total number of 42 information items. After the criteria being presently discussed were applied to the clusters, the majority of these clusters were of the two-item variety. Thus, of the 5 BC-BS and 5 CHF clusters (meeting these criteria) which were included in the study for the testing of hypotheses, three were of the two-item variety. The fourth was of moderate size (the BC-BS cluster contained 4 items, and the CHF cluster contained 6 items), and the fifth was large (with the BC-BS cluster containing 11 items and the CHF cluster containing 15 items). In view of the subsample sizes and the nature of the cluster analysis itself, these 5 clusters represent what was considered to be the optimal formulation, in view

of the restrictions discussed above, including the desire that each subsample contain the same number of clusters, and clusters of varying, but comparable, size; 5) a fifth criterion, to be explained below when the procedure used for "scoring" the clusters is discussed, was that the items within each cluster had to form Guttman scales with a coefficient of reproducibility of .90 or greater. This naturally further restricted the choice of clusters for inclusion in the statistical analysis. The clusters ultimately chosen as meeting the above criteria are presented in Table 6 (for BC-BS respondents) and in Table 7 (for CHF respondents).

TABLE 6

Clusters Obtained Using Yule's Q on Responses of BC-BS Members

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
1	1.0000	20	Home visits provided in BC-BS?
		21	Home visits provided in commercial plans?
2	1.0000	32	Can see MD soon in BC-BS?
		33	Can see MD soon in commercial plans?

TABLE 6 -- Continued

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
3	1.0000	41	Hospital associated with BC-BS nearby?
		42	Hospital associated with commercial plans nearby?
4	.881	26	All medical services in one place (BC-BS)?
		27	All medical services in one place (commercial plans)?
		28	One-stop medical service in BC-BS?
		30	One-stop medical service in commercial plans?
5	.796	4	MD's work in a group in BC-BS?
		6	MD's work in a group in commercial plans?
		8	Can see specialists freely in BC-BS?
		9	Can see specialists freely in commercial plans?
		12	Regular MD provided in commercial plans?

TABLE 6 -- Continued

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
5 (Cont.)		13	Fee/visit in BC-BS?
		15	Fee/visit in commercial plans?
		23	Can get MD easily and fast in BC-BS?
		24	Can get MD easily and fast in commercial plans?
		38	MD nearby in BC-BS?
		39	MD nearby in commercial plans?

TABLE 7

Clusters Obtained Using Yule's Q on Responses of CHF Members

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
1	1.0000	5	MD's work in a group in CHF?
		6	MD's work in a group in commercial plans?

TABLE 7 -- Continued

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
2	1.0000	15	Fee/visit in commercial plans?
		22	Can get MD easily and fast in CHF?
3	.8530	2	Shots and check-ups provided under BC-BS?
		8	Can see specialists freely in BC-BS?
4	.8930	9	Can see specialists freely in commercial plans?
		10	Regular MD provided in CHF?
		16	Same MD treat whole family in CHF?
		25	All medical services in one place in CHF?
		27	All medical services in one place in commercial plans?
		40	CHF hospital located near you?

TABLE 7 -- Continued

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
5	.7000	11	Regular MD provided in BC-BS?
		12	Regular MD provided in commercial plans?
		13	Fee/visit in BC-BS?
		17	Same MD treat whole family in BC-BS?
		23	Can get MD easily and fast in BC-BS?
		24	Can get MD easily and fast in commercial plans?
		26	All medical services in one place in BC-BS?
		28	One-stop medical service provided by BC-BS?
		29	One-stop medical service provided in CHF?
		31	Can see MD soon in CHF?
		32	Can see MD soon in BC-BS?
		33	Can see MD soon in commercial plans?
		38	MD nearby in BC-BS?

TABLE 7 -- Continued

Cluster Number	Average Internal Similarity (Reliability)	Variables	Items
5 (Cont.)		39	MD nearby in commercial plans?
		41	Hospital associated with BC-BS nearby?

The clustering technique was employed primarily for the purpose of operationalizing the dependent variable, and therefore the reasons why the items clustered as they did is, for present purposes, a peripheral (although interesting) issue. However, an interesting difference between the BC-BS and CHF clusters should be pointed out here. The five BC-BS clusters contain items referring only to BC-BS and commercial plans, indicating no discernable information concerning the prepaid group practice plan (CHF), as measured herein. The CHF members, however, appear to have information regarding BC-BS and commercial health care plans, as well as their own. This discrepancy in the "scope" of information, as measured herein, reinforces the necessity for a separate analysis of responses of the members of the different plans.

B. Procedure for Scoring the Clusters

After obtaining these "information clusters", it was necessary to "score" them in some way in order to operationalize the dependent variable (level of information concerning features of health care plans) for purposes of hypothesis testing. Since the coefficient used in the cluster analysis accounted for inclusion relationships in the manner discussed by Guttman, and since Guttman scales are relatively easy to "score", it was decided to examine these clusters for Guttman scales -- and if they were found, to use them as the basis for assigning scores to the clusters.

In order to test for Guttman scales, one must first obtain "p" values (the number of positive responses to a given item divided by the total number of respondents) for each item in the cluster. "P values" for all 42 items are given in Appendix C, separated according to the health care plan to which the respondents belonged. Next, the items within a given cluster are arranged -- either in ascending or descending order -- according to their "p values". In the example to follow, the items are arranged in order of descending "p values", with a "1" indicating a positive response to the item and a "0" indicating a negative response. The example shows a perfect Guttman scale

for a two-item cluster arranged in this manner.

Item A (p = 70/100)	Item B (p = 30/100)	Score
1	1	2
1	0	1
0	0	0

As can be seen, to "score" these responses, one simply adds up the number of "1's". For those individuals whose responses fit one of the patterns in a perfect Guttman scale (such as that above), one is able to "reproduce" the pattern of his responses on the basis of his "score" (for example, in such a perfect scale one would expect anyone with a score of "2" to have responded positively to both items A and B).

Since it is rather rare to find all persons in the sample responding in a manner that perfectly fits a Guttman scale, one must cope with "off-scale" responses (in the above example, a response of "0,1" would have been an "off-scale pattern"). In view of the fact that one is likely to encounter off-scale patterns in one's research endeavors, a means has been devised by Guttman to measure the amount by which a scale deviates from the ideal scale pattern. This measure is called the "coefficient of reproducibility" and is secured by counting up the number of responses which would have been predicted wrongly for each person on the basis of his scale score, and dividing these

errors by the total number of responses, and then subtracting the resulting fraction from 1, as shown in the formula:

$$\text{Coefficient of Reproducibility} = 1 - \frac{\text{Sum of errors within each response pattern}}{\text{No. of questions x No. of respondents}}$$

There are some who use a rather liberal method of calculating the number of errors within each response pattern. Such a method tends to minimize the number of errors, thus making it easier to obtain a coefficient of reproducibility of .90 or better, which Guttman arbitrarily set as an acceptable approximation to a perfect scale. The approach used in this research, in calculating the number of errors within each response pattern, is a rather conservative one, which tends to maximize the number of errors, thus making it more difficult to obtain a coefficient of reproducibility of at least .90.[60] The original, more technical discussion of these scales by their originator, is available in several places,[61,62] and also in secondary references such as Phillips, which gives a step-by-step procedure for

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[60]Bert F. Green, "A Method of Scalogram Analysis Using Summary Statistics," Psychometrika, Vol. 21 (March 1956), 79-88.

[61]Louis Guttman, op. cit.

[62]Ibid., also available as a Bobbs-Merrill Reprint (S-413), Indianapolis, Indiana: Bobbs-Merrill, Inc.

doing this work on a counter-sorter.[63]

When the 5 clusters obtained for BC-BS respondents, and the 5 clusters obtained for the CHF respondents, were examined in this manner, responses to the items in each of the clusters were found to form Guttman scales, with coefficients of reproducibility ranging from .9096 -- for a 15-item CHF cluster, to 1.0000 -- for all but one of the two-item clusters (the calculations for these coefficients of reproducibility may be found in Appendix D). It appeared, then, that the items were in a given cluster because over the total set of people, there weren't many who didn't respond in pattern to these items. Since Yule's Q incorporates the definitive relationship of a Guttman scale, clusters found using this coefficient must be, and in this case are, equivalent to the Guttman scale. In addition, because they formed Guttman scales, one was provided with a method of scoring these information clusters, for purposes of hypothesis testing later on.

As mentioned above, one method of scoring such clusters would be to add up the number of positive responses, for each individual, to the items in each cluster. The

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[63]Bernard S. Phillips, Social Research: Strategy and Tactics, New York: Macmillan Co., 1966, 187-195.

advantages to doing this -- rather than combining scores into broad categories such as "high", "moderate" or "low" are: 1) by not combining scores into broad categories one "saves" data in the sense that they yield more information because they afford more detailed analysis, and 2) one is likely to obtain better evidence of non-linearity with uncombined data. However, such an approach has at least two problems associated with it: 1) a simple addition of positive responses could yield the same "score" for an individual whose pattern of responses fit the Guttman scale and also for a person whose responses yielded an off-scale pattern. An example of this would be where the response to a two-item cluster that fits the Guttman scale is "1,0" and to which we assign a score of "1". Under this approach, a person who responds in the off-scale pattern "0,1" would also receive a score of "1". Since there may be important differences between those whose responses fit the Guttman scale and those whose do not, to assign them the same score in this manner and lump them together for hypothesis testing may confound the investigation. Therefore, a way of handling this problem is to separate respondents before hypothesis testing, on the basis of whether their responses were off-scale or not -- in order to detect any important differences between them as regards the problem at hand and the variables under consideration. Because of the

general soundness of such a separation of respondents, for purposes of hypothesis testing, it was incorporated into this research project. 2) A second problem one may encounter in not combining these simple scores into larger categories is related to sample size. Since the subsamples were not particularly large to begin with (BC-BS = 277, CHF = 304), and one would be dividing them each again according to whether the person's responses were off-scale or not, with such an approach one could find oneself with tables containing a number of "zero" cells, or low-frequency cells when one came to testing the hypotheses. The problem such zero or low-frequency cells could create is that they could limit the efficiency of the particular statistics planned for use in hypothesis testing, and discussed in Chapter IV.

When one looks at the alternative approach of combining the scores described above into "high", "moderate", and "low" categories, one is again faced with advantages and disadvantages. The primary advantage of this approach is that it tends to avoid the problem of excessive "zero" cells and low-frequency cells, and their possible effects on the test statistics. On the other hand, such an approach may not yield as much information as the prior approach -- because the analysis isn't as fine and detailed. In

addition, the problem arises as to the basis for combining scores into such categories. The acceptable rule-of-thumb in such instances is to make the three groups ("high", "moderate" and "low") as "equal" in size as possible. Now, when a closer look was taken at the total of 10 clusters, it was seen that for 5 of the 10 clusters there was no difference in score regardless of which of the above methods were used. These 5 clusters were two-item clusters which fit the following pattern, with a coefficient of reproducibility equal to 1.0000.

Item A	Item B	Score
1	1	2 -- or "high"
1	0	1 -- or "moderate"
0	0	0 -- or "low"

As can be seen, whether one simply sums the "1's" in such cases, or divides the three types of response into categories labeled "high", "moderate" or "low" -- there is really no difference. In scoring the remaining 5 clusters, the division of responses into "high", "moderate" and "low" categories is more arbitrary, and in an attempt to "equilize" the groups, the definitions of "high", "moderate", and "low" would thus differ from cluster to cluster -- depending upon the number of items contained therein and their distribution.

Since both scoring procedures offered advantages and disadvantages -- with neither being unequivocably superior to the other, it was initially decided to score the clusters both ways -- wherever appropriate, and compare the results of hypothesis testing when the clusters were scored in these two different (but related) manners. However, when statistical analysis got underway, it was obvious that the subsamples were too small to allow for any scoring procedure other than that which combined scores into the three broad categories discussed above. The other method would have led to many low-frequency and/or zero cells, making the results of the hypothesis testing unreliable and difficult to evaluate.

The scoring procedure raised one further question which received attention prior to hypothesis testing. One wondered about the consistency among the cluster scores -- in other words, to what extent did a person who received a given score ("high", "moderate" or "low") on a given cluster, score the same on each of the other clusters. Goodman-Kruskal gammas were therefore calculated to find relationships between the scores on each possible pair of clusters. Table 8 presents the results for the BC-BS members whose responses fit the Guttman scale pattern, and indicates rather strong positive relationships, varying from .5233 to .8650. Table 9 presents the results for

the CHF members whose responses fit the Guttman scale pattern, and indicates rather strong relationships, varying between .5619 and 1.0000. Tables 10 and 11 present the results for BC-BS and CHF respondents whose scores did not fit the Guttman scale pattern. Only the fourth and fifth clusters of each subsample contained enough responses not fitting the Guttman scale pattern to make a separate analysis practical, and so, Tables 10 and 11 report only the relationship between scores on cluster 4 and cluster 5. The over-all impression from these four tables is that there was a definite tendency for respondents to receive similar scores on each of the 5 clusters, in each subsample.

