Role of Information in Consumer Selection of Health Plans

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Considerable efforts are underway in the public and private sectors to increase the amount of information available to consumers when making health plan choices. The objective of this study was to examine the role of information in consumer health plan decisionmaking. A computer system was developed which provides different plan descriptions with the option of accessing varying types and levels of information. The system tracked the information search processes and recorded the hypothetical plan choices of 202 subjects. Results are reported showing the relationship between information and problem perception, preference structure, choice of plan, and attitude towards the decision.

INTRODUCTION

Paramount to the concept of true market competition is the availability of information that will enable consumers to make value-based purchase decisions. However, one particular market distortion of concern has been the limited information available to consumers about health coverage and treatment options or the lack of understanding of that information. Thus, considerable efforts are underway in both the public and private sectors to increase the amount of information available to consumers when making health plan choices. The assumption behind these

efforts is that providing purchasers with more information will increase competition in the health care market. In spite of this assumption, little is really known about how consumers will use information and what impact, if any, the information will have on their health plan selections.

Under this research, we studied how consumers make decisions about health care coverage and the role of information about health plans in this decision process. The specific objectives of this research were to examine the relationship between information and: consumers' perception of the health plan choice problem, consumers' preferences for health plan choice, any resulting changes in health plan choice, and consumers' attitudes towards the health plan choice process.

BACKGROUND

The most common analytic conception of insurance is the view that it exists to reduce uncertainty (Rushing, 1986). Under this formulation, insurance is simply protection against risk (Cullis and West, 1979). It is a way individuals have of coping with uncertainty. In return for a small certain sum (the premium), individuals guard against much larger potential losses should they become sick. From this viewpoint, the act of purchasing insurance is rational behavior. However, there is a clear distinction between the relatively straightforward decision to purchase health insurance and the problem of selecting one of many health plans. The potential consequences of uninformed health plan choices include selecting a plan that does

not provide sufficient financial protection, where access to needed care is difficult or inconvenient, and/or where the quality of care provided is less than optimal.

Early studies (from the 1970s) of consumer knowledge about their health insurance showed that people were relatively accurate in their reports of their hospital coverage but knew less about the specifics of non-hospital coverage (Marquis, 1983; Cafferata, 1984). This knowledge gap does not appear to have diminished. Results from a 1990 nationwide study showed that while consumers appear to accurately report coverage for hospital care and physician visits, there was considerable underreporting of coverage for mental health and substance abuse services and over-reporting of long-term care coverage (Garnick et al., 1993). Those who may understand their coverage the least are Medicare beneficiaries who currently face the complexities of the Medicare program and supplemental policies. Numerous methods for educating the elderly about health insurance options have been tried, including the use of broadcast and print media, booklets or brochures, personalized direct mailings, telephone-accessed informational tapes, telephone hotlines, lectures, and counseling. The relative effectiveness of these methods depends on the population to whom they are provided (Davidson, 1988; Andrews et al., 1989).

Work in the area of communicating health insurance information to consumers has led to the development and testing of the episode-of-illness approach for comparing health insurance options, initially for supplementary Medicare coverage. This approach is grounded in theories of social learning and information processing that suggest that people find comparisons and choices easier when they can see the potential implications of their choices. Service and cost profiles were developed for a series of 13 illnesses that are common among Medicare beneficiaries: high blood pressure, hearing loss, arthritis, depression, cataract, pneumonia, heart attack, enlarged prostate, breast cancer, broken hip, lung cancer, and stroke. Out-of-pocket costs under Medicare coverage and under each supplementary health insurance option are then calculated for each illness. Participants in educational sessions based on this approach were more likely to drop duplicative coverage, spend less on premiums, and report that expectations regarding changes in coverage had been met than participants receiving traditional comparative health insurance information (Sofaer, Kenney, and Davidson, 1992).

Studies on consumer choice of health plans began in the 1970s as researchers described who was choosing the new health maintenance organization (HMO) plans instead of traditional fee-for-service (FFS) insurance plans. In 1980, Berki and Ashcraft developed an analytic framework for the process of choice based on their own work and a review of the earlier work of others. The purpose of their review was to answer the question: Who joins what kind of HMO and why? They suggested that enrollment in an HMO (versus traditional FFS plans) is a selection of both the insurance characteristics (benefit package, premium price, and out-of-pocket costs) of the plan and its system of delivery of medical services (spatial, psychosocial, and temporal access, continuity of care, comprehensiveness of care, and clinical and social quality of care). They proposed two explanatory hypotheses for choice of particular insurance characteristics:

• The (health) risk perception hypothesis: "The higher an individual's perceived likelihood of the occurrence of future events that will require the use of medical services, the more likely that an

individual is, other things being equal, to choose a more comprehensive benefit package and pay the higher premium."

- The financial vulnerability hypothesis: "The larger the expected utility loss associated with a given level of expected financial loss, the more likely that the individual will purchase a plan that reduces the cost of utilization of medical services" (Berki and Ashcraft, 1980).

Studies that followed tried to determine whether the HMO plans were experiencing biased selection, either favorable (i.e., healthier, younger individuals) or adverse (for reviews of these studies, see Wilensky and Rossiter, 1986 and Hellinger, 1987). Wilensky and Rossiter (1986) concluded that there were generally mixed results with regard to the extent of selection bias. In a more recent review of selection bias, Hellinger (1995) concluded that plans restricting physician choice do experience favorable selection, but there continue to be studies that limit or contradict this conclusion. For example, Agency for Health Care Policy and Research (AHCPR) staff reported findings from the 1987 National Medical Expenditure Survey indicating that HMOs tended to enroll younger but not necessarily healthier enrollees (Taylor, Beauregard, and Vistnes, 1995), while, in their study of the Medicare market in the Twin Cities area, Dowd et al. (1996) found no evidence of favorable selection for the HMOs.

These selection studies looked at characteristics of individual members and factors affecting their past choice of health plans, such as family size, family income, education level, health status, satisfaction with current provider, and anticipated medical care needs. In addition, many of the studies used past utilization (either based on individual reports or claims data) as an indicator of selection bias. However, others have found expected utilization to be a better predictor

of future utilization (Robinson, Gardner, and Luft, 1993). Other factors investigated as potential factors leading to selection bias include consumer knowledge, health status, and health practices.

Others who studied choice of health plans, primarily economists, focused on the characteristics of plans people chose rather than characteristics of the consumers. Early studies of why people chose one type of plan over another focused primarily on the role of plan price (e.g., McGuire, 1981). Economists have since applied expected utility maximization theory to examine consumers' behavior in response to different financial characteristics such as health plan price (employee share of premium), deductibles, coinsurance and maximum liability. Dowd and Feldman (1994) found that consumers are quite sensitive to price differences in choosing among different traditional FFS options and between traditional plans and HMOs. Hershey et al. (1984) used an alternative approach by posing hypothetical choices of plans that differed in the levels of deductible amounts, coinsurance rates and limits, maximum out-of-pocket liability, and price. They used conjoint analysis to derive preference curves for each of these features. In addition to investigating general financial characteristics of plans, others have looked at the impact of benefit-specific factors such as hospital and outpatient mental health coinsurance, physician visit deductible, etc. on plan choices (Short and Taylor, 1989). Another study that attempted to address why consumers chose one specific plan among alternative health plans found that other plan characteristics, such as choice of provider, appeared to outweigh specific benefit coverage in choice decisions. Plan price and coverage for anticipated future health care needs also appeared to be important factors (Mechanic, Ettel, and Davis, 1990).