TABLE 8

Goodman-Kruskal Gammas Indicating the Relationship of BC-BS Respondents' Scores (Fitting Guttman Scale) on a Given Cluster, to their Scores on Another Cluster

Clusters	Gamma	S.E.	95% C.I.	99% C.I.
1 vs. 2	.5492	.0902	.3723,.7261	.3167,.7817
1 vs. 3	.5233	.0918	.3432,.7033	.2866,.7599
1 vs. 4	.6586	.0732	.5151,.8021	.4700,.8472
1 vs. 5	.7926	.0837	.6284,.9567	.5768,1.0000
2 vs. 3	.6380	.0819	.4774,.7986	.4269,.8491
2 vs. 4	.8650	.0434	.7799,.9501	.7531,.9768
2 vs. 5	.8090	.0797	.6527,.9653	.6036,1.0000

TABLE 8 -- Continued

Clusters	Gamma	S.E.	95% C.I.	99% C.I.
3 vs. 4	.7282	.0731	.5849,.8716	.5399,.9166
3 vs. 5	.8035	.0714	.6636,.9435	.6196,.9875
4 vs. 5	.8093	.0713	.6695,.9491	.6256,.9930

TABLE 9

Goodman-Kruskal Gammas Indicating the Relationship of CHF Respondents' Scores (Fitting Guttman Scale) on a Given Cluster, to their Scores on Another Cluster

Clusters	Gamma	S.E.	95% C.I.	99% C.I.
1 vs. 2	.8217	.0611	.7019,.9415	.6643,.9792
1 vs. 3	.5619	.0859	.3934,.7304	.3404,.7834
1 vs. 4	.9277	.0342	.8606,.9948	.8395,1.0000
1 vs. 5	.9000	.0541	.7939,1.0000	.7606,1.0000
2 vs. 3	.5796	.1068	.3702,.7890	.3044,.8549
2 vs. 4	.9679	.0154	.9373,.9979	.9277,1.0000
2 vs. 5	1.0000	.0000	1.0000,1.0000	1.0000,1.0000
3 vs. 4	.5574	.0907	.3794,.7354	.3235,.7913
3 vs. 5	.8260	.0610	.7064,.9457	.6688,.9833
4 vs. 5	.9532	.0270	.9002,1.0000	.8836,1.0000

TABLE 10

Goodman-Kruskal Gamma Indicating the Relationship of BC-BS Respondents' Scores (Not Fitting Guttman Scale) on Cluster Number Four, to their Scores on Cluster Number Five

Clusters	Gamma	S.E.	95% C.I.	99% C.I.
4 vs. 5	.4150	.1977	.0274,.8027	-.0944,.9246

TABLE 11

Goodman-Kruskal Gamma Indicating the Relationship of CHF Respondents' Scores (Not Fitting Guttman Scale) on Cluster Number Four, to their Scores on Cluster Number Five

Clusters	Gamma	S.E.	95% C.I.	99% C.I.
4 vs. 5	.6324	.1623	.3142,.9507	.2142,1.0000

CHAPTER III. OPERATIONALIZATION OF THE INDEPENDENT VARIABLES

A. Vulnerability to Risk

As indicated in Chapter I, the concept "vulnerability to risk" was initially considered here to be composed of three "components": 1) perceived physiological susceptibility, 2) social responsibility for others, and 3) lack of social support. While it became necessary to examine these "components" separately, this did not change the way in which they were operationalized. The purpose now is to describe the questions in the original study which were used to operationalize these components, as well as any recoding of responses that may have been accomplished for this specific purpose. The deficiencies discussed in Chapter I, resulting in a measure of vulnerability to risk which doesn't account for differences in quality and quantity, will be particularly evident when the questions upon which this measure was based are examined.

"Perceived physiological susceptibility" was measured in the following way: In the original study, individuals were asked, "Are you concerned or worried about something that might go wrong with your health?" (Question 13, variable 49). Responses were coded as follows:

1. Yes
2. No
&. Don't know
-. Not ascertained

For present purposes, an affirmative response was taken as indicating perceived physiological susceptibility and concern with one's health, and a negative response as not -- without any recoding necessary.

In the original study, respondents were asked the following questions to determine their life cycle stages: "Could you tell me what year you were born?" (Question 39, variable 147). "What is your marital status? Are you married, widowed, divorced, separated or single?" (Question 40, variable 148). "Do you have any children? Altogether, counting those that aren't living with you?" (Question 40c, variable 150). On the basis of this information, the original researchers delineated the following nine life cycle stages:

1. Single and under 40 years of age
2. Single and 40 years of age and over
3. Married, no children and under 40 years of age
4. Married, no children and 40 years of age and over

5. Married with children and youngest child under 6 years of age

6. Married with children and youngest child 6-18 years of age

7. Married with children and youngest child over 18 years of age

8. Widowed, separated or divorced and no children under 18 years of age

9. Widowed, separated or divorced and children -- with youngest child under 18 years of age

The above life cycle stages were used to operationalize the concepts "social responsibility for others" and "lack of social support" in the present study.

For present purposes, "social responsibility for others" was defined as "having dependent children". Therefore, using the above life cycle stages, responses were recoded as follows:

1. Has social responsibility for others -- dependent children (life cycle stages 5,6 and 9)

2. Does not have social responsibility for others -- no dependent children (life cycle stages 1,2,3,4,7,8)

For present purposes, "lack of social support" was defined as "not presently married". Therefore, using the original life cycle stages, responses were recoded as follows:

1. Lacks social support -- not married (life cycle stages 1,2,8,9)

2. Has social support -- married (life cycle stages 3,4,5,6,7)

B. The Other Ten Independent Variables

In the original study, respondents were asked, "How much formal education have you had? Have you attended night school or had vocational training? What was it?" (Questions 44, 45, 45a, variable 156). For purposes of the present study, responses were recoded as follows, to indicate high, moderate and low levels of education:

1. High level of education

   Business school or some college work, or
   College degree

2. Moderate level of education

   High school graduate, or
   High school graduate plus non-academic

3. Low level of education

   Grade school or none, or
   Less than high school graduate, or
   Less than high school graduate plus non-academic

Respondents in the original study were asked the following question regarding income adequacy: "With respect to meeting the basic needs of your family (that is, being able to pay your bills and buying the things your family needs)

would you say your income was:" (Question 53, variable 174).

1. More than adequate
2. Adequate
3. Less than adequate

Responses to this question were, for present purposes, taken as an indication of perceived income adequacy and interpreted as follows:

1. More than adequate = high income adequacy perceived
2. Adequate = moderate income adequacy perceived
3. Less than adequate = low income adequacy perceived

In the original study, respondents were asked, "Do you (or your spouse) belong to labor unions?" (Question 51, variable 171). For purposes of the present study, responses were recoded as follows:

1. Respondent, or spouse, or both, belong
2. Does not belong

Respondents in the original study were asked, "Do you have any cars in your household?" "List latest model car".

(Questions 38, 38a, 39b, variable 145). For purposes of the present study, responses were coded as follows:

1. Yes
2. No

In the original study, respondents were asked, "Where were you born?" (Question 42, variable 153). For purposes of the present study, responses were recoded as follows:

1. Born in the United States
2. Foreign-born (not born in the United States)

In the original study, the respondent's race was coded as follows: (Question 35, variable 142).

1. White
2. Negro
3. Other

For present purposes, these responses were recoded to indicate "color" as follows:

1. White
2. Black
3. Other

In regard to contact with communication media, in the original study respondents were asked about contact with newspapers, television, radio, and mail advertisements, as follows:

"Do you read any newspapers regularly?" (Question 63, variable 207). For present purposes, the original responses were recoded as follows:

1. Reads newspapers regularly (ordinary or special interest newspapers or both)
2. Does not read newspapers

"How often do you watch TV?" (Question 64, variable 208). For present purposes, the original responses were recoded as follows:

1. Watches TV regularly (more than 2 hours daily -- or less than 2 hours, but daily)
2. Does not watch TV regularly (few times a week, or few times a month, or rarely)

"How often do you listen to the radio?" (Question 65, variable 209). For present purposes, the original responses were recoded as follows:

1. Listens to the radio regularly (more than 2 hours daily -- or less than 2 hours, but daily)

2. Does not listen to the radio regularly (few times a week, or few times a month, or rarely)

"Which ones do you usually read (mail advertisements)?" (Question 66a, variable 211). For present purposes, the original responses were recoded as follows:

1. Regularly reads mail advertisements (commercial, organizational, health information, or various combinations thereof, or reads or glances at all)
2. Seldom or never reads mail advertisements

In order to use an electronic computer to perform the various statistical analyses desired on the data, the information scores referred to in Chapter II -- as well as the independent variables described in this chapter, were punched onto data processing cards. The code for this deck of cards, which was used in hypothesis testing, may be found in Appendix F.

CHAPTER IV. FINDINGS

A. Statistics Used in the Analysis

As was mentioned earlier, since the data being analyzed in the present study were ordinal, Goodman-Kruskal's Coefficient of Ordinal Association -- Gamma (which ranges between minus one and plus one) was used to test Hypotheses A and B. Hypothesis C was tested by Goodman-Kruskal's Measure of Partial Association -- Lambda (which ranges between zero and one).

Mention was also made earlier that gamma generally appears to be rather unreliable when used on tables containing a number of low-frequency and/or zero cells. This problem was especially apparent when responses which did not fit the Guttman scale pattern were examined. Of the five information clusters in each plan, only the fourth and fifth contained enough off-scale responses to appear to warrant, after visual inspection, a separate statistical analysis after they had been separated from those responses which fit the Guttman scale pattern. However, once the calculations on the off-scale responses were made, their general reliability was held seriously in doubt. The tables, upon which such calculations were based, often contained several low-frequency and/or zero cells. In addition, confidence limits were often so broad that in

effect, the statistic was really "saying" very little about the data in the table that could be the basis of meaningful interpretation. These problems could not be overcome due to the small number of off-scale responses in the first place. Because of the limitations this placed on a meaningful, reliable interpretation of the off-scale responses, the results of testing Hypotheses A and B on the off-scale responses were considered to be too unreliable for serious consideration in the main body of this report. Later, when the tables used in testing Hypothesis C on the off-scale responses were examined, they too were found to often contain numerous low-frequency and/or zero cells. It was suspected that this would affect the reliability of lambda -- which was used to test Hypothesis C, as it had previously affected the reliability of gamma when testing Hypotheses A and B. While such calculations are not included in the main body of this report, since they were made, they are presented in Appendix G for the curious. However, they will not be discussed in this report, and from this point on, any reference to BC-BS or CHF responses refers only to responses which fit the Guttman scale pattern.[64]

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[64]At the time of hypothesis testing, the original BC-BS subsample of 277 respondents was reduced to 276, as several of the "components" of vulnerability were "not ascertained" in the original study for one of the BC-BS members. The CHF subsample remained at 304.

B. Results of Testing Hypothesis A

In testing Hypothesis A, where one was concerned with the relationship between the "components" of vulnerability to risk and level of information concerning features of health care plans, the data were arranged in such a way, before calculations were made, so that a positive gamma would indicate a positive relationship between information and the measure of "vulnerability" being considered. Tables 12 (BC-BS) and 13 (CHF) present the relationship between "concern over health" and level of information concerning features of health care plans. As can be seen, the gammas tended to range in the vicinity of zero on most clusters, for members of both plans. However, when the tables upon which these calculations were based were examined, they were <u>not</u> found to contain low-frequency or zero cells to a degree which might limit the reliability of the values of gamma obtained. Therefore, the over-all impression from both Tables 12 and 13 is that they provide no evidence of the relationship hypothesized.

Tables 14 (BC-BS) and 15 (CHF) present the relationship between "social responsibility" and level of information concerning features of health care plans. As can be seen, for the BC-BS respondents, the gammas are in the vicinity of zero, with none higher than .1860. However,

TABLE 12

Relationship Between Concern Over Health and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.0354	.1196	-.1990,.2699	-.2727,.3436
2	.1469	.1238	-.0957,.3896	-.1719,.4658
3	.0610	.1354	-.2044,.3265	-.2878,.4099
4	.0638	.1306	-.1922,.3199	-.2727,.4004
5	.0367	.1563	-.2697,.3432	-.3660,.4396

TABLE 13

Relationship Between Concern Over Health and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.0085	.1368	-.2595,.2767	-.3438,.3610
2	.1720	.1442	-.1106,.4546	-.1994,.5434
3	.0847	.1196	-.1496,.3192	-.2233,.3929
4	-.0560	.1473	-.3449,.2327	-.4356,.3234
5	-.1348	.1539	-.4365,.1668	-.5313,.2616

TABLE 14

Relationship Between Social Responsibility and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1527	.1080	-.0591,.3645	-.1256,.4310
2	.1705	.1111	-.0472,.3883	-.1157,.4568
3	.0207	.1187	-.2119,.2534	-.2850,.3265
4	.1860	.1119	-.0332,.4054	-.1022,.4743
5	-.0081	.1438	-.2900,.2737	-.3786,.3623

TABLE 15

Relationship Between Social Responsibility and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.2539	.1182	.0220,.4857	-.0508,.5586
2	.2518	.1349	-.0125,.5163	-.0957,.5994
3	.2401	.1008	.0423,.4378	-.0197,.4999
4	.2613	.1264	.0134,.5092	-.0644,.5871
5	.2747	.1401	.0000,.5494	-.0863,.6357

among the CHF members, there is a slight positive relationship for all five clusters, with the strongest relationship (.2747) found for the large 15-item cluster. While the BC-BS data did not support the hypothesis, the CHF data tended slightly in the direction expected.

Tables 16 (BC-BS) and 17 (CHF) present the relationship between "lack of social support" and level of information concerning features of health care plans. As can be seen, contrary to what was hypothesized, lack of social support is negatively associated with information level. This suggests that it is the presence of social support which is positively associated with information level, rather than its absence.

The reasoning behind the hypothesis initially stated was that people who lack social support (unmarried) would be more highly motivated to obtain information concerning features of health care plans, in an attempt to meet the burden of providing for health care by themselves. The results in Tables 16 and 17, whereby married persons apparently have more information than the unmarried in these subsamples, suggests that this variable may not really be much different from that of "social responsibility". It may well be that whether a person has "social responsibility" for dependent children, or for a spouse,

TABLE 16

Relationship Between Lack of Social Support and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.2063	.1256	-.4526,.0398	-.5300,.1172
2	-.4033	.1203	-.6391,-.1675	-.7132,-.0934
3	-.1936	.1377	-.4636,.0763	-.5484,.1611
4	-.3295	.1250	-.5746,-.0845	-.6516,-.0074
5	-.2213	.1717	-.5580,.1152	-.6638,.2210

TABLE 17

Relationship Between Lack of Social Support and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.2906	.1462	-.5773,-.0039	-.6674,.0861
2	-.1039	.1716	-.4403,.2324	-.5460,.3381
3	-.3396	.1117	-.5586,-.1206	-.6275,-.0518
4	-.2544	.1616	-.5712,.0623	-.6707,.1617
5	-.2298	.1679	-.5589,.0992	-.6623,.2026

the end result may be relatively the same as concerns finding a health care plan that best meets the needs of the individual and all his dependents. Thus, the separation of "dependents" into children ("social responsibility") and spouses ("social support") may have been a rather superficial one which failed to recognize that in either case -- children or spouses, "dependents" were involved.