Rather than study enrollment decisions, i.e., why people join a plan, several researchers have examined disenrollment decisions, i.e., why people leave a plan, often using attitudinal rather than, or in addition to, behavioral evidence (Sofaer and Hurwicz, 1993). For example, Long, Settle, and Wrightson (1988) concluded that disenrollments are largely a function of economic factors, but also noted that plan characteristics such as staffing, hours, and location appear to play an important role. Most recently, Riley, Feuer, and Lubitz (1996) compared disenrollment rates for people diagnosed with cancer with those of other enrollees.

A number of studies investigating preferences for plan features have been reported in the health care marketing literature. Although the specific content of the studies varies, the general approach of these studies is to present respondents (over the telephone or in person) with a number of plan features and to ask the respondents to rate how important each of these features is in selecting among alternative health plans or health insurance carriers (e.g., Smith and Rogers, 1986; Scammon, 1989; Thompson and Kaminski, 1993). However, respondents to these types of studies tend to rate most features as very important and the studies fail to show if and how these criteria are actually incorporated into the decisionmaking process.

Klinkman (1991) proposed a model of the health plan decisionmaking process, expanding Berki and Ashcraft's model to describe two stages of health plan choice: the primary employer (plan sponsor) choice of plans to be offered to employees and then the consumer choice stage among these options. The latter stage delineates three (sequential) questions and the associated factors which the consumer considers:

(1) What Is Our Ideal Plan?

- What we can afford (available income: socioeconomic status).
- What we need (health risk: health status, perceived health, medical conditions, health concerns, prior utilization; demographics: life cycle stage, family size, other coverage; health beliefs: efficacy of care, prevention, locus of control).
- What we would like (prior experience, plan attributes).

(2) What Are Our Choices?

- Freedom of choice, convenience of use, integration into community.
- Economic characteristics of plans (benefit package, premium, copayment provisions).
- Service characteristics of plans (comprehensiveness, continuity of care, reputation of institutions).

(3) After a Choice Is Made, How Satisfied Are We?

However, as Klinkman (1991) acknowledged, this model represents a far more rational process than probably exists. In reality, he suggested "each choice situation can be characterized in terms of the demographic characteristics of individuals, the information available to them, and the information they seek."

Traditionally, the information available to consumers has focused on a description of plan coverage and costs. One of the major reasons for providing "additional" information regarding health plans to consumers is to allow them to extend their evaluation criteria beyond plan cost to consider the notion of value, where "value" is a ratio of the concept of plan quality to plan costs (Enthoven, 1993). Thus, significant efforts are underway to gather and

present information to consumers on plan quality. Currently, there are two major approaches to measuring plan quality. One approach involves the selection and development of performance indicators using administrative and clinical data; the other approach relies on consumer assessments of health plans. The most well-known example of the first approach is the Health Plan Employer Data and Information Set (HEDIS), released by the National Committee for Quality Assurance (NCQA), an organization that accredits HMOs. HEDIS 2.0/2.5 was developed based on earlier work by a group of HMOs and four large employers, and consists of approximately 60 indicators in 5 major areas of performance: quality, access and patient satisfaction, membership and utilization, finance, and health plan management (Corrigan and Nielsen, 1993). NCQA is currently working on additions and revisions to the indicators with Version 3.0 expected later this year.

The second approach to measuring plan quality is the use of surveys of consumer assessments of health plans. A number of groups such as the Group Health Association of America (GHAA) and companies such as Xerox, Digital and GTE (the Employee Health Care Value Survey) have developed or sponsored development of instruments for surveying consumers' judgments of various aspects of health plans. In 1995, AHCPR initiated a major effort to develop a standardized approach to measuring consumers' assessments of health plans, awarding research funds to Harvard Medical School, the RAND Corporation, and the Research Triangle Institute to test consumer assessment tools. In a paper commissioned for a conference sponsored by the Robert Wood Johnson Foundation and AHCPR, Gold and Wooldridge (1995) reviewed a number of plan-based surveys

of consumer satisfaction with access and quality of care. They point out that these surveys may be initiated by plans themselves, by consumer and/or community groups, or by plan sponsors. Government sponsors, such as the States of Minnesota and Wisconsin and the Office of Personnel Management (OPM) on behalf of the Federal Employee Health Benefits Program (FEHBP), are among those gathering and releasing consumer assessments of health plans. For example, the FEBHP published percent satisfaction scores for five areas of plan performance: access to care, quality of care, doctors available, coverage, and information/customer service/paperwork; along with a graphic depicting overall plan satisfaction (Office of Personnel Management, 1994).

Building on the literature and current developments described previously, the next section presents a framework for studying the role of plan information, including plan costs, plan quality, and plan rules (how the plans work), in consumer decisionmaking.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Table 1 summarizes the key factors of health care coverage decisionmaking as reviewed in the previous section.

Thus, past research suggests that, dependent on their own context (economic characteristics, demographics, health status, past utilization, etc.), consumers formulate perceptions of their need for coverage (based on their anticipated need for health services) and consider potential health plan alternatives based on this perception and on the relative costs of the alternatives. In addition, if consumers have a satisfactory relationship with a current provider, they will seek a plan that provides coverage for this provider. The characteristics that represent

Table 1
## Key Elements of Three Models of Health Care Coverage Decisionmaking

Sofaer and Hurwicz	Klinkman	Mechanic	Study Framework
Economic Characteristics Demographics	Available Income Demographics		Non-Health Background Variables
Historical and Recent Utilization Health Status Propensity to Utilize Health Care	Prior Utilization Health Status Health Risk Expected Utilization	Perceived Need	Health Background Variables
Relationship to Current Health Care Provider and Insurer	Prior Experience (Relationship, Satisfaction)	Physician/Patient Relationship	Health Plan Background Variables
Health Care Preferences and Satisfaction	Health Beliefs		Preference Structure
Knowledge and Information Sources for Health Care Coverage Options			Health Plan Knowledge
	Plan Characteristics (Economics and Service)	Cost of Plans	Health Plan Information

SOURCES: (Sofaer and Hurwicz, 1993); (Klinkman, 1991); and (Mechanic, 1989).

the context (or background variables) under which an individual contemplates the problem of choosing a health plan also include the individual's perception of choosing a health plan (e.g., how important or difficult a problem they consider it to be) and the individual's preferences for health plan features (i.e., the attributes of plans they consider important). According to behavioral and normative decision theories, the specific elements involved in the health plan choice process are the individual's preference structure, their view of any uncertainty surrounding the choice problem, and the choice itself. After making a choice, individuals also form attitudes towards both the process of making their decision as well as their actual decision.

The hypothesized relationship between these background variables and choice elements and information and knowledge form the conceptual framework for this study, presented in Figure 1. Background characteristics are likely to influence the amount and type of information that individuals desire in selecting a health plan. Individuals' level of knowledge about health plans in general and about the specific options available is likely to influence the information they seek. Conversely, the information they are exposed to is likely to affect their level of knowledge. Similarly, it is hypothesized that the information individuals are exposed to will affect their preference structure, choices, and attitude towards their