Since there were indications that both having dependent children and being married were positively associated with information level, an attempt (initially unplanned) was made to combine the two variables, in order to see if persons who were married and had dependent children, tended to have more information concerning features of health care plans than those who were not presently married and did not have dependent children. Tables 18 (BC-BS) and 19 (CHF) present the results of this test, and indicate a moderately positive relationship to information when the two variables are combined in this fashion.

Thus, when the "components" of vulnerability were examined, in relation to information level, "social responsibility" (having dependent children) and "social support" (being married) appeared to be slightly positively associated with information level -- and when these variables were combined, the association appeared stronger.

TABLE 18

Relationship Between Having Social Responsibility Plus Social Support, and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.2673	.1461	-.0190,.5538	-.1090,.6438
2	.4276	.1358	.1612,.6939	.0775,.7776
3	.2099	.1512	-.0864,.5064	-.1796,.5996
4	.3677	.1428	.0877,.6477	-.0002,.7356
5	.1993	.1942	-.1813,.5799	-.3009,.6996

TABLE 19

Relationship Between Having Social Responsibility Plus Social Support, and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.3567	.1626	.0379,.6756	-.0622,.7758
2	.1871	.1985	-.2019,.5763	-.3242,.6986
3	.3516	.1289	.0989,.6043	.0195,.6837
4	.4018	.1747	.0594,.7443	-.0482,.8520
5	.3461	.1851	-.0167,.7091	-.1308,.8232

C. Results of Testing Hypothesis B

In testing Hypothesis B, one was interested in the relationship between level of information concerning features of health care plans and certain independent variables. The first of these independent variables was "education", and a positive gamma was expected, indicating a positive relationship between educational level and information level. Tables 20 (BC-BS) and 21 (CHF) present the results of this test. While the values are in the vicinity of zero for the BC-BS respondents, there is a slight positive relationship for the CHF respondents, with the strongest (.3668) referring to the large, 15-item, CHF cluster.

In looking at automobile ownership, a positive gamma was expected, indicating a positive relationship between having a car and having information concerning features of health care plans. Tables 22 (BC-BS) and 23 (CHF) present the results of this test. For the BC-BS members, a slight positive relationship was found for all five clusters. For CHF members, two of the clusters were associated with positive gammas, and three were associated with slightly negative gammas, or gammas which were close to zero.

TABLE 20

Relationship Between Education and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.0111	.0932	-.1938,.1715	-.2513,.2289
2	.0459	.0984	-.1470,.2389	-.2077,.2996
3	-.0426	.0972	-.2332,.1479	-.2931,.2078
4	.0330	.0953	-.1538,.2199	-.2125,.2787
5	.0370	.1226	-.2034,.2774	-.2789,.3530

TABLE 21

Relationship Between Education and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1884	.0917	.0085,.3682	-.0479,.4247
2	.3242	.0991	.1298,.5186	.0687,.5797
3	.0337	.0883	-.1394,.2068	-.1938,.2613
4	.2671	.0941	.0826,.4516	.0246,.5096
5	.3668	.1040	.1629,.5707	.0988,.6348

TABLE 22

Relationship Between Automobile Ownership and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1234	.1770	-.2235,.4704	-.3326,.5795
2	.3519	.1949	-.0300,.7339	-.1501,.8540
3	.2946	.2195	-.1356,.7248	-.2709,.8601
4	.1174	.2245	-.3226,.5575	-.4609,.6958
5	.1501	.2363	-.3130,.6132	-.4586,.7588

TABLE 23

Relationship Between Automobile Ownership and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.1585	.2299	-.6092,.2921	-.7509,.4337
2	.3177	.2713	-.2141,.8496	-.3812,1.0000
3	.2209	.2062	-.1832,.6251	-.3102,.7522
4	-.1377	.2447	-.6174,.3419	-.7681,.4927
5	.0319	.2950	-.5463,.6103	-.7281,.7920

It had been hypothesized that persons who perceived their income as "less adequate" would be more motivated to obtain information concerning features of health care plans than those who perceived their income as "more adequate", and consequently, the former group would have more information. In testing this hypothesis, the data were arranged in such a way that a positive gamma would indicate a positive relationship between perceived income adequacy and level of information (the opposite to what had been hypothesized). As Tables 24 (BC-BS) and 25 (CHF) indicate, information level appeared to increase as perceived income adequacy increased (contrary to the hypothesis as originally stated) -- among CHF members, while the results for BC-BS members are mixed (both positive and negative) -- in the vicinity of zero. While the mixed results are difficult to interpret, to the extent that information level is, in fact, positively associated with an increase in perceived income adequacy (as the CHF data indicate slightly), it may be that those who perceive their income as "more adequate" have more means at their disposal for obtaining such information, than those living on "less adequate" income. Consequently, this latter factor may be more important than the "anxiety" originally hypothesized as stimulating those who perceive their income as "less adequate".

TABLE 24

Relationship of Income Adequacy to Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.1109	.1056	-.3179,.0960	-.3830,.1611
2	.0521	.1039	-.1515,.2558	-.2155,.3198
3	.0631	.1111	-.1546,.2809	-.2231,.3493
4	.1419	.1066	-.0670,.3509	-.1327,.4166
5	-.0492	.1295	-.3031,.2047	-.3829,.2845

TABLE 25

Relationship of Income Adequacy to Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.3807	.0992	.1861,.5753	.1249,.6364
2	.2278	.1214	-.0101,.4659	-.0850,.5407
3	.1937	.0952	.0070,.3804	-.0515,.4391
4	.3403	.1034	.1375,.5431	.0738,.6068
5	.2268	.1276	-.0233,.4770	-.1020,.5556

Tables 26 (BC-BS) and 27 (CHF) present the results of testing the hypothesis that union affiliation is positively associated with level of information concerning features of health care plans. As can be seen, a negative relationship was indicated, contrary to what was expected. Earlier, in Chapter I, there was a discussion of this variable, and the recognition of its being a rather gross measure, in that 81% of the respondents were affiliated with unions, and represented a rather heterogeneous grouping of blue collar workers, professionals, and others. One suspects the resultant negative gammas in Tables 26 and 27 are due in part to the failure of this gross measure to discriminate among the respondents, as there is no apparent logical explanation for union members having less information about features of health care plans (although a case can be made for their having more, since many health care plans are arranged by unions).

Tables 28 (BC-BS) and 29 (CHF) present the results of testing the hypothesis that those who were born in the United States would have more information than those who were foreign-born. Among BC-BS respondents, a slight positive relationship was indicated, while among the CHF respondents, negative relationships were indicated, with the strongest (-.3090) related to the large 15-item cluster. However, when one examined the tables upon which these

TABLE 26

Relationship Between Union Affiliation and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.0888	.1303	-.3443,.1666	-.4246,.2469
2	-.0969	.1316	-.3549,.1610	-.4360,.2421
3	-.2943	.1270	-.5434,-.0452	-.6217,.0330
4	.0138	.1346	-.2499,.2776	-.3328,.3605
5	-.2246	.1705	-.5588,.1095	-.6638,.2145

TABLE 27

Relationship Between Union Affiliation and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

1	-.4513	.1243	-.6950,-.2077	-.7716,-.1311
2	-.6367	.1015	-.8358,-.4376	-.8984,-.3750
3	-.2475	.1685	-.5779,.0828	-.6818,.1867
4	-.4686	.1476	-.7579,-.1792	-.8489,-.0882
5	-.6212	.1775	-.9691,-.2732	-1.0000,-.1638

TABLE 28

Relationship Between Ethnicity and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.0175	.1896	-.3542,.3892	-.4711,.5061
2	.1182	.1824	-.2394,.4758	-.3518,.5882
3	.3227	.1956	-.0607,.7061	-.1812,.8267
4	.2742	.1797	-.0779,.6265	-.1887,.7372
5	.1382	.2077	-.2688,.5454	-.3968,.6734

TABLE 29

Relationship Between Ethnicity and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	-.1470	.1765	-.4930,.1989	-.6018,.3077
2	-.1195	.2009	-.5133,.2742	-.6371,.3980
3	-.1230	.1649	-.4463,.2003	-.5479,.3019
4	.0131	.2009	-.3806,.4069	-.5044,.5307
5	-.3090	.1703	-.6430,.0248	-.7480,.1298

statistics were calculated, one found low-frequency cells to be rather common, due to the small number of foreign-born persons in the sample, and it is suspected that the efficiency of the statistic was affected due to this, making interpretation of the results unreliable.

Tables 30 (BC-BS) and 31 (CHF) present the results when testing the hypothesis that Whites would tend to have more information than Blacks. The tendency in both subsamples was for the hypothesis to be moderately supported, with the highest gamma (.6833) related to the 15-item CHF cluster. The only exception was the 11-item BC-BS cluster, with a gamma of -.1607. However, the table upon which it was based contained very low frequencies in half its cells, which may limit the reliability of that figure. As it turned out, the "color" variable was more strongly related to information than any of the other nine independent variables considered under Hypothesis B. Not only were the gammas generally higher for this variable, but the results were also consistent for both subsamples, with the exception of the fifth BC-BS cluster.

Tables 32 (BC-BS) and 33 (CHF) present the results of testing the hypothesis that information will be positively associated with newspaper reading. Among the BC-BS respondents, a negative relationship is indicated, but an exami-

TABLE 30

Relationship Between Color and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.2728	.1485	-.0182,.5639	-.1097,.6554
2	.3675	.1487	.0759,.6590	-.0156,.7507
3	.4634	.1448	.1795,.7473	.0903,.8365
4	.2594	.1530	-.0404,.5594	-.1347,.6537
5	-.1607	.2295	-.6107,.2892	-.7521,.4306

TABLE 31

Relationship Between Color and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.2017	.1283	-.0499,.4533	-.1289,.5324
2	.4859	.1284	.2341,.7377	.1550,.8169
3	.3828	.0985	.1896,.5760	.1289,.6367
4	.3982	.1218	.1593,.6371	.0842,.7121
5	.6833	.0956	.4959,.8707	.4370,.9296

TABLE 32

Relationship Between Newspaper Reading and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1150	.3248	-.5216,.7516	-.7217,.9517
2	-.0803	.3390	-.7448,.5841	-.9536,.7929
3	-.5264	.2550	-1.0000,-.0265	-1.0000,.1305
4	-.6607	.0389	-1.0000,-.0553	-1.0000,.1349
5	-.4919	.4389	-1.0000,.3683	-1.0000,.6387

TABLE 33

Relationship Between Newspaper Reading and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.5167	.1627	.1977,.8357	.0975,.9359
2	.1116	.2446	-.3679,.5912	-.5186,.7416
3	.1578	.1918	-.2180,.5338	-.3362,.6519
4	.2266	.2373	-.2385,.6918	-.3847,.8380
5	-.0903	.2657	-.6113,.4305	-.7750,.5942

nation of the tables upon which these calculations were based revealed a number of low-frequency and/or zero cells which may have limited the reliability of these findings. Except for the fifth cluster, the CHF findings indicate a slight-to-moderate positive relationship between the variables. The exception regarding the fifth cluster is unreliable, as several of the cells in the table upon which the calculation was based contain only a single respondent.

Tables 34 (BC-BS) and 35 (CHF) present the results of testing the hypothesis that information will be positively associated with television viewing. As one can see, among BC-BS respondents there was a slight positive relationship, while among CHF respondents the results ranged near zero, in both directions. An examination of the tables upon which the calculations were based indicated a greater occurrence of low-frequency cells among the CHF tables, which may limit the reliability of these statistics.

Tables 36 (BC-BS) and 37 (CHF) present the results of testing the hypothesis that information will be positively associated with radio listening. Among the BC-BS respondents, there was a slight-to-moderate relationship, with the largest gamma (.5287) relating to the large 11-item cluster. The gamma values for CHF members were in the vicinity of zero, or only slightly positive.

TABLE 34

Relationship Between TV Viewing and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1244	.1137	-.0986,.3474	-.1687,.4175
2	.1124	.1190	-.1207,.3457	-.1941,.4190
3	.1715	.1225	-.0686,.4117	-.1441,.4872
4	.1156	.1173	-.1143,.3455	-.1865,.4177
5	.0859	.1514	-.2110,.3828	-.3043,.4761

TABLE 35

Relationship Between TV Viewing and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.0329	.1255	-.2131,.2790	-.2904,.3564
2	-.1647	.1380	-.4353,.1058	-.5203,.1908
3	.0157	.1187	-.2170,.2485	-.2902,.3216
4	-.0850	.1351	-.3499,.1797	-.4331,.2630
5	.1123	.1499	-.1816,.4062	-.2740,.4986

TABLE 36

Relationship Between Radio Listening and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1351	.1224	-.1048,.3750	-.1802,.4504
2	.2252	.1298	-.0292,.4797	-.1091,.5597
3	.2455	.1379	-.0248,.5159	-.1097,.6009
4	.2367	.1201	.0013,.4722	-.0726,.5462
5	.5287	.1200	.2935,.7639	.2196,.8379

TABLE 37

Relationship Between Radio Listening and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1060	.1372	-.1630,.3751	-.2475,.4596
2	.1422	.1597	-.1709,.4554	-.2693,.5538
3	.0873	.1213	-.1504,.3252	-.2251,.3999
4	-.0708	.1481	-.3613,.2195	-.4525,.3107
5	.1173	.1690	-.2139,.4486	-.3181,.5527

Tables 38 (BC-BS) and 39 (CHF) present the results of testing the hypothesis that information will be positively associated with reading mail advertisements. For both subsamples, the gammas ranged from around zero to .2, showing little relationship of a positive nature.