Figure 1
Conceptual Framework

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.
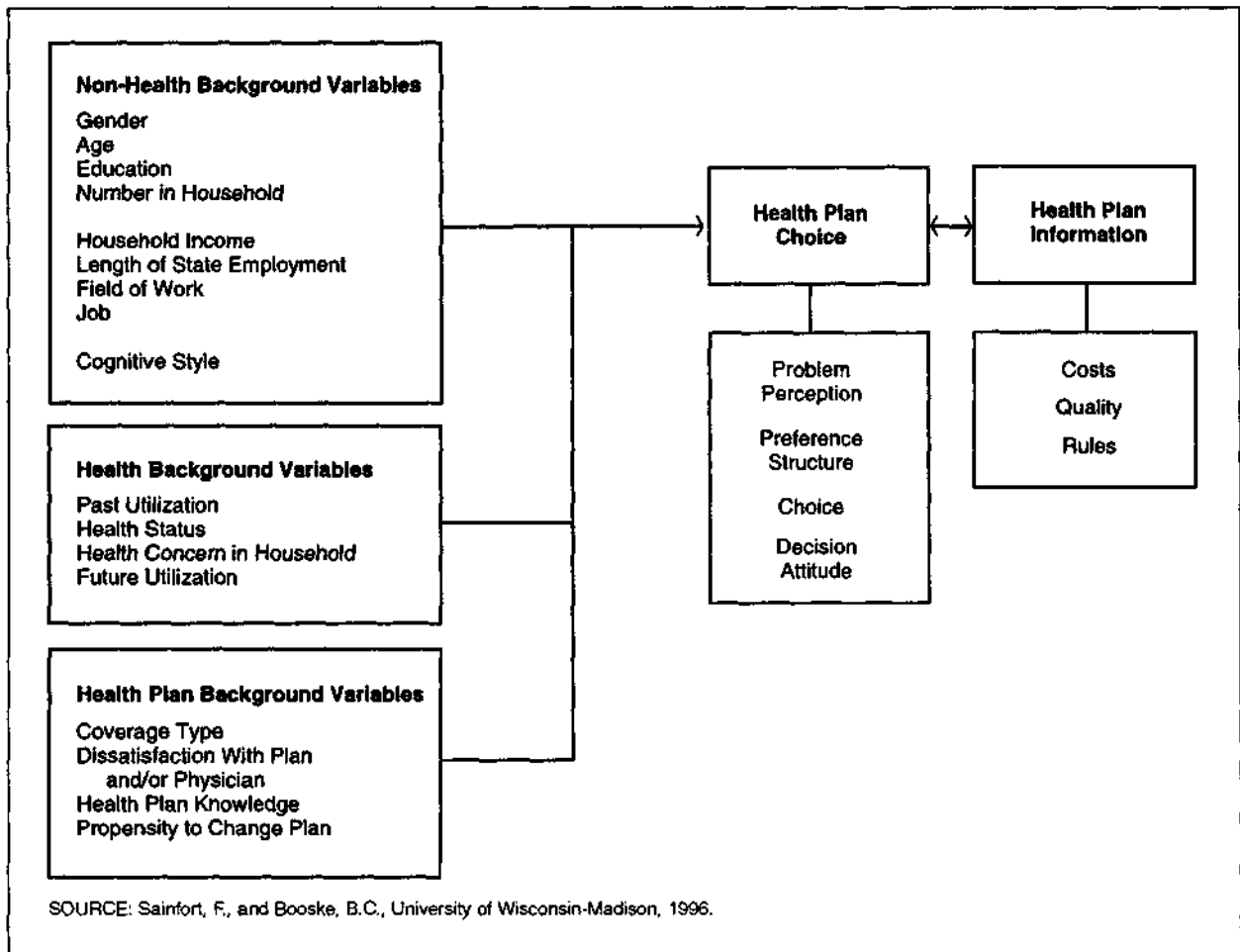
decision, which, in turn will affect the amount and type of information they seek.

This article focuses on the testing of hypotheses focusing on the relationship between the choice elements and information. Future work will address other components of the conceptual framework. The specific hypotheses tested include:

Information and Problem Perception

- Access to more information is associated with a perception of increased importance of the problem.
- Access to more information is associated with a perception of increased difficulty of the problem.

Information and Preference Structure

- Access to more information is associated with an increase in number of attributes.
- Access to more information is associated with a redistribution of relative importance of attributes.

Information and Choice

- Access to more information is associated with increased ability to choose.
- Access to more information is associated with increased likelihood of changing choice.

Information and Attitude Towards Decision

- Access to more information is associated with improved attitude towards decision.
- Access to more information is associated with decreased desire for additional information/assistance.

STUDY DESIGN

Past studies on consumer choice of health plans have relied on the use of mail or telephone surveys or face-to-face interviews to gain insights as to why people choose particular health plans. However, these data collection methods have provided little insight into how consumers make these decisions. As Mechanic (1989) points out, "simply giving respondents a list and asking them to rate the importance of various facets of their medical care is unlikely to elicit their preferences accurately. Respondents will indicate that many of the items you ask them about are important, but these identical criteria may not be particularly salient to them as they make their choices." As an alternative to these more traditional data collection methods, we developed a computerized system that was used to: elicit consumers' preferences for health plans; present different plan option descriptions with differing amounts and types of information; track the information search process; and record their actual plan choices.

The study population included the 74,000 individuals employed by the State of Wisconsin. The State of Wisconsin has provided group health insurance for its employees since 1960 and has offered multiple health plan options among which employees may choose (during an annual open enrollment period) for the past 11 years.[1] The Department of Employe Trust Funds, which administers the employee benefit programs, provided assistance with the identification of an appropriate random sample of respondents. The selected subjects were sent a letter offering compensation for participation in a

research study investigating how consumers use information in making decisions.[2] Calculating a response rate for this project is difficult due to the need to limit the number of subjects so as not to exceed the limits of our scheduling and compensation abilities. At least 45 percent[3] of the 754 subjects who received letters responded to the mailing, 215 appointments were scheduled, and 202 sessions were completed.

While the population of State employees is not representative of the general employed population since it fails to capture any employees in manufacturing occupations, this population was selected due to the prior exposure of a large number of State employees (or spouses) to the concept of multiple health plan options (few employers offer as many choices as the State of Wisconsin). We chose to study all State employees rather than only new State employees who have recently chosen a health plan upon initial employment since the underlying health care reform intent of increasing competition in order to increase quality and cost-effectiveness implicitly assumes that people will make ongoing choices rather than one-time-only choices.

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[2] Those interested in participating were asked to call to arrange an appointment, or, if they lived outside the local calling area, were provided a postcard they could return to indicate their interest in participation and their preferred times for an appointment. There was a high response to this initial mailing: letters were mailed on a Friday and over 100 phone calls were received on the following Monday. A phone script was used in handling these calls to ensure that all participants received the same information. Two hundred and fifteen 2-hour appointments were scheduled (to ensure that with no-shows at least 200 subjects would participate) between October 7 and November 5, 1995, to correspond with the State's open enrollment period (October 9 through October 27). Reminders were prepared for mailing 1 week prior to scheduled appointments. By the end of the data collection period, a total of 202 sessions were conducted and there were 13 cancellations/no-shows.

[3] Once the appointment schedule was filled, additional names were placed on a waiting list and then additional responses were calculated based on the volume of calls to the appointment scheduling number for the remainder of the month. Additional inquiries reaching the line in subsequent months or other research center staff were not included as responses.

A pilot study based on a series of in-depth face-to-face interviews with a small sample of consumers was conducted to test and refine the initial conceptual model and the design of the computer system. The results of the pilot study were used to finalize the system design. The data collection system was designed to be extremely user-friendly to minimize the impact of the technology itself on the subjects' decision process. Subjects were given training on a similar system that addresses an unrelated problem (apartment choice) so as not to influence their approach to the study problem. The system consists of a series of modules through which the subjects were guided. When they first accessed the system, subjects were prompted to indicate the features they consider important in selecting a health plan. They were then presented with alternative hypothetical health plan scenarios and asked to choose their preferred plan, first with a minimal amount of information, and then again with the option of accessing varying levels of extensive additional information about these plans.

Specifically, the computer system guided each consumer through seven modules:

- Module 1: While those of us who work in the health care field assign a certain level of importance to the problem of health plan selection, this same feeling may not apply to the increasing numbers of consumers who are presented with choices regarding their health plan coverage. One of the potential outcomes of increased customer knowledge is an increased perception of the importance of this choice problem. Consequently, before any information about health plan selection is presented to the subjects, an assessment was made of the level of importance they assign to this problem. Rather than a simplistic question such as

"How important is the choice of a health plan?", subjects were asked to consider a number of life choices such as purchasing a house or a car, selecting car insurance, selecting a college, choosing an apartment, choosing a child care provider, as well as choosing a health plan. Subjects indicated the relative importance of these choices and rated their difficulty.