After Hypothesis B had been tested, earlier doubts regarding the reliability of gamma when used on small samples, where one is likely to have tables containing low-frequency or zero cells, were confirmed. In general, one of the "subgroups" examined in each hypothesis was so small to begin with, that its distribution throughout the cells of the table resulted in a general trend in the direction of low-frequency cells on one side of the table. Examples of such subgroups were: Blacks, those not owning automobiles, those not affiliated with unions, those who were foreign-born, and those who tended to have less contact with the communication media, as measured herein. As will be seen when Hypothesis C is discussed below, consideration of this problem strongly influenced the approach that was taken in testing Hypothesis C.

TABLE 38

Relationship Between Reading Mail Advertisements and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.1396	.1119	-.0797,.3591	-.1487,.4280
2	.1049	.1179	-.1261,.3359	-.1988,.4086
3	.0687	.1251	-.1765,.3140	-.2536,.3911
4	.0018	.1209	-.2352,.2389	-.3097,.3134
5	.2137	.1454	-.0714,.4989	-.1610,.5885

TABLE 39

Relationship Between Reading Mail Advertisements and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
1	.2091	.1189	-.0240,.4423	-.0973,.5155
2	.1712	.1357	-.0948,.4373	-.1784,.5210
3	.0843	.1077	-.1268,.2954	-.1931,.3617
4	.1720	.1263	-.0756,.4196	-.1534,.4974
5	.0446	.1409	-.2316,.3209	-.3185,.4078

D. Results of Testing Hypothesis C

As mentioned above, by the time testing of Hypothesis C was to begin, it was obvious that due to several limitations in the data, uncovering relationships which could be interpreted meaningfully and with reasonable reliability, would be a difficult task. These limitations included: 1) the fact that some of the variables had been operationalized in such a gross fashion that they were apparently not discriminating well among respondents. However, as a secondary analysis, the study was restricted by the original data -- which had been gathered for other purposes, of course; and 2) the overall sample (581) was rather small to begin with, so that the introduction of controls for plan membership, Guttman scales, etc., further reduced the number of respondents in each of the tables upon which calculations were made, often resulting in a proliferation of low-frequency and/or zero cells which have a tendency to limit the efficiency of ordinal statistics. With these problems in mind, the overall goal in testing Hypothesis C became the desire to use the clues presented from testing Hypotheses A and B, in an attempt to focus upon the variables among which the <u>strongest</u> detectable relationships (using the present methods and with the present limitations) were likely to be found. Thus, in considering the further testing of the "components" of vulnerability, the

results of testing Hypothesis A were re-examined. As will be recalled, there was no evidence of a relationship between "concern over health" and level of information concerning features of health care plans. However, there was a slight positive relationship when social responsibility and social support were examined (in relation to information level) separately -- and when combined, a moderately positive relationship to information level was indicated. Therefore, it was decided that in using lambdas to test Hypothesis C, the focus would be upon how well information level may be predicted only from social responsibility and social support (when controlling for the other independent variables), since testing of Hypothesis A had indicated that "concern over health" was not likely to be a fruitful variable in the present research.

The same procedure was used in deciding how each of the other ten independent variables would be used as the third (control) variables in calculating lambdas on the relationship between information level and social responsibility or social support. The general rule here was to follow the direction indicated by the testing of Hypothesis B above. Thus, since information level appeared (in varying degree) to be greater among those of higher education, automobile owners, those who perceived their income

as "more than adequate", and those who were White (the strongest relationship), it was decided that one would be more likely to find a relationship (when testing Hypothesis C) among social responsibility or social support and information level, if one used these subgroups as the control variables in the calculation of lambda. Since the remaining independent variables did not indicate a consistently positive relationship to information when Hypothesis B was tested (and, in fact, the relationship was sometimes negative), it was felt that all one could do in using these remaining variables as controls in testing Hypothesis C, was to pick the subgroup within each variable that had the largest number, thus hoping to cut down on the limitations placed on ordinal statistics by low-frequency and/or zero cells in the tables. Consequently, the other subgroups (third variables) used in testing Hypothesis C were: those who were affiliated with unions, those who were born in the United States, and those who had regular contact with the four communication media included in this study. As noted above, these subgroups were used because they were much larger than those (respectively) who were not affiliated with labor unions, who were foreign-born, and who did not have regular contact with the communication media. And as also stated above, it was believed that the testing of Hypothesis B had indicated that the uncover-

ing of meaningful relationships when Hypothesis C was tested was more likely if each of these subgroups were used as the third (control) variable in testing Hypothesis C.

One further word is needed before the results of testing Hypothesis C are presented. By far, the majority of the lambda values calculated were "zero". This was due to the fact that the data were distributed in such a way, in most of the tables, that the numerator of the lambda coefficient was "zero" most of the time -- resulting in a value of "zero" for the lambda based on that table. When lambdas were obtained which were values other than "zero", they were based almost exclusively on the testing of the largest cluster for each subsample (cluster five -- which contained eleven items for BC-BS members, and fifteen items for CHF members). Occasionally, a non-zero lambda resulted from calculations on one of the smaller clusters, but for the most part, the impression was that larger clusters may be more fruitful for use in hypothesis testing of this kind. As stated earlier, only the results of hypothesis testing on cluster scores which fit the Guttman scale pattern are discussed in the main body of this report -- for the same reasons as stated earlier (with calculations

based on off-scale cluster scores to be found in Appendix G), and, in addition, the only lambdas to be presented in the tables to follow will be those where a value other than "zero" was found.

Tables 40-44 present lambda values indicating how well information scores may be predicted from knowing if a BC-BS member has social responsibility (dependent children), when one controls for various other variables. As can be seen, the strongest relationship (.44444) was found among those who perceive their income as more than adequate (Table 40), in relation to their score on the large, 11-item cluster (cluster 5).

Tables 45-51 present lambda values indicating how well information scores may be predicted from knowing if a CHF member has social responsibility (dependent children), when one controls for various other variables. As can be seen, the strongest relationship (.13333) was found among those who perceive their income as more than adequate (Table 45), in relation to their score on the moderate-sized, 6-item cluster (cluster 4).

TABLE 40

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Perceive their Income as More than Adequate

Cluster	Lambda	95% C.I.	99% C.I.
3	.05882	.00000,.49202	.00000,.62817
5	.44444	.04683,.84205	.00000,.96701

TABLE 41

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
5	.18518	.00000,.45536	.00000,.54027

TABLE 42

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
5	.04225	.00000,.20658	.00000,.25823

TABLE 43

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
5	.01408	.00000,.18081	.00000,.23321

TABLE 44

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.07812	.00000,.25698	.00000,.31319

TABLE 45

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Perceive their Income as More than Adequate

Cluster	Lambda	95% C.I.	99% C.I.
1	.05555	.00000,.51681	.00000,.66178
4	.13333	.00000,.61990	.00000,.77283

TABLE 46

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
5	.02439	.00000,.15370	.00000,.19434

TABLE 47

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Are Affiliated with Labor Unions

Cluster	Lambda	95% C.I.	99% C.I.
5	.04000	.00000,.17788	.00000,.22122

TABLE 48

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
5	.03896	.00000,.17789	.00000,.22156

TABLE 49

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Read Newspapers Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.02439	.00000,.15794	.00000,.19991

TABLE 50

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Watch Television Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.06557	.00000,.22394	.00000,.27372

TABLE 51

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Read Mail Advertisements Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.09259	.00000,.24330	.00000,.29066

Tables 52-59 present lambda values indicating how well information scores may be predicted from knowing if a BC-BS member has social support (is married), when one controls for various other variables. As can be seen, the strongest relationship (.25925) was found among those who had a high level of education (Table 53), in relation to the large, 11-item cluster (cluster 5). In addition, in accord with the findings relating to high income adequacy reported above -- in relation to social responsibility, the next strongest relationship here (.22222) was found among those who perceived their income as more than adequate (Table 52), in relation to the large, 11-item cluster (cluster 5).

Tables 60-65 present lambda values indicating how well information scores may be predicted from knowing if a CHF member has social support (is married) when one controls for various other variables. As can be seen, all the values are close to "zero", not allowing for meaningful or reliable interpretation.

TABLE 52

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Perceive their Income as More than Adequate

Cluster	Lambda	95% C.I.	99% C.I.
3	.05882	.00000,.42979	.00000,.54638
5	.22222	.00000,.49383	.00000,.57920

TABLE 53

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
5	.25925	.07182,.44669	.01291,.50560

TABLE 54

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
5	.04225	.00000,.14688	.00000,.17977

TABLE 55

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Are Affiliated with Labor Unions

Cluster	Lambda	95% C.I.	99% C.I.
5	.03333	.00000,.16180	.00000,.20218

TABLE 56

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
5	.01408	.00000,.13969	.00000,.17917

TABLE 57

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Read Newspapers Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.01388	.00000,.13776	.00000,.17670

TABLE 58

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.01562	.00000,.14090	.00000,.18027

TABLE 59

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Read Mail Advertisements Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.03921	.00000,.18989	.00000,.23725

TABLE 60

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Are Affiliated with a Labor Union

Cluster	Lambda	95% C.I.	99% C.I.
3	.00800	.00000,.09771	.00000,.12590

TABLE 61

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
5	.02439	.00000,.11882	.00000,.14850

TABLE 62

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who are White

Cluster	Lambda	95% C.I.	99% C.I.
5	.01851	.00000,.15778	.00000,.20155

TABLE 63

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Read Newspapers Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.01219	.00000,.11014	.00000,.14092

TABLE 64

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.04477	.00000,.14786	.00000,.18026

TABLE 65

Lambdas Indicating How Well Cluster Scores Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Read Mail Advertisements Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.03703	.00000,.16042	.00000,.19919

CHAPTER V. CONCLUSION

A. Summary of Findings

In summarizing the findings reported here, it should be reiterated that in general, the findings underscored the necessity for the initial assumption that the BC-BS and CHF subsamples were likely to be quite "different" from one another, requiring separate analyses. Not only were the "information clusters" obtained from one subsample different from those obtained from the other, but also the "scope" of information varied, in that CHF members appeared to "have information" on BC-BS and commercial plans (in addition to their own), while BC-BS members appeared to only "have information" concerning BC-BS and commercial plans. In addition, when the hypotheses were later tested, results were often not consistent "across" plans.

When the "components" of vulnerability to risk were examined under Hypothesis A (in relation to information level), no evidence was found for a positive relationship between "concern over health" and information level. However, there was an indication that "social responsibility" (having dependent children) might be associated with information level, and that "social support" (being married) might also be associated with information level. When these two latter variables were combined, so that the in-

formation scores of persons who were married and had dependent children were compared with the information scores of persons who were not married and did not have dependent children, evidence of an even stronger relationship occurred.

Of the remaining ten independent variables examined under Hypothesis B, the strongest, most consistent relationship was found using the "color" variable. That is, for both subgroups, Whites appeared to have more information than Blacks. Indications of a relationship were also found between "perceived income adequacy" and information level, with information level increasing as perceived income adequacy increased. There were also indications of a positive relationship between automobile ownership and information level. In regard to the remaining variables, results were mixed. For instance, there were indications among CHF members (only) that education level might be positively associated with information level, and there were indications among BC-BS members (only) that being native-born American might be positively associated with information level. Also, there were indications among BC-BS members (only) that union affiliation might be positively associated with information level. When contact with the communication media was examined in relation to information level, the results were either too ambiguous or erratic to lend themselves to meaningful, reliable interpretation.

When one attempted, under Hypothesis C, to predict information level from knowing if a person had social responsibility (dependent children) or social support (was married), the ten independent variables examined under Hypothesis B were used as control variables. For both BC-BS and CHF members, "social responsibility" (having dependent children) appeared to be a predictor of information level, among persons who perceived their income as "more than adequate". "Social support" (being married) appeared to be a predictor of information level among BC-BS respondents who either perceived their income as "more than adequate" or had a high level of education. "Social support" did not appear to be a predictor of information level among CHF members, on the basis of the analysis reported in Chapter IV.

B. Implications of Findings

The findings reported here have both general and specific implications. Originally, the analysis which was attempted here developed, in part, out of frustration with a field (medical care organization) whose journals are often filled with reports containing analyses no more sophisticated than the presentation of "frequencies and percentages". It was hoped that this would have been an attempt to successfully deal with medical care data on a more

sophisticated analytical basis. This experience would tend to indicate that in general, attempts at such analysis should make use of large samples (or at least the largest samples one can afford to gather -- due to time, financial, and other constraints). There were indications that the occurrence of even a single low-frequency or zero cell in a small table might prevent ordinal statistics such as gamma and lambda from picking up an underlying relationship, and hopefully, the larger the sample, the less frequent will be the occurrence of such cells.

As far as this specific research is concerned, one would think that in view of our present state of knowledge in medical care, time might be better spent on "less esoteric" variables and hypotheses. In their work on choice of health care plans, Metzner and Bashshur have found indications that such choice is more likely to be related to pragmatic, rather than ideological, concerns.[65] So too, in this analysis, information level appeared to be associated more with the kinds of variables which have an important impact upon one's day-to-day functioning (social responsibility, color, income adequacy, educational level)

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[65]Charles A. Metzner and Rashid L. Bashshur, "Factors Associated with Choice of Health Care Plans," Journal of Health and Social Behavior, Vol. 8 (December 1967), 291-299.

than with the more esoteric (and more strictly psychological) variables, such as "concern over health". Thus, if one's purpose is to be able to identify, in broad terms, subgroups of the population which are likely to have, or not have, information concerning features of health care plans, one would opt at present for hypotheses which view the consumer as motivated by highly pragmatic concerns, related to his present social responsibilities and "position" (racial, financial, educational, etc.) in society.

The findings of this study have specific implications for those who provide health care through various health care plans. A major concern of such providers is known in insurance terminology as "adverse selection" -- referring to the process whereby, in the absence of adequate controls, the persons who obtain insurance will tend to be those who want it most and have a greater probability of loss than average. More technically, it may be defined as "any process whereby the exercise of choice by insureds leads to higher loss levels than average".[66] In this regard, earlier work by Metzner and Bashshur has, in fact, found indications, for example, that those who were older, and had more dependent children -- in a sense more "vulnerable", were more likely to join a prepaid group practice

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[66] O.D. Dickerson, Health Insurance, Homewood, Illinois: Richard D. Irwin, 1963, p. 464.

plan than those who were not.[67] In order for such plans to be financially sound, they need to attract some members who are less likely to need extensive medical care, in order to avoid the kind of imbalance which could result if most of the clientele were likely to need a great deal of medical care. This study has indicated that having "social responsibility" (dependent children) is associated with level of information concerning features of health care plans. If persons with dependent children are more likely to have such information, they may also be more likely to join such health care plans. Thus, the organizers and administrators of such plans may have to make a special effort to get information to the unmarried (and often younger and relatively healthier) segments of the population, in order to counterbalance the drain on their facilities which families with young children are likely to make.

Other implications of these findings deal with social concerns for providing adequate health care for all persons, at prices they can afford. It would appear from these findings that those who are sincerely committed to such a goal may have to make special efforts to "inform" and "reach" members of minority groups -- such as Blacks, and

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[67]Rashid L. Bashshur and Charles A. Metzner, "Patterns of Social Differentiation between CHA and BC-BS," Inquiry, Vol. 4 (June 1967), 23-44.

also persons who have not had much formal education, and who are likely to be experiencing financial difficulty in meeting their needs -- including the need for adequate medical care. Once one has identified the subgroups in the population which are likely to lack information on health care plans and their alternatives, this information about such subgroups should assist in determining the manner in which information concerning features of health care plans and their alternatives is disseminated, at whom it is aimed, and how it is most likely to be effective -- all of which should be the legitimate concern of those who profess to provide adequate health care for all members of society.

C. Future Directions for Related Research

In addition to the directions implied above which can be taken by providers of health care plans in doing research which will enable them to attract as heterogeneous a clientele as possible, or those persons most in need of care at a price they can afford -- depending on the purpose of those providing care, the findings reported herein have implications for related research -- two examples of which are discussed below.

A body of research findings has developed in this country concerning the phenomenon of "innovation". In his synthesis and evaluation of these findings, Everett Rogers[68] has pointed out that a great deal of time has been devoted to the study of "innovators" (those who adopt new methods, services, or products quickly), and how they differ from persons who take longer to accept such innovations. Prepaid group practice plans like the Community Health Foundation of Cleveland (CHF) are "innovative" forms of medical care in many communities, in spite of their existence in certain parts of the United States for many years.[69] It would seem that persons who opt to choose such a plan, in a community which has not previously had such a plan, might be viewed as "innovators", and research carried out in an attempt to determine in what ways such persons differ from those who continue to obtain their care from more traditional sources. The findings reported herein indicate that those belonging to the prepaid group practice plan (CHF) had more information about health care plans other than their own, than did the BC-BS members. This difference in the kinds of information the two subsamples had may reflect just one of several important differences, between such

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[68]Everett M. Rogers, Diffusion of Innovation, Glencoe, Illinois: Free Press, 1962.

[69]Jerome L. Schwartz, "Early History of Prepaid Medical Care Plans," Bulletin of the History of Medicine, Vol. 39 (October 1965), 450-475.

groups, which may be the object of future research conducted by those interested in innovation theory.

Another interesting area of research involves communication theory -- particularly that aspect dealing with the ways and paths by which information is communicated. While the attempt made in this study to relate information to contact with four relatively common communication media was unsuccessful (due to ambiguous and erratic results), one can still develop more sophisticated methods for examining the ways in which information (in this case, information concerning health care plans) is disseminated. With the present interest in providing new forms of organization for the provision of health care, it is possible that a number of communities may soon experience the introduction of a prepaid group practice, or similar facility, into their area for the first time. This could provide an excellent opportunity for studying how information about this new facility is transmitted among the populace. Such research would best be on-going, starting with the first public announcement of the attempt to establish such a facility -- whether that announcement be in the form of a newspaper article, television announcement, "flyer" passed out at a supermarket parking lot, etc. Keeping track of each "official" attempt at informing the public regarding the new facility, and trying to "trace" these efforts among

the population, would most likely make it a more feasible research study if it were conducted in a small university community, where the researcher would be present at all times to maintain as much surveillance on the situation as possible, and yet be near the equipment and personnel needed for conducting the analysis in an on-going fashion, over a period of time. Coleman, Katz and Menzel's study of the spread of information concerning a new drug (and its adoption) among physicians, provides an example of related research which attempts to explore the pathways by which information travels, before it reaches those for whom it is intended.[70] If anything, their study underscores how important it is for the researcher to be as "close" to the situation as possible, because of the rapid, and often elusive, manner in which information is disseminated.

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[70]James S. Coleman, Elihu Katz, and Herbert Menzel, Medical Innovation, Indianapolis, Indiana: Bobbs-Merrill, 1966.

APPENDIX A

Questions on Features of Health Care Plans, From the Cleveland Study on Choice of Health Care Plans

1. "Do you think that shots and regular check-ups are arranged for under CHF?" (Question 12b, variable 46). "What about Blue Cross-Blue Shield or Major Medical?" (Question 12c, variable 47). "What about commercial health insurance plans?" (Question 12d, variable 48).

2. In questioning respondents regarding whether doctors and specialists worked together in the same place as a group, or by themselves, the respondents were asked questions worded somewhat differently -- depending upon whether they had previously indicated a <u>preference</u> for physicians working as a group, or by themselves. Those who preferred that physicians and specialists work as a group were asked, "In Blue Cross-Blue Shield, do physicians and specialists work as a group?" (Question 14c, variable 55). "What about CHF?" (Question 14d, variable 56). "What about commercial plans?" (Question 14e, variable 57). Those respondents who preferred that physicians work by themselves, were asked, "In Blue Cross-Blue Shield do physicians work by themselves?" (Question 14h, variable 60). "What about CHF?" (Question 14i, variable 61). "What about commercial plans?" (Question 14j, variable 62). Since this distinction, based on consumer preference for group practice, was not relevant

APPENDIX A -- Continued

for present purposes -- the distinction was not made in the current research, and these two groups of questions, about the same feature of health care plans, were considered as one.

3. "Can you see specialists freely in CHF?" (Question 15a, variable 64). "Can you do this in Blue Cross-Blue Shield?" (Question 15b, variable 65). "What about commercial plans?" (Question 15c, variable 66).

4. "Is a regular doctor provided by CHF?" (Question 16a, variable 68). "Is this provided by Blue Cross-Blue Shield?" (Question 16b, variable 69). "Is it provided by commercial plans?" (Question 16c, variable 70).

5. "Do the Blue Cross-Blue Shield doctors receive a fee for each visit from all their patients?" (Question 17c, variable 74). "How about CHF doctors; do they receive a fee for each visit from their patients?" (Question 17d, variable 75). "How about doctors with commercial plans?" (Question 17e, variable 76).

6. "In CHF, does the same doctor treat all members in the family, or do they have different doctors for different members of the family?" (Question 19b, variable 84).

APPENDIX A -- Continued

"How about Blue Cross-Blue Shield -- is it same or different doctors that treat different members in the family?" (Question 19c, variable 85). "How about commercial plans?" (Question 19d, variable 86).

7. "Does CHF provide for home visits by a physician?" (Question 21a, variable 90). "Does Blue Cross-Blue Shield provide this service?" (Question 21b, variable 91). "Do commercial insurance plans offer this service?" (Question 21c, variable 92).

8. "Can you get to a doctor easily and fast in CHF?" (Question 22a, variable 94). "Can you do this in Blue Cross-Blue Shield?" (Question 22b, variable 95). "What about commercial plans; can you do this?" (Question 22c, variable 96).

9. "Are all medical needs such as lab tests, x-rays, etc., taken care of all in one place in CHF?" (Question 23a, variable 98). "Is this provided in BC-BS?" (Question 23b, variable 99). "Is this provided in commercial plans?" (Question 23c, variable 100).

10. "Is one-stop medical service found in BC-BS?" (Question 24b, variable 103). "Is it found in CHF?" (Ques-

APPENDIX A -- Continued

tion 24c, variable 104). "Is it found in commercial plans?" (Question 24d, variable 105).

11. "Can you see a doctor in CHF as soon as you need one?" (Question 25c, variable 109). "How about BC-BS; can you see a doctor as soon as you need one?" (Question 25d, variable 110). "How about commercial plans?" (Question 25e, variable 111).

12. "Do you have a say in how BC-BS is run?" (Question 29b, variable 123). "How about CHF?" (Question 29c, variable 124). "How about commercial plans?" (Question 29d, variable 125).

13. "Is a doctor who is nearby provided in CHF?" (Question 30a, variable 128). "Is it provided in BC-BS?" (Question 30b, variable 129). "Is this provided in commercial plans?" (Question 30c, variable 130).

14. "Is there a CHF hospital located near you?' (Question 31a, variable 132). "Is there a hospital associated with BC-BS which is located near you?" (Question 31b, variable 133). "Is there one associated with the commercial plans?" (Question 31c, variable 134).

APPENDIX B

Work Deck Code Used in Cluster Analysis

Column	Variable Number	Code	Source
1-3		Study number (961)	20:1-3
4-5		Deck number (NR)	Added
6-8		Interview number	20:6-8
9		Type of insurance 7a. What is the name of the insurance company that covers you? 1. BC-BS (1) 2. CHF (2) 3. All other replies (3,4,5,6,7,8,9,&, -,0)	20:30-31
10	1	12b. Do you think shots and regular check-ups are arranged for under CHF? 1. Yes; qualified yes; no; qualified no (1, 2,5,6) = have information 2. Don't know (&) = don't have information	21:11
11	2	12c. What about BC-BS or Major Medical? 1. Yes; qualified yes; depends on doctor; no; qualified no (1,2,3,5,6) = have information 2. Don't know (&) = don't have information	21:12

APPENDIX B -- Continued

Column	Variable Number	Code	Source
12	3	12d. What about commercial health insurance plans. Do they arrange regular check-ups? 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:13
13	4	14c. In BC-BS do doctors and specialists work as a group? 1. Yes; qualified yes; depends on doctor; depends on person; no; qualified no; in the hospital (1, 2,3,4,5,6,7) = have information 2. Don't know (&) = don't have information	21:20
		14h. In BC-BS do doctors work by themselves? 1. Yes; qualified yes; depends on doctor; no; qualified no (1, 2,3,5,6) = have information 2. Don't know (&) = don't have information	21:25

APPENDIX B -- Continued

Column	Variable Number	Code	Source
14	5	14d. What about CHF? (Work as a group) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:21
		14i. What about CHF? (Solo practice) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:26
15	6	14e. What about commercial plans? (Work as a group) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:22
		14j. What about commercial plans? (Solo practice) 1. Yes; qualified yes; no; qualified no (1, 2,5,6) = have information 2. Don't know (&) = don't have information	21:27

APPENDIX B -- Continued

Column	Variable Number	Code	Source
16	7	15a. Can you see specialists freely in CHF? 1. Yes; qualified yes; no; qualified no; requires MD's recommendation (1,2,5,6, 8) = have information 2. Don't know (&) = don't have information	21:29
17	8	15b. Can you do this in BC-BS?(See specialists freely) 1. Yes; qualified yes; depends on MD; depends on person; no; qualified no; if hospitalized (1,2,3,4,5, 6,7) = have information 2. Don't know (&) = don't have information	21:30
18	9	15c. What about commercial plans? (See specialists freely) 1. Yes; qualified yes; you choose your own; no; qualified no (1, 2,4,5,6) = have information 2. Don't know (&) = don't have information	21:31

APPENDIX B -- Continued

Column	Variable Number	Code	Source
19	10	16a. Is this provided by CHF? (Have regular MD) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:33
20	11	16b. Is this provided by BC-BS? (Have regular MD) 1. Yes; qualified yes; depends on MD; depends on person; no; qualified no; if hospitalized (1,2,3,4,5,6,7) = have information 2. Don't know (&) = don't have information	21:34
21	12	16c. Is it provided by commercial plans (Have regular MD) 1. Yes; qualified yes; you choose your own; no; qualified no (1,2,4,5,6) = have information 2. Don't know (&) = don't have information	21:35

APPENDIX B -- Continued

Column	Variable Number	Code	Source
22	13	17c. Do the BC-BS MD's receive a fee for each visit from all their patients? 1. Yes; qualified yes; no; qualified no; BC-BS doesn't have its own MD's (1,2,5,6,8) = have information 2. Don't know (&) = don't have information	21:40
23	14	17d. How about CHF MD's; do they receive a fee for each visit from all their patients? 1. Yes; qualified yes; no; $1 per visit; small amount paid (1,2,5,6,8) = have information 2. Don't know (&) = don't have information	21:41
24	15	17e. How about MD's in commercial plans? (fee for service) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:42

APPENDIX B -- Continued

Column	Variable Number	Code	Source
25	16	19b. In CHF, does the same MD treat all members of the family or do they have different MD's for different members of the family? 1. Same; qualified same; it's up to the person; different; qualified different; have pediatrician for children; specialists available (1,2,4,5,6,8) = have information 2. Don't know (&) = don't have information	21:50
26	17	19c. How about BC-BS -- is it same or different MD's that treat different members in the family? 1. Same; qualified same; depends on MD; depends on person; different; qualified different; BC-BS doesn't provide MD's (1,2,3,4,5,6,8) = have information 2. Don't know (&) = don't have information	21:51
27	18	19d. How about commercial plans?(Same MD treat family) 1. Same; qualified same; you choose your own; different; qualified different (1,2,4,5,6) = have information 2. Don't know (&) = don't have information	21:52

APPENDIX B -- Continued

Column	Variable Number	Code	Source
28	19	21a. Does CHF provide this service? (Home visit) 1. Yes; qualified yes; no; qualified no; within a certain area; in an emergency (1,2,5,6,7,8) = have information 2. Don't know (&) = don't have information	21:56
29	20	21b. Does BC-BS provide this service?(Home visit) 1. Yes; qualified yes; depends on MD; if you pay for it; no; qualified no (1,2,3,4,5,6) = have information 2. Don't know (&) = don't have information	21:57
30	21	21c. Do commercial insurance plans offer this service? (Home visit) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:58
31	22	22a. Can you get to a doctor easily and fast in CHF? 1. Yes; qualified yes; no; qualified no; if you go to the clinic (1,2,5,6,8) = have information 2. Don't know (&) = don't have information	21:60