* Module 2: The subject's preference structure was assessed by prompting them to list the concerns they have when trying to decide between alternative health plans, i.e., subjects were asked to generate their own list of concerns rather than identifying concerns from a predefined list. Subjects were also asked to indicate the importance of each concern on an analog scale. Preferences were reassessed in the same way in Modules 4 and 6.

* Module 3: Subjects indicated whether they have a particular physician whom they usually see. Those who do were asked to report their level of satisfaction with this provider. Past research on consumer choice of health plans indicates that the presence of a provider relationship plays a major role in the health plan selection process—in other words, if a consumer has a satis-

factory provider relationship, any plan that does not include that provider is likely to be automatically eliminated from consideration.

* Module 4: Subjects were provided with general information about four health plans and asked to make a choice. The subjects were informed that the plans all cover the same services, i.e., a standard benefits package. The package was described as very comprehensive covering hospital, nursing home, and home health care; sick and preventive physician visits; diagnostic tests; prescription drugs, medical equipment and supplies; mental health, alcohol and drug abuse treatment; all types of therapies, etc. Subjects with a satisfactory relationship with a physician were told to assume that their physician was covered under all four plans. The plan descriptions were displayed in a matrix format similar to that used by State government or private entities who offer alternative health plan options, with the limitation being the amount of information that can be displayed on one screen. An example of the type of information that was displayed is provided in Table 2. After selecting a plan, subjects were asked a series of questions about their attitude towards their decision.

Table 2
Choice 1 Plan Descriptions

Measure	Plan A	Plan B	Plan C	Plan D
Cost				
Your Share of Monthly Premium	$3.75	$4.87	$45.24	$12.29
Individual	$9.26	$11.93	$103.28	$29.16
Family				
Annual Deductible	None	Varies	$200	Varies
Percent You Pay for Services	0 or Small Copayment	0 or 30	10	0 or 30
Quality				
Members' Rating	Good	Excellent	Very Good	Good
Consumer Group's Rating	Fair	Good	Good	Excellent
Type of Plan	Health Maintenance Organization	Point-of-Service Health Maintenance Organization	Standard Fee-for-Service	Preferred Provider Organization

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

Additionally, the subject's preference structure was reassessed.

- Module 5: This section contained both a demonstration of an information search (regarding an apartment choice) and the information about each health plan. The purpose of the demonstration was to help familiarize the subject with the various methods to search the health plan information. In general, subjects were able to search by attribute (e.g., review how all four plans rate on cost), by plan (e.g., review how Plan A rates on cost, quality, or rules), or any combination of the methods.

Search by attribute: The subject can elect to search the information by attribute (by clicking on appropriate buttons). Within each attribute (e.g., quality) the information was arranged hierarchically in levels from general to detailed. The number of levels of information provided was different for each attribute: cost (2), quality (4), and rules (4). Level 1 corresponded to the most general information and the more detailed levels could be viewed by clicking "more information about ..." buttons.

Search by plan: The subject could elect to search the information by plan (by clicking on appropriate buttons). Information about each attribute of the selected plan could then be searched.

On any screen, words that were highlighted were included in a glossary that the subject could view by clicking on the unknown highlighted word. The subject navigated the system by clicking on the "more information about ..." buttons on all but the screen presenting the most detailed level of information. The subject could "back" out of their search by using a "previous screen" option or by directly returning to the initial screen in this module (by clicking a "home" button). The system tracked the information search pattern of the subjects as well as the glossary use. Subjects were required to view at least three screens (of level 2, 3 or 4 information) before being allowed to make their choice among the four plans.

- Module 6: The subjects were again asked about their attitude towards their choice and their preference structure was reassessed.

- Module 7: Subjects were presented with multiple choice questions to determine their experience and satisfaction with their current health plan, health plan utilization, cognitive style (using the Myers-Briggs Type Indicator), health status, health risk/behaviors, and demographic information.

Data collection took place in four phases: at the beginning of the session (time 0), in conjunction with the first display of the first health plan options (time 1), in conjunction with the second display of the health plan options (time 2), and at the conclusion of the session (followup). The sequencing of these data collection points was constructed carefully to avoid influencing the subject's decision process simply by asking a question. In effect, questions themselves, particularly those related to potential factors in the decisionmaking process, may provide information or suggest changes to the subjects' preference structures. For example, by asking the subject about his/her prior health care utilization, just this question itself might prompt a subject to consider incorporating this factor into his/her decisionmaking.

During the initial presentation of information about the four health plans (time 1), all subjects were exposed to the same amount of information. However subsequently (time 2), subjects were able to select which additional items of information they wished to access. As noted earlier, the

Figure 2

Distribution of Distinct Screens Accessed

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.
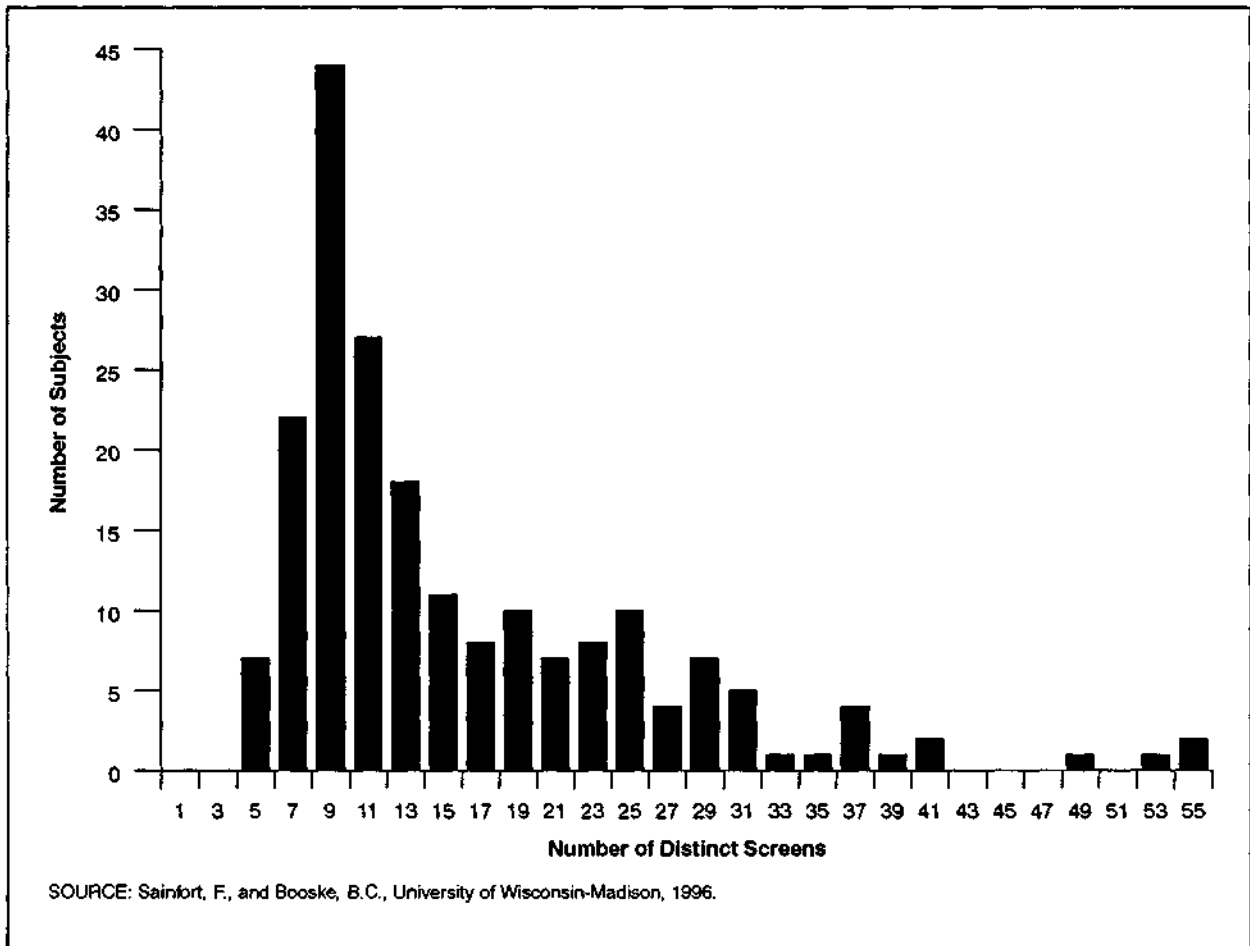
information search patterns of each of the subjects was recorded by the computer system. Consequently, for each subject, a record was available of every screen visited and every glossary definition accessed. These data were translated initially into three variables that captured different aspects of the subject's information search quantity: information time, information access, and information load. Information time was measured by the total amount of time the subjects spent looking at information prior to their second choice of plans (time 2). Information access was measured by the number of distinct screens visited (without taking into consideration how much information each screen contains) (Figure 2). Each screen varied in