APPENDIX B -- Continued

Column	Variable Number	Code	Source
32	23	22b. Can you do this in BC-BS? (Easy and fast service) 1. Yes; qualified yes; depends on MD; depends on person; no; qualified no; in the hospital (1,2,3,4,5,6,7) = have information 2. Don't know (&) = don't have information	21:61
33	24	22c. What about commercial plans; can you do this -- easy and fast service? 1. Yes; qualified yes; depends on MD; you choose your own; no; qualified no (1,2,3,4,5,6) = have information 2. Don't know (&) = don't have information	21:62
34	25	23a. Is this provided in CHF? (All medical services in one place) 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	21:64
35	26	23b. Is this provided in BC-BS? (All medical services in one place) 1. Yes; qualified yes; depends on MD; no; qualified no; in the hospital (1,2,3,5,6,7) = have information 2. Don't know (&) = don't have information	21:65

APPENDIX B -- Continued

Column	Variable Number	Code	Source
36	27	23c. Is this provided in commercial plans? (All medical services in one place) 1. Yes; qualified yes; no; qualified no; in the hospital (1, 2,5,6,7) = have information 2. Don't know (&) = don't have information	21:66
37	28	24b. Is this type of arrangement found in BC-BS? (One-stop medical service) 1. Yes; qualified yes; no; qualified no; in the hospital (1,2,5, 6,7) = have information 2. Don't know (&) = don't have information	21:69
38	29	24c. Is it found in CHF? (One-stop medical service) 1. Yes; qualified yes; no; qualified no (1, 2,5,6) = have information 2. Don't know (&) = don't have information	21:70
39	30	24d. Is it found in commercial plans? (One-stop medical service) 1. Yes; qualified yes; no; qualified no (1, 2,5,6) = have information 2. Don't know (&) = don't have information	21:71

APPENDIX B -- Continued

Column	Variable Number	Code	Source
40	31	25c. Can you see a doctor as soon as you need one in CHF? 1. Yes; qualified yes; no; qualified no; if you can go to the clinic; if it's an emergency (1,2,5,6,7,8) = have information 2. Don't know (&) = don't have information	22:12
41	32	25d. How about BC-BS; can you see a doctor as soon as you need one? 1. Yes; qualified yes; depends on person; no; qualified no; if you go to the hospital (1,2,3,4,5,6,7) = have information 2. Don't know (&) = don't have information	22:13
42	33	25e. How about commercial plans? 1. Yes; qualified yes; depends on MD; you choose your own; no; qualified no (1,2,3,4,5,6) = have information 2. Don't know (&) = don't have information	22:14

APPENDIX B -- Continued

Column	Variable Number	Code	Source
43	34	29b. Do you have a say in how BC-BS is run? 1. Yes; qualified yes; no; qualified no; indirectly (1,2,5, 6,8) = have information 2. Don't know (&) = don't have information	22:27
44	35	29c. How about CHF? 1. Yes; qualified yes; no; qualified no; through the union (1,2,5,6,8) = have information 2. Don't know (&) = don't have information	22:28
45	36	29d. How about commercial plans? 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	22:29
46	37	30a. Is this provided in CHF? (MD nearby) 1. Yes; qualified yes; no; qualified no; only in an emergency; I live too far away (1,2,5,6,7,8) = have information 2. Don't know (&) = don't have information	22:32

APPENDIX B -- Continued

Column	Variable Number	Code	Source
47	38	30b. Is this provided in BC-BS? (MD nearby) 1. Yes; qualified yes; depends on MD; depends on person; no; qualified no; if you go to the hospital (1,2,3,4,5,6,7) = have information 2. Don't know (&) = don't have information	22:33
48	39	30c. Is this provided in commercial plans? (MD nearby) 1. Yes; qualified yes; no; qualified no; depends on MD (1,2,3,5,6) = have information 2. Don't know (&) = don't have information	22:34
49	40	31a. Is there a CHF hospital located near you? 1. Yes; qualified yes; no; qualified no; in an emergency (1,2,5,6,8) = have information 2. Don't know (&) = don't have information	22:36
50	41	31b. Is there a hospital associated with BC-BS which is located near you? 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	22:37

APPENDIX B -- Continued

Column	Variable Number	Code	Source
51	42	31c. Is there one associated with the commercial plans? 1. Yes; qualified yes; no; qualified no (1,2,5,6) = have information 2. Don't know (&) = don't have information	22:38
52		13. Are you concerned or worried about something that might go wrong with your health? 1. Yes (1) 2. No (5) &. D.K. -. N.A.	21:14
53		39,40,40c. Could you tell me what year you were born? What is your marital status? Are you married, widowed, divorced, separated, single? Do you have any children? Altogether, counting those that aren't living with you? 1. Has social responsibility -- dependent children (5,6,9) 2. Doesn't have social responsibility -- no dependent children (1,2,3,4,7,8)	22:61

APPENDIX B -- Continued

Column	Variable Number	Code	Source
54		39,40,40c. Could you tell me what year you were born? What is your marital status? Are you married, widowed, divorced, separated, or single? Do you have any children? Altogether, counting those that aren't living with you? 1. Lacks social support -- not married (1,2, 8,9) 2. Has social support -- married (3,4,5,6,7)	22:61
55		44,45,45a. How much formal education have you had? Have you attended night school or had vocational training? What was it? 1. Low level of education (1,2,3) 2. Moderate level of education (4,5) 3. High level of education (6,7) &. D.K. -. N.A.	22:67
56		38,38a,39b. Do you have any cars in your household? Latest model car only. 1. Yes (1,2,3,4,5,6,7, 8,9) 2. No (0) &. D.K. -. N.A.	22:54

APPENDIX B -- Continued

Column	Variable Number	Code	Source
57		53. With respect to meeting the basic needs of your family, that is -- being able to pay your bills and buying the things your family needs, would you say that your total family income was: 1. More than adequate (1) = high income adequacy perceived 2. Adequate (2) = moderate income adequacy perceived 3. Less than adequate (3) = low income adequacy perceived &. D.K. -. N.A.	23:21
58		51. Do you or your spouse belong to labor unions? 1. Respondent, or spouse, or both, belong (1,2,3,4,5,6,7,9) 2. Does not belong (0) &. D.K. -. N.A.	23:18
59		42. Where were you born? 1. United States (1,2,3,4) 2. Foreign-born -- not U.S. (5,0) &. D.K. -. N.A.	22:64

APPENDIX B -- Continued

Column	Variable Number	Code	Source
60		35. Color 1. White (1) 2. Black (2) 3. Other -. N.A.	22:51
61		63. Do you read any newspapers regularly? 1. Reads newspapers regularly -- ordinary, or special interest newspapers, or both (1,5,7) 2. Does not read newspapers (0) &. D.K. -. N.A.	23:57
62		64. How often do you watch TV? 1. Watches TV regularly -- more than 2 hours daily, or less than 2 hours -- but daily (1,2) 2. Does not watch TV regularly -- few times a week or few times a month or rarely (3,4,5) &. D.K. -. N.A.	23:58

APPENDIX B -- Continued

Column	Variable Number	Code	Source
63		65. How often do you listen to the radio? 1. Listens to the radio regularly -- more than 2 hours daily or less than 2 hours, but daily (1,2) 2. Does not listen to the radio regularly -- few times a week or few times a month or rarely (3,4,5) &. D.K. -. N.A.	23:59
64		66a. Which ones do you usually read? (mail advertisements) 1. Regularly reads mail advertisements -- commercial, organizational, health information, or various combinations thereof, or reads or glances at all (1,2,3,4,7) 2. Seldom or never reads mail advertisements (6,0) 9. Other -. N.A.	23:61

APPENDIX C

"P Values" for the 42 Information Items

Key to Column Headings in Appendix C:

"Variable Number" refers to the numbering of the 42 information items (variables) from 1 to 42, in order to avoid confusing one item with another.

"P Value" refers to the number of positive responses to a given item, divided by the total number of respondents.

"Decks NR and YQ" are the IBM card decks used in the processing of the data, the codes for which are located in Appendices B and F, respectively. "NR" and "YQ" are the identification letters for distinguishing between the two decks.

APPENDIX C -- Continued

P Values for Information Items -- BC-BS Members (N = 277)

Variable Number	P Value	Location in Decks NR and YQ
1	.4332	Column 10
2	.8267	" 11
3	.2635	" 12
4	.7292	" 13
5	.3863	" 14
6	.1841	" 15
7	.3032	" 16
8	.7401	" 17
9	.1480	" 18
10	.4043	" 19
11	.8772	" 20
12	.2419	" 21
13	.8411	" 22
14	.3610	" 23
15	.1805	" 24
16	.3646	" 25
17	.8447	" 26
18	.1625	" 27
19	.2960	" 28
20	.7942	" 29
21	.1769	" 30

APPENDIX C -- Continued

Variable Number	P Value	Location in Decks NR and YQ
22	.4585	Column 31
23	.8556	" 32
24	.2924	" 33
25	.4621	" 34
26	.8267	" 35
27	.2130	" 36
28	.8086	" 37
29	.4729	" 38
30	.1697	" 39
31	.3863	" 40
32	.8484	" 41
33	.2058	" 42
34	.9097	" 43
35	.3754	" 44
36	.2708	" 45
37	.4874	" 46
38	.8881	" 47
39	.3466	" 48
40	.5848	" 49
41	.9783	" 50
42	.3935	" 51

APPENDIX C -- Continued

P Values for Information Items -- CHF Members (N = 304)

Variable Number	P Value	Location in Decks NR and YQ
1	.9803	Column 10
2	.7171	" 11
3	.3059	" 12
4	.5987	" 13
5	.9178	" 14
6	.2138	" 15
7	.9079	" 16
8	.5987	" 17
9	.2336	" 18
10	.9605	" 19
11	.7303	" 20
12	.2829	" 21
13	.7039	" 22
14	.8684	" 23
15	.1941	" 24
16	.9046	" 25
17	.6546	" 26
18	.2303	" 27
19	.8520	" 28
20	.6974	" 29
21	.2632	" 30

APPENDIX C -- Continued

Variable Number	P Value	Location in Decks NR and YQ
22	.9638	Column 31
23	.7336	" 32
24	.3520	" 33
25	.9770	" 34
26	.6974	" 35
27	.2796	" 36
28	.7467	" 37
29	.9737	" 38
30	.2697	" 39
31	.9539	" 40
32	.6776	" 41
33	.2763	" 42
34	.7993	" 43
35	.8191	" 44
36	.2993	" 45
37	.9605	" 46
38	.7533	" 47
39	.3717	" 48
40	.9507	" 47
41	.9342	" 50
42	.3914	" 51

APPENDIX D

Calculations of Coefficients of Reproducibility
(Items Arranged in Order of Descending P Values)

Blue Cross-Blue Shield Clusters

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
1	20,21	None			1.000
2	32,33	None			1.000
3	41,42	None			1.000
4	26,28, 27,30	1101	6	6	.9684
		1010	4	4	
		0101	2	4	
		0100	19	19	
		0010	1	2	
				35	
5	38,23, 13,8, 4,39, 24,12, 6,15, 9	11111111011	3	3	.9150
		11111011111	2	2	
		11111111101	3	3	
		11111110110	4	4	
		11111110101	1	2	
		11011111101	3	6	
		11101111110	1	1	
		11110111011	1	2	
		11111111010	3	3	
		11111110011	2	4	
		11111111001	3	6	
		11111001110	1	2	
		11111110100	2	2	
		11111110010	3	6	
		11111101100	1	1	

APPENDIX D -- Continued

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
5 (Cont.)		11101111010	1	2	
		11111001101	1	3	
		11111101010	1	2	
		11101101110	1	2	
		11111000101	1	4	
		11111010010	1	3	
		11111101000	2	2	
		11111000011	1	4	
		11111001010	1	3	
		11111100100	1	2	
		11100110110	1	3	
		11101011100	1	2	
		11101001100	1	3	
		11111010000	3	3	
		11111001000	3	6	
		11101110000	2	2	
		11111000100	2	6	
		11011110000	1	1	
		11110110000	1	1	
		11100110010	2	8	
		11001111000	1	2	
		11101100000	1	1	
		10110001000	1	4	
		11100100000	2	4	
		11101000000	16	16	
		11011000000	4	4	
		11010001000	1	4	
		10111000000	6	6	
		01101010000	1	3	
		10101100000	1	2	
		11100001000	1	4	
		11010100000	1	2	
		10100100000	1	3	
		11001000000	2	4	
		10011000000	1	2	
		01100010000	2	8	
		01110000000	2	2	
		10110000000	2	2	
		11000001000	1	5	
		11010000000	3	3	
		11000100000	1	3	
		01101000000	2	4	
		00111000000	4	8	
		01011000000	1	2	
		10101000000	2	4	
		11010110000	1	2	

APPENDIX D -- Continued

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
5 (Cont.)		11110001000	2	6	
		11110100000	1	1	
		10111100000	1	1	
		11011001000	1	3	
		11010001000	1	4	
		11011100000	1	1	
		10010000000	1	2	
		00011000000	1	3	
		10100000000	1	1	
		00110000000	1	2	
		10000100000	1	4	
		00101000000	1	3	
		00001000000	1	4	
		00100000000	3	6	
		00010000000	1	3	
		01000000000	2	2	
				259	

CHF Clusters

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
1	5,6	None			1.000
2	22,15	None			1.000
3	2,8	01	17	17	.9720

APPENDIX D -- Continued

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
4	25,10,	110111	1	1	.9759
	40,16,	111101	12	12	
	27,9	111011	3	3	
		101111	1	1	
		111010	3	3	
		110110	2	2	
		111001	1	2	
		110101	1	2	
		101110	1	1	
		110100	5	5	
		101100	4	4	
		101000	2	2	
		011000	3	3	
		010000	1	1	
		001000	1	2	
				44	
5	29,31,	110111111111111	1	1	.9096
	41,38,	111111101111111	8	8	
	28,23,	111111111111101	3	3	
	11,13,	111111111101111	1	1	
	26,32,	111111111101101	2	4	
	17,39,	111111111110011	1	2	
	24,12,	111111110111101	1	2	
	33	111110111111011	2	4	
		111111111011110	2	2	
		111111111111001	1	2	
		111101101111111	1	2	
		111111101111011	1	2	
		111111101111110	1	1	
		111111111110100	4	4	
		101111111110110	1	2	
		101111111011110	1	2	
		111111111110010	3	6	
		111111011101101	1	3	
		111111001111101	1	3	
		111111110101101	1	3	
		111111011110001	1	4	
		111111111100100	2	4	
		111111110111000	2	2	
		110110110111011	1	4	
		111111101001110	1	3	
		111101111011100	1	2	
		111111110010110	1	3	