the amount of available information: for example, subjects who reviewed information by attribute were exposed to information on one or more attributes or sub-attributes for all four plans while subjects who searched by plan were exposed to information on one or more attributes for only one plan at a time. Thus, a third variable was constructed, information load, measured by the number of the distinct screens visited, taking into consideration the weight of information on each screen, i.e., how many information cells each screen contained (Figure 3).[4]

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[4] As pointed out by an anonymous reviewer, the current analysis makes no distinction between differences in information other than the "amount"—each cell showed the results of a piece of information about one attribute for one plan, regardless of whether the information was qualitative or quantitative.

Figure 3

Distribution of Total Time Spent

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.
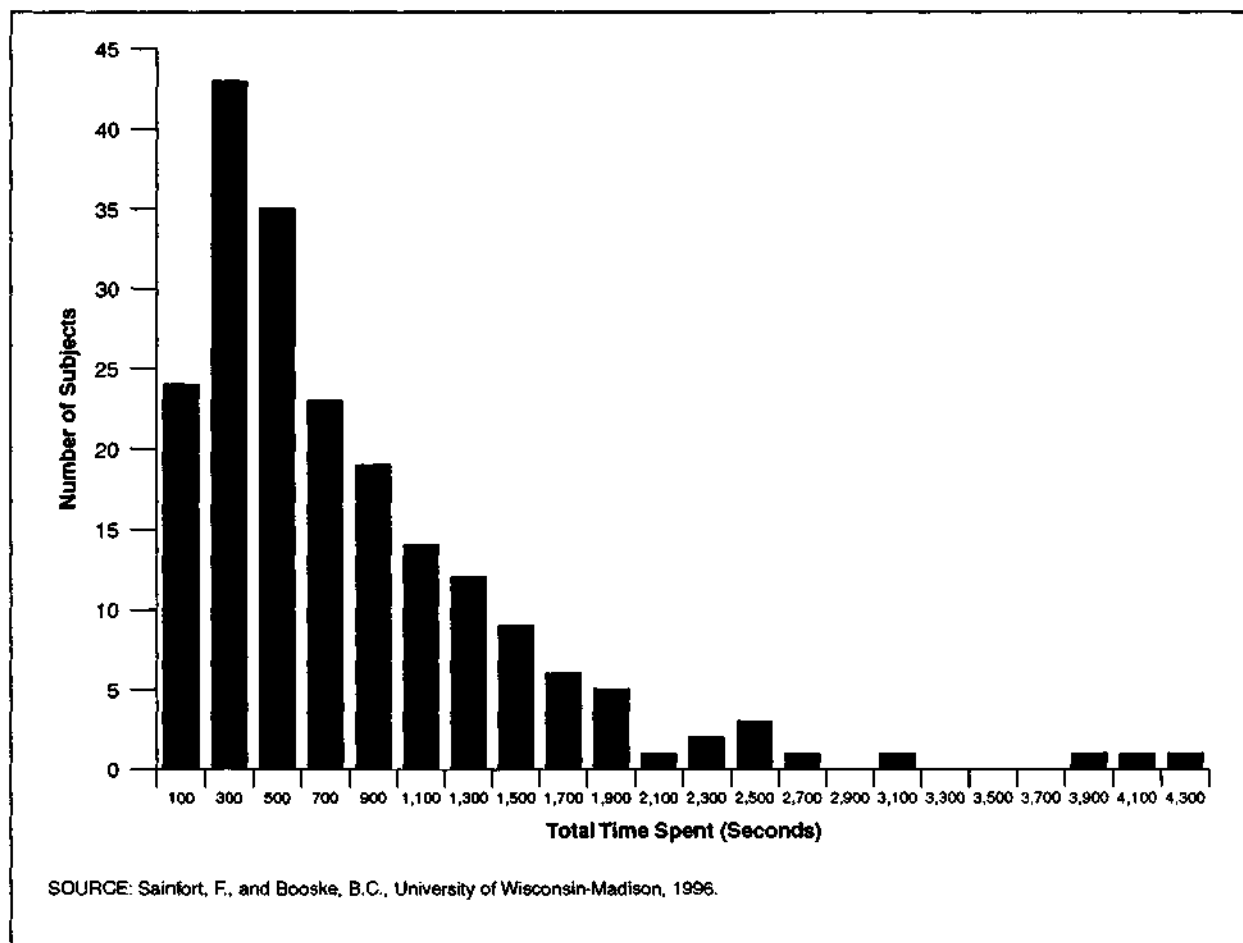
Subsequent analysis revealed a very high correlation between information access and information load indicating that the load distribution on the screens visited by subjects was similar across subjects. Consequently, only the information access and the information time variables are included in the results reported below.

A second approach was also used for testing the hypotheses involving "increased information." The information access and information time represent the amount of information accessed during time 2 and could be measured across subjects. A within-subject approach was also employed for testing some of the hypotheses. This approach involved examining differences between responses following review of the minimal information at time 1 and review of more detailed information at time 2. Using appropriate variables the eight hypotheses formulated earlier were tested. Results are presented in the following section.

RESULTS

Analyses were performed to investigate the relationship between information amount and four measures: (1) problem perception, (2) preference structure, (3) choice of plan, and (4) decision attitude. Information amount was measured in two different ways: number of information screens accessed and total time spent on these screens. Figures 2 and 3 show the distribution of these variables.

Of the 202 subjects, one subject was unable to navigate the information in module 5. Since he was given assistance for his information search, he was not included in the data analysis sample. In addition, the distribution of total time spent revealed four outliers spending much more time than the remaining subjects. Consequently, all the data analyses reported below were performed on the entire usable sample (N=201) as well as on a smaller sample excluding the outliers (N=197). Since all findings but one (discussed in the Information and Problem Perception section) were identical, statistical results from the entire sample are reported.

Information and Problem Perception

In terms of their perception of the health plan selection problem, two variables were examined—perceived relative importance of choosing a health care plan (importance) and perceived difficulty of choosing a health plan (difficulty). When compared with four other significant life decisions, opinions on the relative importance of choosing a health plan were mixed: 13 percent of the subjects ranked choosing a health plan as most important, 34 percent second, 29 percent third, 17 percent fourth and 7 percent fifth. Regarding the perceived difficulty in making such a choice, 5 percent of the subjects indicated that they consider choosing a health plan to be very easy, 20 percent thought it was easy, 38 percent neither easy nor difficult, 28 percent difficult, and 10 percent very difficult. These two aspects of problem perception—importance and difficulty—are only slightly correlated with a Spearman rank order correlation coefficient of .22 (p=.002, N=200). Table 3 shows summary statistics for the number of information screens accessed and the total time spent on these screens broken down by importance rank and by difficulty category.

Since the number of screens accessed and the total time spent on these screens were not normally distributed, both variables were transformed using a power transformation for number of

Table 3
Information and Problem Perception (N=201)

Ranking	Subjects		Number of Screens		Total Time Spent	
	N	Percent	Mean	SD	Mean	SD
Importance						
Ranked 5th (Low)	15	7.5	17.9	12.4	1,028	900
Ranked 4th	34	16.9	14.6	9.9	642	507
Ranked 3rd	58	28.9	15.2	8.7	625	487
Ranked 2nd	68	33.8	14.7	9.1	919	758
Ranked 1st (High)	26	12.9	17.4	12.4	1,007	987
ANOVA Results			NS		F=2.42 p=.05	
Difficulty						
Very Easy	9	4.5	14.8	8.9	551	354
Easy	40	20.0	15.8	10.7	835	762
Neither Easy Nor Difficult	75	37.5	17.4	11.3	954	782
Difficult	56	28.0	13.3	7.5	709	655
Very Difficult	20	10.0	13.6	7.9	586	533
ANOVA Results			NS		F=2.53 p=.042	

NOTES: SD is standard deviation. NS is not significant. ANOVA is analysis of variance.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

screens and logarithmic transformation for total time spent. The resulting transformed variables were normally distributed and an analysis of variance was performed to test the relationship between problem perception and information. As shown in Table 3, there was no significant effect of perceived importance on the amount of information accessed by subjects as measured by the number of screens. There was a significant effect of perceived importance on the total time spent accessing and studying information. However, there is no such effect when the same analysis is performed without the outliers ($F=1.71$, $p=.150$). In particular, the mean time spent by the 15 subjects ranking the health plan choice as a low importance decision drops from 1,028 to 829 seconds when outliers are excluded from the data sample. If subjects are split in two groups—those ranking health plan choice as the most or second most important decision, and the other subjects—then a significant difference ($F=6.10$, $p=.014$) is found in terms of total time spent: subjects ranking the problem of choosing a health care plan as more important spend on average more time accessing information than subjects giving lower rankings of importance.

A different pattern is observed regarding the relationship between perceived difficulty and information. While there was no significant effect of perceived difficulty on the amount of information accessed by subjects as measured by the number of screens, there was a significant effect of perceived difficulty on the total time spent accessing and studying information. The relationship between perceived difficulty and total time spent is not linear but displayed in inverted U-shape curve: subjects perceiving the problem of choosing a health care plan either as very difficult or very easy spent on average less time accessing information than subjects giving intermediate ratings of difficulty.

Information and Preference Structure

In this study, the subjects' preference structure consists of the set of attributes and the relative importance of these attributes elicited at different decision-making points. Before viewing any health plan information (time 0), subjects were asked to list the attributes important to them in selecting a health plan and to rate the importance of each in making such a decision. Subsequently, after examining a minimal amount of information about four plans (time 1), they were asked to redo the same tasks and again after being presented the option to access extensive information (time 2). Thus, the data available to examine changes in preference structure and its relationship to the amount of information accessed by the subjects consist of three consecutive sets of named attributes and their respective ratings of importance. Content analysis was conducted on the attributes of health plans entered by subjects during the interactive computer session at the three points in time. A coding system was developed to assign each attribute to one of nine categories of concerns: benefits/coverage, costs, provider, location/affiliation, availability of services, quality, administrative, satisfaction, and miscellaneous. The distribution of the codes assigned to these attributes and the changes over time is shown in Table 4.

As can be seen in Table 4, more concerns were added in the costs category than in any of the other categories. The administrative category saw the greatest percent increase, with 57 concerns initially listed at time 0 and 35 added by time 2. Examples of concerns in this category address quantity of paperwork, claims handling, the level of bureaucracy and/or

Table 4
Codes for Attributes Stated, by Subjects

Attribute Category	Time 0		Time 1		Time 2	
	Number	Percent	Number	Percent	Number	Percent
Total	1,079	100	1,192	100	1,272	100
Benefits/Coverage	325	30.1	351	29.4	360	28.3
Costs	208	19.3	237	19.9	254	20.0
Provider	185	17.1	186	15.6	192	15.1
Location/Affiliation	158	14.6	157	13.2	160	12.6
Availability of Services	60	5.6	68	5.7	82	6.4
Quality	59	5.5	74	6.2	82	6.4
Administrative	57	5.3	81	6.8	92	7.2
Satisfaction	15	1.4	26	2.2	36	2.8
Miscellaneous	12	1.1	12	1.0	14	1.1

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

red tape, ability to get appointments, and characteristics of the insurer. More details on the content analysis of the attributes is provided in Booske, Hundt, and Sainfort (1996).

After qualitative analysis of these data, we constructed three types of quantitative variables. The first type of variable consists of the change in the set of attributes from one decision time frame to the next, where a "change" consists of any attribute deletion and/or addition from the previous set. The second type of variable is simply defined as the number of attributes listed at any decision point. The third type of variable consists of the change in the ratings of importance of attributes from one time frame to the next. If the rating of an attribute listed on two consecutive time frames is modified, a change is recorded. This measure does not take account of attributes that are added or deleted in a time frame with respect to the previous opportunity, since these changes are accounted for in the first type of variable. Table 5 summarizes the results regarding attribute set change.

As shown in Table 5, a first group of 71 subjects (35.3 percent) did not change the set of attributes elicited at time 0 (before viewing any health plan information) over the entire experiment while 130 subjects (64.7 percent) did. Of those 130 subjects, a second group of 62 subjects (47.7 percent) changed their attribute set at time 1 only (after viewing a limited amount of information), a third group of 37 subjects (28.5 percent) changed their attribute set at time 2 only (after viewing an extensive amount of information), and a fourth group of 31 subjects (23.8 percent) changed their attribute set both at time 1 and then again at time 2. Thirty-four percent of the subjects who did not change their attribute set at time 1 changed it at time 2 and 33 percent percent of the subjects who did change their attribute set at time 1 changed it at time 2. Thus, changing or not at time 2 is not conditioned by changing or not at time 1. As expected, the number of attributes increased after viewing the information in the system. Overall, subjects elicited an average of 5.37 attributes (S.D.=2.08) at time 0; 5.93 attributes (S.D.=2.24) at time 1; and 6.33 attributes (S.D.=2.37) at time 2. More specifically, as shown in Table 5, the largest increase occurred for subjects changing their attribute set in both time 1 and time 2. While there are no differences in the mean number of attributes at time 0 between the four groups of subjects listed in Table 5, there are significant differences in the mean number of attributes at both time 1 and time 2.

Also shown in Table 5, there are significant differences in the mean number of screens accessed and the mean total time spent accessing and studying information among the four groups. Specifically, the results show that subjects who access more screens and spend more time studying the information are more likely to change their attribute set from time 1 to time 2 and significantly increase the number of attributes important to them in selecting a health plan. On the other hand, whether the subjects changed their attribute set from time 0 to time 1 had no effect on number of screens accessed in or time spent on the system.