APPENDIX D -- Continued

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
5 (Cont.)		111111011110000	1	1	
		111111111010000	3	3	
		111101011110100	1	3	
		111011111110000	1	1	
		101111111110000	1	1	
		111111101100001	1	5	
		111110111110000	1	1	
		111101111100100	1	3	
		111011101110000	2	4	
		111110111100000	3	3	
		111111001110000	1	2	
		111100111110000	1	2	
		111111100110000	2	4	
		111101101110000	1	2	
		001111111110000	3	6	
		111101111001000	1	3	
		111111011100000	1	1	
		111011011100100	1	4	
		111110110110000	1	2	
		111010110110000	1	3	
		111111001100000	1	2	
		111100011110000	1	3	
		111101110010000	1	3	
		111100110110000	1	3	
		111111010100000	1	2	
		111001111010000	1	3	
		111010111010000	1	3	
		111000000001111	1	8	
		110100000001111	1	8	
		111011101100000	1	2	
		111101011100000	1	2	
		111100110010000	1	4	
		111110010010000	1	4	
		111011101000000	1	2	
		111010101100000	1	3	
		111011011000000	1	2	
		101111101000000	1	2	
		011101110100000	1	3	
		111111010000000	1	1	
		111001100110000	1	4	
		111100000001011	1	8	
		111001110010000	1	4	
		111101010010000	1	4	
		111001010000100	1	7	
		110010110010000	1	5	
		111101011001100	1	4	

APPENDIX D -- Continued

Cluster	Items	Off-scale Patterns	Freq.	Total Errors	Coeff.
5 (Cont.)		111011011110000	1	2	
		111011000010000	1	5	
		111011101010010	1	5	
		111100001100000	1	4	
		111011111100000	1	1	
		111101111010000	1	2	
		111111101100000	3	3	
		111011110110000	1	2	
		110101111110000	1	2	
		111110100011010	1	5	
		111100110000000	1	2	
		110100000101001	1	9	
		111101100000000	1	1	
		111010000110000	1	5	
		111100000011000	1	6	
		111100010000000	1	3	
		101010101000000	1	4	
		111010010000000	2	6	
		101110001000000	1	4	
		111111101110000	1	1	
		111111110110000	2	2	
		111010001000000	1	4	
		111000110000000	1	3	
		111010100000000	1	2	
		111000100000000	2	6	
		111000000010000	1	7	
		111001000000000	3	6	
		001110010000000	1	4	
		111000010000000	2	8	
		110100000001000	1	8	
		111000001000000	1	5	
		111010000000000	3	3	
		101010100000000	1	3	
		111111101011110	2	4	
		111111010111101	2	6	
		111111111011100	2	2	
		110000010000000	4	20	
		111101111111010	1	2	
		101000010000000	1	5	
		111111111110101	1	2	
		111111101101111	1	2	
		001000010000000	1	6	
		011000000000000	1	1	
				412	

APPENDIX E

Scoring Procedure for Information Clusters

Blue Cross-Blue Shield Clusters

Cluster	Freq.	Pattern	Score
		Scale:	
1	49	11	2
	171	10	1
	57	00	0
	277		
		Scale:	
2	57	11	2
	178	10	1
	42	00	0
	277		
		Scale:	
3	109	11	2
	162	10	1
	6	00	0
	277		
		Scale:	
4	39	1111	4 (H)
	15	1110	3 (H)
	143	1100	2 (M)
	22	1000	1 (L)
	26	0000	0 (L)
	245		

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
		Off-scale:	
4 (Cont.)	6	1101	3 (H)
	4	1010	2 (M)
	2	0101	2
	19	0100	1 (L)
	1	0010	1
	32		
		Scale:	
5	19	11111111111	11 (H)
	2	11111111110	10 (H)
	3	11111111100	9 (H)
	1	11111111000	8 (H)
	7	11111110000	7 (H)
	8	11111100000	6 (H)
	58	11111000000	5 (M)
	18	11110000000	4 (L)
	6	11100000000	3 (L)
	3	11000000000	2 (L)
	1	10000000000	1 (L)
	9	00000000000	0 (L)
	135		
		Off-scale:	
	3	11111111011	10 (H)
	2	11111011111	10
	3	11111111101	10
	4	11111110110	9 (H)
	1	11111110101	9
	3	11011111101	9
	1	11101111110	9
	1	11110111011	9
	3	11111111010	9
	2	11111110011	9
	3	11111111001	9
	1	11111001110	8 (H)
	2	11111110100	8
	3	11111110010	8
	1	11111101100	8
	1	11101111010	8
	1	11111001101	8

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
5 (Cont.)	1	11111101010	8
	1	11101101110	8
	1	11111000101	7 (H)
	1	11111010010	7
	2	11111101000	7
	1	11111000011	7
	1	11111001010	7
	1	11111100100	7
	1	11100110110	7
	1	11101011100	7
	1	11101001100	6 (M)
	3	11111010000	6
	3	11111001000	6
	2	11101110000	6
	2	11111000100	6
	1	11011110000	6
	1	11110110000	6
	2	11100110010	6
	1	11001111000	6
	1	11101100000	5 (M)
	1	11010110000	5
	2	11110001000	5
	1	11110100000	5
	1	10111100000	5
	1	11011001000	5
	1	11011100000	5
	1	11010001000	4 (M)
	1	10110001000	4
	2	11100100000	4
	16	11101000000	4
	4	11011000000	4
	1	11010001000	4
	6	10111000000	4
	1	01101010000	4
	1	10101100000	4
	1	11100001000	4
	1	11010100000	4
	1	10100100000	3 (L)
	2	11001000000	3
	1	10011000000	3
	2	01100010000	3
	2	01110000000	3
	2	10110000000	3
	1	11000001000	3
	3	11010000000	3
	1	11000100000	3

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
5 (Cont.)	2	01101000000	3
	4	00111000000	3
	1	01011000000	3
	2	10101000000	3
	1	10010000000	2 (L)
	1	00011000000	2
	1	10100000000	2
	1	00110000000	2
	1	10000100000	2
	1	00101000000	2
	1	00001000000	1 (L)
	3	00100000000	1
	1	00010000000	1
	2	01000000000	1
	142		

CHF Clusters

Cluster	Freq.	Pattern	Score
		Scale:	
1	65	11	2
	214	10	1
	25	00	0
	304		

		Scale:	
2	59	11	2
	234	10	1
	11	00	0
	304		

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
		Scale:	
3	165	11	2
	53	10	1
	69	00	0
	287		
		Off-scale:	
	17	01	1
		Scale:	
4	52	111111	6 (H)
	22	111110	5 (H)
	174	111100	4 (M)
	10	111000	3 (L)
	2	110000	2 (L)
	1	100000	1 (L)
	2	000000	0 (L)
	263		
		Off-scale:	
	1	110111	5 (H)
	12	111101	5
	3	111011	5
	1	101111	5
	3	111010	4 (M)
	2	110110	4
	1	111001	4
	1	110101	4
	1	101110	4
	5	110100	3 (M)
	4	101100	3
	2	101000	2 (L)
	3	011000	2
	1	010000	1 (L)
	1	001000	1
	41		

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
		Scale:	
5	48	111111111111111	15(H)
	3	111111111111110	14(H)
	7	111111111111100	13(H)
	5	111111111111000	12(M)
	46	111111111110000	11(M)
	6	111111111100000	10(L)
	1	111111111000000	9(L)
	0	111111110000000	8(L)
	0	111111100000000	7(L)
	1	111111000000000	6(L)
	0	111110000000000	5(L)
	1	111100000000000	4(L)
	18	111000000000000	3(L)
	8	110000000000000	2(L)
	0	100000000000000	1(L)
	1	000000000000000	0(L)
	145		
		Off-scale:	
	1	110111111111111	14(H)
	8	111111101111111	14
	3	111111111111101	14
	1	111111111101111	14
	2	111111111101101	13(H)
	1	111111111110011	13
	1	111111110111101	13
	2	111110111111011	13
	2	111111111011110	13
	1	111111111111001	13
	1	111101101111111	13
	1	111111101111011	13
	1	111111101111110	13
	1	111111111110101	13
	1	111111101101111	13
	2	111111101011110	12(H)
	2	111111010111101	12
	2	111111111011100	12
	1	111101111111010	12
	4	111111111110100	12
	1	101111111110110	12
	1	101111111011110	12
	3	111111111110010	12

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
5 (Cont.)	1	111111011101101	12
	1	111111001111101	12
	1	111111110101101	12
	1	111111011110001	11(H)
	2	111111111100100	11
	2	111111110111000	11
	1	110110110111011	11
	1	111111101001110	11
	1	111101111011100	11
	1	111111110010110	11
	1	111111011110000	10(M)
	3	111111111010000	10
	1	111101011110100	10
	1	111011111110000	10
	1	101111111110000	10
	1	111111101100001	10
	1	111110111110000	10
	1	111101111100100	10
	2	111011101110000	10
	1	111111101110000	10
	2	111111110110000	10
	3	111110111100000	9(M)
	1	111111001110000	9
	1	111100111110000	9
	2	111111100110000	9
	1	111101101110000	9
	3	001111111110000	9
	1	111101111001000	9
	1	111111011100000	9
	1	111011011100100	9
	1	111110110110000	9
	1	111101011001100	9
	1	111011011110000	9
	1	111011101010010	9
	1	111011111100000	9
	1	111101111010000	9
	3	111111101100000	9
	1	111011110110000	9
	1	110101111110000	9
	1	111110100011010	9
	1	111010110110000	8(M)
	1	111111001100000	8
	1	111100011110000	8
	1	111101110010000	8
	1	111100110110000	8
	1	111111010100000	8

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
5 (Cont.)	1	111001111010000	8
	1	111010111010000	8
	1	111011101100000	8
	1	111101011100000	8
	1	111000000001111	7(L)
	1	1101000000001111	7
	1	111100110010000	7
	1	111110010010000	7
	1	111011101000000	7
	1	111010101100000	7
	1	111011011000000	7
	1	101111101000000	7
	1	011101110100000	7
	1	111111010000000	7
	1	111001100110000	7
	1	111100000001011	7
	1	111001110010000	7
	1	111101010010000	7
	1	111001010000100	6(L)
	1	110010110010000	6
	1	111011000010000	6
	1	111100001100000	6
	1	111100110000000	6
	1	110100000101001	6
	1	111101100000000	6
	1	111010000110000	6
	1	111100000011000	6
	1	111100010000000	5(L)
	1	101010101000000	5
	2	111010010000000	5
	1	101110001000000	5
	1	111010001000000	5
	1	111000110000000	5
	1	111010100000000	5
	2	111000100000000	4(L)
	1	111000000010000	4
	3	111001000000000	4
	1	001110010000000	4
	2	111000010000000	4
	1	110100000001000	4
	1	111000001000000	4
	3	111010000000000	4
	1	101010100000000	4

APPENDIX E -- Continued

Cluster	Freq.	Pattern	Score
5 (Cont.)	4	1100000010000000	3(L)
	1	1010000010000000	3
	1	0010000010000000	2(L)
	1	0110000000000000	2
	159		

APPENDIX F

Work Deck Code Used in Hypothesis Testing

Column	Variable Number	Code	Source
1-3		Study number (961)	NR:1-3
4-5		Deck number (YQ)	Added
6-8		Interview number	NR:6-8
9		Type of Insurance	NR:9
		1. BC-BS (1) 2. CHF (2)	
Code for Clusters Scores of BC-BS Respondents Only			
10	1	Score on BC-BS Cluster #1	NR:30,29
		Code actual score	
11		Response pattern for cluster #1 fit Guttman scale?	NR:30,29
		1. Yes 2. No	
13	2	Score on BC-BS Cluster #2	NR:42,41
		Code actual score	
14		Response pattern for cluster #2 fit Guttman scale?	NR:42,41
		1. Yes 2. No	
16	3	Score on BC-BS Cluster #3	NR:51,50
		Code actual score	

APPENDIX F -- Continued

Column	Variable Number	Code	Source
17		Response pattern for cluster #3 fit Guttman scale? 1. Yes 2. No	NR:51,50
19	4	Score on BC-BS cluster #4 Code actual score	NR:39,36, 37,35
20		Response pattern for cluster #4 fit Guttman scale?	NR:39,36, 37,35
22-23	5	Score on BC-BS cluster #5 Code actual score	NR:18,24, 15,21, 33,48, 13,17, 22,32, 47
24		Response pattern for cluster #5 fit Guttman scale? 1. Yes 2. No	NR:18,24, 15,21, 33,48, 13,17, 22,32, 47
Code for Cluster Scores of CHF Members Only			
10	1	Score on CHF cluster #1 Code actual score	NR:15,14
11		Response pattern for cluster #1 fit Guttman scale? 1. Yes 2. No	NR:15,14

APPENDIX F -- Continued

Column	Variable Number	Code	Source
13	2	Score on CHF cluster #2 Code actual score	NR:24,31
14		Response pattern for cluster #2 fit Guttman scale? 1. Yes 2. No	NR;24,31
16	3	Score on CHF cluster #3 Code actual score	NR:17,11
17		Response pattern for cluster #3 fit Guttman scale? 1. Yes 2. No	NR:17,11
19	4	Score on CHF cluster #4 Code actual score	NR:18,36, 25,49, 19,34
20		Response pattern for cluster #4 fit Guttman scale? 1. Yes 2. No	NR:18,36, 25,49, 19,34
22-23	5	Score on CHF cluster #5 Code actual score	NR:42,21, 33,48, 26,41, 35,22, 20,32, 37,47, 50,40, 38