Table 6 shows the relationships between information amount and change in the relative importance of the attributes listed by subjects. As shown in Table 6, a first group of 114 subjects (57 percent) did not change the importance ratings of the attributes they listed at time 0 over the entire experiment while 87 subjects (43 percent) did. Of those 87 subjects, a second group of 45 subjects changed their ratings at time 1 only, a third group of 18 subjects changed their ratings at time 2 only, and a fourth group of 24 subjects changed their ratings both at time 1 and time 2.

Table 5
Information and Attribute Structure

| Measure | Set of Attributes | | | | |
	No Change Over Time (N=71)	Change From T0-T1 Only (N=62)	Change From T1-T2 Only (N=37)	Change From Both T0-T1 and T1-T2 (N=31)	ANOVA Results
Mean (SD) Number of Attributes at T=0	5.06 (2.06)	5.55 (2.25)	5.57 (2.10)	5.48 (1.73)	NS
Mean (SD) Number of Attributes at T=1	5.06 (2.06)	6.66 (2.19)	5.57 (2.10)	6.90 (2.09)	F=13.55 p=.0001
Mean (SD) Number of Attributes at T=2	5.06 (2.06)	6.66 (2.19)	7.05 (2.31)	7.71 (2.15)	F=20.22 p=.0001
Mean (SD) Number of Screens	13.37 (8.40)	14.42 (9.40)	17.43 (12.50)	19.65 (8.84)	F=6.76 p=.001
Mean (SD) Total Time Spent	633 (503)	689 (683)	1088 (868)	1105 (809)	F=10.38 p=.0001

NOTES: SD is standard deviation. NS is not significant. ANOVA is analysis of variance.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

Table 6
Information and Relative Importance of Attributes

| Measure | Importance Structure | | | | |
	No Change Over Time (N=114)	Change From T0-T1 Only (N=45)	Change From T1-T2 Only (N=18)	Change From Both T0-T1 and T1-T2 (N=24)	ANOVA Results
Mean (SD) Number of Screens	13.89 (9.32)	16.91 (10.12)	15.39 (9.20)	19.79 (11.00)	F=5.94 p=.003
Mean (SD) Total Time Spent	681 (541)	1013 (899)	711 (667)	1092 (923)	F=4.86 p=.009

NOTES: SD is standard deviatiion. ANOVA is analysis of variance.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

Table 6 reveals significant differences in the mean number of screens accessed and the mean total time spent·accessing and studying information among these four groups. As opposed to the change in attribute set, however, these differences come from changes between time 0 and time 1. Specifically, subjects who changed their importance ratings from time 0 to time 1 subsequently accessed more screens and spent more time studying information than subjects who did not change their importance ratings from time 0 to time 1.

Information and Choice

After viewing the initial display of health plan information, subjects were asked to indicate which plan they preferred (plan A, B, C, or D) or they could select "Don't know." They were asked the same question again after viewing the more detailed information. Twelve percent of the subjects were unable to select a plan initially, while all but 5 percent of the subjects chose a specific plan after viewing more information. The point-of-service (POS) plan was the most popular plan at time 1 and time 2, however, its lead over the other plans was far greater at time 2. The results of the two choices are cross-tabulated and presented in Table 7.

Approximately one-half of the subjects changed their plan choice after viewing more detailed information. Table 8 shows that there was a clear relationship between information amount, as measured in terms of screens accessed and time spent, and change in plan choice. Those who changed plans from time 1 to time 2 looked at significantly more screens and spent more time looking at information than those who did not.

Looking at the amount of information accessed by specific plan chosen at t=1 and t=2 showed no significant difference in number of screens accessed among the five groups of subjects (i.e., those who

Table 7

Plan Choice

Choice 1	Choice 2					
	Total	HMO	POS	FFS	PPO	Don't Know
Total	201	37	105	8	42	9
HMO	53	26	21	1	4	1
POS	79	5	59	1	11	3
FFS	10	1	4	3	2	0
PPO	34	1	7	2	20	4
Don't Know	25	4	14	1	5	1

NOTES: HMO is health maintenance organization. POS is point of service. FFS is fee for service. PPO is preferred provider organization.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

Table 8

Plan Choice Results

	No Change in Choice	Change in Choice	t-test Results
Mean (SD) Number of Screens	13.7 (8.1)	17.4 (11.2)	$p=.01$
Mean (SD) Total Time Spent (Seconds)	721 (724)	909 (689)	$p=.01$

NOTE: SD is standard deviation.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

chose Plan A, B, C, D or don't know) at time 1 or time 2. However, there was an indication of some difference in terms of the amount of time spent and the plan chosen at time 1 (F=2.179, p=.073) and time 2 (F=2.069, p=.086). Those who chose the preferred provider organization (PPO) plan at time 1 spent less time looking at information than those who chose the other plans while those who chose the POS plan at time 2 spent more time looking at information.

Information and Decision Attitude

A series of questions were formulated to measure subjects' attitudes toward their decisions. The subjects were asked to indicate the extent to which they agree or disagree with each of 10 statements. The series of 10 statements were presented after each of the 2 decision points in the system, at time 1 and time 2. The 10 items were factor-analyzed using the principal component solution of the factor model with orthogonal rotation. Several factor solutions were examined in order to choose the most appropriate number of factors. A number of analytical criteria can be used to select the appropriate number of factors, including the cumulative percentage of total variation explained, Kaiser's and Jolliffe's rules, and graphical analyses of the scree graph and the log-eigenvalue diagram (Jolliffe, 1986). All criteria led us to retain two factors: (1) general attitude towards the decision and decision process (seven items); and (2) satisfaction with information and assistance (three items). Several techniques exist to develop scales that combine the 10 items into two measures (Kim and Mueller, 1978): regression method, least squares criterion, Bartlett's criterion, and summation of variables with high factor loadings. In this study we chose the last method, averaging of variables with high factor loadings. Table 9 shows the factor items, their loadings on each factor, the eigenvalue of each factor, the percent of variance

Table 9
Results for Decision Attitude Scales

Measure	Factor 1 General Decision Attitude	Factor 2 Satisfaction With Information and Assistance
Items Factor Loadings		
I Had No Problem Using the Information	.692	-.137
I Am Comfortable With My Decision	.786	-.140
The Information Was Easy to Understand	.747	-.067
It Was Difficult to Make a Choice	-.580	.346
I Am Satisfied With My Decision	.785	-.146
My Decision Is Sound	.768	-.171
My Decision Is the Right One for My Situation	.673	-.180
Consulting Someone Else Would Have Been Useful	-.111	.817
More Information Would Help	-.140	.648
I Wish Someone Else Had Made the Decision for Me	-.124	.504
Factor Eigenvalue	4.14	1.14
Percent of Variance Explained	41.40	11.40
Cronbach Alpha Coefficient	.86	.43
Factor Mean (SD) at T1	3.41 (.73)	2.85 (.55)
Factor Mean (SD) at T2	3.61 (.68)	3.24 (.61)
Paired t-test of Difference in Means (Time 1 Versus Time 2)	p=.0014	p=.0001

NOTE: SD is standard deviation.

SOURCE: Sainfort, F., and Booske, B.C., University of Wisconsin-Madison, 1996.

explained, and the level of internal consistency of the resulting scale as measured by its Cronbach's alpha (Cronbach, 1951).

Each scale varies from 1 to 5, where a score of 1 means negative attitude for the general attitude factor and low level of satisfaction with information and assistance for the second factor and 5 means positive attitude for the general attitude factor and high level of satisfaction with information and assistance for the second factor. The two scales are moderately correlated with a Pearson correlation coefficient of .48 at time 1 and .46 at time 2. As shown in Table 9, a paired t-test reveals a significant difference in the mean general decision attitude between time 1 and time 2: Subjects report a more positive attitude towards their decision on average at time 2 than at time 1. Similarly, a paired t-test reveals a significant difference in the mean satisfaction with information and assistance between time 1 and time 2: Subjects report a higher level of satisfaction with information and assistance on average at time 2 than at time 1. Thus attitude towards the decision process as measured by these two scales improved with the viewing of the more detailed information.

DISCUSSION

The results presented seem to lend support to the eight hypotheses formulated in the conceptual framework section. The general patterns that seem to appear are summarized and discussed here.

An individual's initial perception of the health plan selection problem has an effect on the information search strategy. Individuals who regard the problem of choosing a health care plan as either very difficult or very easy are less likely to spend time accessing and reviewing information than others. It might be that these individuals are trying to minimize their cognitive burden in making such a decision and therefore access less information. Individuals who initially perceive the problem as important spent on average more time accessing information than individuals who do not. While this result is sensible, it should be pointed out that subjects knew that the experiment was about health plan decisions before ranking the importance of choosing a health plan as compared with other life decisions.[5] This might have biased their judgments of the relative importance upward, hence the distribution of the ratings of importance might be overskewed to the left. However, the relationship of importance to information amount is, in our opinion, still valid.

Also, an individual's stated preference structure for evaluating and choosing health plan selection problem is influenced by and changes with the information search pattern. After viewing even a limited amount of information, individuals tend to change their preference structure in terms of the attributes deemed important in selecting health plans. Not only do they add or remove attributes, but they also tend to modify and adjust the ratings of the importance of the attributes in making such decisions. Furthermore, when offered the possibility to navigate through extensive information, individuals who access more information and spend more time studying it are more likely to change their preference structure and tend to consider more attributes.

Information has an effect on an individual's ability to choose and on his/her final choice. After viewing extensive information, more people were able to select a plan than initially. Approximately one-half of the subjects changed their plan choice after viewing more detailed information. There was a clear relationship between information amount and change in plan choice:

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[5] Subjects were not told that the study involved health plan choice until after they had scheduled an appointment.

Individuals who look at more information are more likely to change their choice.

Finally the provision of detailed information has an impact on an individual's decision attitude. Individuals feel more positive towards their decisions and more satisfied with information and assistance after viewing detailed information. However, this particular finding may be inflated by the design of the experiment due to the large differential in the amount of information available at time 1 and time 2. Another general issue addresses the specific measures of the amount of information. The measures initially constructed for this study do not fully capture the concept of quantity of information received and processed by individuals. Rather, these measures reflect the amount of information to which individuals were exposed. Further investigation and refinement of these measures will be reported elsewhere.

These results support our hypotheses; however, the study has specific limitations which may prevent generalization. The study population is well-educated and thus is not representative of the U.S. population as a whole. However, it was selected precisely because the population is experienced with making health plan choices since one goal of the study is to identify ways to help less experienced individuals in making good health plan decisions. Observing and understanding experienced individuals' decisionmaking processes is critical to provide decision support to less experienced individuals. The use of a computer system was an integral part of the study design since it allowed tracking information search. Such a method might be questioned if the study population were not familiar with computers. However, the majority of the study population had prior computer experience and those who did not showed a positive attitude towards this user-friendly system.

Another potential limitation of the study is that the plans selected in the experiment have rich benefits and small out-of-pocket costs. Thus, these plans are not representative of actual plans across the country. However, they are representative of plans offered to State employees in Wisconsin; this limitation helps narrow down the decision criteria to other important plan characteristics. Furthermore, by conducting the experiment in the context of open enrollment, the potential impact of the hypothetical nature of this choice of plan is decreased. During the debriefing session at the end of the experiment, many subjects made reference to their current decisionmaking process.

CONCLUSION

Numerous private and public organizations are currently engaged in major activities involving the collection and dissemination of health plan information. These activities have been the topic of two U.S. General Accounting Office (1994, 1995) reports in the past 2 years. In addition, there is a growing interest in the use of technology to help consumers make informed health care choices, e.g., projects currently underway and funded by HCFA and AHCPR, as well as in the commercial sector, to develop computer "kiosks" to provide comparative health plan information. One particular goal of these efforts is to extend the scope of these decisions to include aspects beyond premium price and out-of-pocket costs. The premise underlying these efforts is that an increase in information will stimulate competition, creating informed consumers who make value-based purchasing decisions and holding plans accountable for the care they provide. However, since collecting and disseminating information and developing technologies are costly activities, it is

important that the effectiveness of these efforts be determined. These preliminary results from this study begin the process of understanding the impact of providing consumers with additional information.

One key finding from this study was the large percentage of people who changed their choice of plans after reviewing additional information. There is normally a great amount of inertia in health plan enrollment, i.e., few people change plans during open enrollment periods. This study's finding was most likely overstated due to both the hypothetical nature of the choices and also to the large differential in the amount of information between two decision points.[6] However, it is still important from a policy perspective. But, as mentioned by one of the anonymous reviewers, consumer response to information about price and quality is an essential element if managed competition is to work. Yet there may be a point at which increased information may have a long-term negative effect if it leads to frequent plan switching involving provider changes and disruption of the continuity of care.

Another key finding from the study is the relationship between information and preference structure. Interpreting these results suggests, first, that consumers are not able to fully describe the features of plans that are important to them, and second, that providing information about additional features makes them realize that these features are also important. In basic terms, when presented with information about additional plan features, consumers may have one or both of the following reactions: "Oh yes, I forgot that feature is important to me" or "Oh, I've never thought about that feature before but it is an important point to consider." While

many consumers may be accustomed to choosing among plans on the basis of costs and coverage, this study suggests that providing information about additional characteristics, such as quality, will lead consumers to expand the dimensions upon which they base their decisions.

There are at least two important implications of this finding. The first addresses the selection of what health plan information to provide to consumers and the second addresses the design of tools to aid consumer decisionmaking. With respect to identifying what information to provide to consumers, many suggest, not unreasonably, that one of the first steps is to ask consumers what information they need to make a decision. However, as this research points out, upon exposure to information about other plan characteristics that they themselves have not identified as important, consumers will add some of these additional characteristics as dimensions in their decisionmaking. Thus, decisions about what features to describe in health plan information should not be based solely on what consumers currently say is important to them. An important policy task is to identify which additional plan features are desirable and important enough to be considered by consumers in selecting a health plan. Describing certain plan features, as opposed to others, may lead consumers to select plans that perform well on these features while ignoring plans that may perform as well or better on other features. For example, in the extreme, concentrating on describing the quality of inpatient care in plans while providing little information about how the plans work may lead consumers to select plans where there is excellent inpatient care but where they find themselves unable to obtain other types of care without major inconvenience.

The second implication of the change in preferences upon reviewing additional

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[6] Future research might investigate whether such frequent switching occurs when more extensive information is provided initially and is then supplemented with a far more limited set of additional information.

information concerns the design of tools to assist consumer decisionmaking. The traditional normative decision approach suggests a two-step process: (1) ask consumers what is important to them in making their choice and then (2) provide information on these features for the consumers to rate. However, since people may not fully describe their preferences because, without information, they do not know all the potential dimensions on which they could and/or should base their decisions, a revised normative model is suggested for assisting consumers' decisionmaking: (1) Present consumers with listings of plan characteristics or features for which information is available; (2) help consumers understand and identify which characteristics might be important to them; and (3) assist consumers with interpreting and then integrating the information on these important characteristics to make a final choice.

In conclusion, we believe that current efforts to provide more information are well founded because exposure to more detailed information was associated with more positive general attitudes towards the health plan decision. However, with more information, our results suggest that we also need to provide more assistance or different types of assistance. Just providing more health plan information is not enough. Because we do not know why some people want more or less information but we do know that they feel better about their decision with more information, consumers may need more structured help. Providing information in a structured way, as in the system developed for this research, helped people clarify their preference structure and enhanced their general attitude towards their final decision.

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