APPENDIX F -- Continued

Column	Variable Number	Code	Source
24		Response pattern for cluster #5 fit Guttman scale? 1. Yes 2. No	NR:42,21, 33,48, 26,41, 35,22, 20,32, 37,47, 50,40, 38

Continuation of Code for All Respondents

52		13. Are you concerned or worried about something that might go wrong with your health? 1. Yes (1) 2. No (2) &. D.K. (&) -. N.A. (-)	NR:52
53		39,40,40c. Could you tell me what year you were born? What is your marital status? Are you married, widowed, divorced, separated, or single? Do you have any children? Altogether, counting those that aren't living with you? 1. Has social responsibility for others -- dependent children (1) 2. Doesn't have social responsibility for others -- no dependent children (2)	NR:53

APPENDIX F -- Continued

Column	Variable Number	Code	Source
54		39,40,40c. Could you tell me what year you were born? What is you marital status? Are you married, widowed, divorced, separated, or single? Do you have any children? Altogether, counting those that aren't living with you? 1. Lacks social support -- not married (1) 2. Has social support -- married (2)	NR:53
55		44,45,45a. How much formal education have you had? Have you attended night school or had vocational training? What was it? 1. High level of education (3) 2. Moderate level of education (2) 3. Low level of education (1) &. D.K. (&) -. N.A. (-)	NR:55
56		38,38a,39b. Do you have any cars in your household? Latest model car only. 1. Yes (1) 2. No (2) &. D.K. (&) -. N.A. (-)	NR:56

APPENDIX F -- Continued

Column	Variable Number	Code	Source
57		53. With respect to meeting the basic needs of your family, that is -- being able to pay your bills and buying the things your family needs, would you say that your total family income was: 1. More than adequate = high income adequacy perceived (1) 2. Adequate = moderate income adequacy perceived (2) 3. Less than adequate = low income adequacy perceived (3) &. D.K. (&) -. N.A. (-)	NR:57
58		51. Do you or your spouse belong to labor unions? 1. Respondent, or spouse, or both, belong (1) 2. Does not belong (2) &. D.K. (&) -. N.A. (-)	NR:58
59		42. Where were you born? 1. United States (1) 2. Foreign-born (2) &. D.K. (&) -. N.A. (-)	NR:59
60		35. Color 1. White (1) 2. Black (2) 3. Other (3) -. N.A. (-)	NR:60

APPENDIX F -- Continued

Column	Variable Number	Code	Source
61		63. Do you read any newspapers regularly? 1. Yes (1) 2. No (2) &. D.K. (&) -. N.A. (-)	NR:61
62		64. How often do you watch TV? 1. Watches regularly (1) 2. Does not watch regularly (2) &. D.K. (&) -. N.A.	NR:62
63		65. How often do you listen to the radio? 1. Listens regularly (1) 2. Does not listen regularly (2) &. D.K. (&) -. N.A. (-)	NR:63
64		66a. Which ones do you regularly read (mail advertisements)? 1. Regularly reads mail advertisements (1) 2. Seldom or never reads mail advertisements (2) 9. Other (9) -. N.A. (-)	NR:64

APPENDIX G

Results of Hypothesis Testing on Responses Which Did Not Fit the Guttman Scale Pattern

TABLE 66

Relationship Between Concern Over Health and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.4074	.3014	-.1834,.9982	-.3691,1.0000
5	.3969	.1432	.1161,.6777	.0279,.7659

TABLE 67

Relationship Between Concern Over Health and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.1562	.2721	-.3771,.6896	-.5448,.8573
5	.0189	.1512	-.2775,.3154	-.3707,.4085

APPENDIX G -- Continued

TABLE 68

Relationship Between Social Responsibility and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.4925	.2781	-1.0000,.0526	-1.0000,.2240
5	.1124	.1373	-.1567,.3816	-.2413,.4662

TABLE 69

Relationship Between Social Responsibility and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.5434	.2020	.1474,.9395	.0229,1.0000
5	.3249	.1207	.0882,.5616	.0138,.6360

APPENDIX G -- Continued

TABLE 70

Relationship Between Lack of Social Support and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.4150	.3500	-1.0000,.2710	-1.0000,.4867
5	-.3694	.1374	-.6388,-.0999	-.7235,-.0152

TABLE 71

Relationship Between Lack of Social Support and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.4642	.2509	-.9561,.0276	-1.0000,.1822
5	-.3034	.1595	-.6162,.0093	-.7145,.1076

APPENDIX G -- Continued

TABLE 72

Relationship Between Having Social Responsibility Plus Social Support, and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.0000	.4895	-.9595,.9595	-1.0000,1.0000
5	.3652	.1569	.0576,.6729	-.0390,.7696

TABLE 73

Relationship Between Having Social Responsibility Plus Social Support, and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.6752	.2162	.2514,1.0000	.1182,1.0000
5	.5699	.1452	.2852,.8545	.1957,.9440

APPENDIX G -- Continued

TABLE 74

Relationship Between Education and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.2659	.2764	-.2758,.8077	-.4460,.9780
5	.1594	.1120	-.0601,.3789	-.1291,.4480

TABLE 75

Relationship Between Education and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.3076	.2073	-.0986,.7140	-.2263,.8417
5	.1481	.1048	-.0573,.3536	-.1219,.4182

APPENDIX G -- Continued

TABLE 76

Relationship Between Automobile Ownership and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	1.0000	.0000	1.0000,1.0000	1.0000,1.0000
5	.3152	.2739	-.2217,.8521	-.3905,1.0000

TABLE 77

Relationship Between Automobile Ownership and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.4166	.1855	.0529,.7803	-.0613,.8946
5	.1037	.2456	-.3777,.5851	-.5290,.7364

APPENDIX G -- Continued

TABLE 78

Relationship Between Income Adequacy and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.0399	.3860	-.7967,.7167	-1.0000,.9545
5	.0556	.1338	-.2067,.3180	-.2891,.4005

TABLE 79

Relationship Between Income Adequacy and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.5102	.1806	.1561,.8642	.0448,.9755
5	.3145	.1077	.1033,.5258	.0369,.5922

APPENDIX G -- Continued

TABLE 80

Relationship Between Union Affiliation and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.6000	.2018	-.9956,-.2043	-1.0000,-.0799
5	-.0891	.1491	-.3813,.2031	-.4732,.2949

TABLE 81

Relationship Between Union Affiliation and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.7678	.2248	-1.0000,-.3272	-1.0000,-.1887
5	-.1490	.1924	-.5261,.2280	-.6447,.3465

APPENDIX G -- Continued

TABLE 82

Relationship Between Ethnicity and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.2424	.4267	-1.0000,.5939	-1.0000,.8567
5	.0905	.2021	-.3055,.4866	-.4300,.6111

TABLE 83

Relationship Between Ethnicity and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.3823	.3838	-1.0000,.3699	-1.0000,.6063
5	-.1926	.2104	-.6052,.2199	-.7349,.3495

APPENDIX G -- Continued

TABLE 84

Relationship Between Color and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	1.0000	.0000	1.0000,1.0000	1.0000,1.0000
5	.6433	.1112	.4252,.8614	.3567,.9300

TABLE 85

Relationship Between Color and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.1122	.2781	-.4328,.6573	-.6042,.8287
5	.2389	.1407	-.0368,.5147	-.1235,.6014

APPENDIX G -- Continued

TABLE 86

Relationship Between Newspaper Reading and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.6666	.3504	-1.0000,.0202	-1.0000,.2361
5	-.1531	.3715	-.8813,.5750	-1.0000,.8039

TABLE 87

Relationship Between Newspaper Reading and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.5094	.3752	-.2261,1.0000	-.4572,1.0000
5	.5810	.1556	.2759,.8862	.1800,.9821

APPENDIX G -- Continued

TABLE 88

Relationship Between TV Viewing and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.5733	.2311	-1.0000,-.1203	-1.0000,.0220
5	.1408	.1174	-.0893,.3711	-.1617,.4435

TABLE 89

Relationship Between TV Viewing and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.1140	.2855	-.6736,.4456	-.8495,.6215
5	.0480	.1421	-.2305,.3266	-.3181,.4141

APPENDIX G -- Continued

TABLE 90

Relationship Between Radio Listening and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.6041	.3519	-.0856,1.0000	-.3025,1.0000
5	.0958	.1546	-.2071,.3989	-.3024,.4941

TABLE 91

Relationship Between Radio Listening and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	-.1203	.2777	-.6648,.4240	-.8359,.5952
5	.1144	.1449	-.1696,.3984	-.2588,.4877

APPENDIX G -- Continued

TABLE 92

Relationship Between Reading Mail Advertisements and Level of Information Concerning Features of Health Care Plans Among BC-BS Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.4714	.2856	-.0884,1.0000	-.2643,1.0000
5	.1105	.1411	-.1661,.3871	-.2530,.4741

TABLE 93

Relationship Between Reading Mail Advertisements and Level of Information Concerning Features of Health Care Plans Among CHF Members Whose Responses Did Not Fit the Guttman Scale Pattern

Cluster	Gamma	S.E.	95% C.I.	99% C.I.
4	.1407	.2614	-.3717,.6532	-.5328,.8143
5	.1373	.1318	-.1209,.3957	-.2022,.4769

APPENDIX G -- Continued

TABLE 94

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
4	.12500	.00000,.73134	.00000,.92190
5	.07692	.00000,.28739	.00000,.35353

TABLE 95

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Are White

Cluster	Lambda	95% C.I.	99% C.I.
5	.07142	.00000,.24835	.00000,.30396

TABLE 96

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among BC-BS Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.07462	.00000,.25036	.00000,.30560

APPENDIX G -- Continued

TABLE 97

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Members Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
4	.40000	.00000,1.00000	.00000,1.00000
5	.17391	.00000,.44221	.00000,.52654

TABLE 98

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
4	.09090	.00000,.40874	.00000,.50863
5	.09375	.00000,.21820	.00000,.25731

TABLE 99

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
4	.05263	.00000,.46661	.00000,.59672
5	.13829	.00000,.28946	.00000,.33698

APPENDIX G -- Continued

TABLE 100

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Are White

Cluster	Lambda	95% C.I.	99% C.I.
4	.17647	.00000,.49035	.00000,.58900
5	.09722	.00000,.25455	.00000,.30400

TABLE 101

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Read Newspapers Regularly

Cluster	Lambda	95% C.I.	99% C.I.
4	.14285	.00000,.49913	.00000,.61110
5	.10000	.00000,.22902	.00000,.26957

TABLE 102

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Watch Television Regularly

Cluster	Lambda	95% C.I.	99% C.I.
4	.06250	.00000,.45588	.00000,.57952
5	.11111	.00000,.25629	.00000,.30192

APPENDIX G -- Continued

TABLE 103

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
4	.11764	.00000,.46012	.00000,.56775
5	.16000	.02450,.29549	.00000,.33807

TABLE 104

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Read Mail Advertisements Regularly

Cluster	Lambda	95% C.I.	99% C.I.
4	.27272	.00000,.77670	.00000,.93509
5	.12500	.00000,.28201	.00000,.33136

TABLE 105

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Responsibility, Among CHF Respondents Who Are Affiliated with Labor Unions

Cluster	Lambda	95% C.I.	99% C.I.
5	.12087	.00000,.27064	.00000,.31771

APPENDIX G -- Continued

TABLE 106

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
4	.12500	.00000,.81252	.00000,1.00000
5	.10256	.00000,.38017	.00000,.46742

TABLE 107

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Perceive their Income as More than Adequate

Cluster	Lambda	95% C.I.	99% C.I.
5	.33333	.00000,.73093	.00000,.85590

TABLE 108

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
5	.03797	.00000,.24588	.00000,.31123

APPENDIX G -- Continued

TABLE 109

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Are White

Cluster	Lambda	95% C.I.	99% C.I.
5	.08571	.00000,.31289	.00000,.38429

TABLE 110

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Watch Television Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.01886	.00000,.28554	.00000,.36935

TABLE 111

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among BC-BS Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.07462	.00000,.29798	.00000,.36818

APPENDIX G -- Continued

TABLE 112

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Have a High Level of Education

Cluster	Lambda	95% C.I.	99% C.I.
4	.20000	.00000,.80728	.00000,.99814
5	.08695	.00000,.31726	.00000,.38965

TABLE 113

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Own Automobiles

Cluster	Lambda	95% C.I.	99% C.I.
4	.04545	.00000,.27574	.00000,.34812
5	.07291	.00000,.15396	.00000,.17944

TABLE 114

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Are Affiliated with Labor Unions

Cluster	Lambda	95% C.I.	99% C.I.
4	.05000	.00000,.30271	.00000,.38214
5	.05494	.00000,.23627	.00000,.29326

APPENDIX G -- Continued

TABLE 115

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Are White

Cluster	Lambda	95% C.I.	99% C.I.
4	.17647	.00000,.41042	.00000,.48395
5	.06944	.00000,.17114	.00000,.20311

TABLE 116

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Read Newspapers Regularly

Cluster	Lambda	95% C.I.	99% C.I.
4	.04761	.00000,.50303	.00000,.64617
5	.05555	.0000,.14780	.00000,.17680

TABLE 117

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Perceive their Income as More than Adequate

Cluster	Lambda	95% C.I.	99% C.I.
5	.11111	.00000,.31643	.00000,.38096

APPENDIX G -- Continued

TABLE 118

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Were Born in the United States

Cluster	Lambda	95% C.I.	99% C.I.
5	.06382	.00000,.23970	.00000,.29498

TABLE 119

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Watch Television Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.11111	.02220,.20001	.00000,.22796

TABLE 120

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Listen to the Radio Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.05333	.00000,.16121	.00000,.19511

APPENDIX G -- Continued

TABLE 121

Lambdas Indicating How Well Cluster Scores Not Fitting the Guttman Scale Pattern May Be Predicted from Social Support, Among CHF Respondents Who Read Mail Advertisements Regularly

Cluster	Lambda	95% C.I.	99% C.I.
5	.10714	.00256,.21172	.00000,.24459

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