Evaluating Consumer Preference for Private Long-Term Care Insurance

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Despite significant growth in the market for private long-term care insurance in recent years, empirical research is lacking on how policy attributes affect consumer preference. Using conjoint techniques, the authors estimate the utility values associated with different levels of long-term care policy attributes, as well as the overall importance of the attributes. A simulation procedure for estimating the percentage of consumers who would prefer specific types of policies also is presented.

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According to a report by the House Select Committee on Aging (U.S. House of Representatives 1987), an astonishing 78% of older (i.e., over the age of 65) married couples living alone "spend down" their incomes to the federal poverty level within one year of either spouse entering a nursing home. The risk of impoverishment, the report notes, is even greater for older single persons living alone. Ninety-four percent of such persons exhaust their incomes to the poverty level within one year of entering a nursing home.

The problem of nursing-home-induced impoverishment in the U.S. is exacerbated by the growing number of persons age 65 and older. In 1980, there were 25.7 million elderly persons in the country, or 11.3% of the total population (Rice 1989). By 2030, the number of elderly persons is projected to be more than 64 million, constituting about 20% of the population. The quantity and quality of long-term care these citizens should receive, and their ability to finance it, is one of the most pressing issues on the national agenda.

In recent years, private long-term care insurance has received considerable attention from both the private and public sectors as a potential alternative to increased public spending for the long-term care needs of the elderly. The attractions of private long-term insurance are many. Potential consumers find it attractive because it protects personal assets and income from the adverse consequences of a nursing home stay. It also affords a high degree of control over the type and quality of nursing home care to be received. Insurance companies are interested in it because of the potential marketing opportunities; though such insurance was unknown only a few years ago, today about 70 companies offer long-term care packages (*Consumer* Reports 1988). Finally, many policy makers advocate an expanded role for private insurance because it is a way to bridge the growing gap between total nursing home expenditures and the fiscal resources available from federal and state sources.

Despite its promise, private long-term care insurance is still in the infancy stage of its life cycle (Sutton 1987). As a result, many unanswered questions remain, particularly demand-related ones. For example, how do consumers evaluate long-term care insurance products? What package of benefits and features (or attributes) do consumers look for in a long-term care policy? What is the relative importance of the features that make up alternative policies? Do consumers weight, say, monthly premium more heavily than years of coverage in evaluating a policy, or vice versa? Relatedly, how do consumers evaluate different levels of the same attribute? That is, how much more (or less) utility do consumers receive from a policy offering, say, lifetime coverage than from one offering five years of coverage?

We address these questions of consumer preference for private long-term care insurance by reporting the results of an empirical study in which the fea-

tures of policies affecting consumer evaluations were investigated. After briefly reviewing the dilemma facing health care analysts and policy makers in providing long-term care for the elderly, we describe the technique we used to quantify the tradeoffs consumers make when evaluating policies. Salient product attributes affecting consumer insurance policy evaluations are identified. Next we describe a conjoint study, based on a sample of elderly citizens, in which each respondent's global judgments about alternative policies were used to infer that individual's utility for each level of each policy attribute. Alternative policy combinations were analyzed by using simulation techniques and the most preferred policy, from the point of view of potential consumers, was identified. After reporting the results, we conclude by discussing implications and limitations, as well as future research directions.

LONG-TERM CARE AND THE PRIVATE INSURANCE OPTION

Two statistics highlight the nature and extent of the challenge confronting health care analysts and policy makers responsible for devising strategies to meet the long-term health care needs of the elderly. One is the high and rising cost of staying in a nursing home—the average stay costs between $20,000 and $30,000 annually (U.S. House of Representatives 1987), but by the year 2018 the average cost of a year's stay will be approximately $55,000 (Consumer Reports 1988). Second is the tremendous growth in the elderly population projected over the next several decades-growth that will result in a large increase in the number of nursing home residents. According to one projection, the number of elderly requiring nursing home care will quadruple between 1980 and 2040, from 1.3 million to 5 million persons (Rice 1989).

The increasing cost of nursing home care

and the growing number of elderly pose the critical question: Who will pay the cost of caring for the disabled elderly? At present, there are three main sources of nursing home financing: private payments (not insurance), Medicaid, and Medicare (Connolly 1987). Individual out-of-pocket payments for nursing home care account for approximately 5 1% of all nursing home expenditures. Medicaid, the federal and state health care program for individuals with income below poverty thresholds, finances approximately 43% of the national nursing home "bill." The Medicare program, initially implemented to protect the elderly from the financial risk of acute care costs, covers less than 2% of total nursing home costs (Branch et al. 1988). Miscellaneous sources finance the remainder.

Initially, many elderly persons entering nursing homes attempt to finance their stay by using personal income and assets. However, as a result of the high cost of nursing home care, many of these individuals eventually "spend down" assets and income to the point of Medicaid eligibility (eligibility differs among states, but is typically near or below the poverty line). The impoverishment of the (initially) "nonpoor" as a result of their need for extended nursing home care is a common phenomenon. Of major concern is the fact that of the two-thirds of nursing home residents who receive Medicaid assistance, nearly one-half were not poor upon entrance to a nursing home (Sutton 1987).

Many consumers, concerned about their risk of requiring long-term care and the lack of public resources available to prevent a decline into impoverishment, look toward private insurance for long-term care protection. According to a National Center for Health Services Research survey, elderly persons consider purchasing long-term care insurance for the following reasons: to avoid dependence on family support, to ensure choice in the selection of the type of care and the location of the care, and

to protect personal income and assets (Meiners and Tave 1984).

Private care insurance, however, is a very new product and insurers offer a tremendous variety of policies. In her study of current long-term care insurance products, Sutton (1987) found that policies differed significantly in (1) the method of defining each level of nursing care and other services to be covered, (2) the length of the coverage, (3) the deductible amount and waiting periods, (4) the exclusionary periods and pre-existing condition clauses, (5) the prior hospitalization requirements and physician certification, and (6) the benefit amount. A recent Consumer Reports (1988) article on long-term care policies notes that currently available private policies are characterized by "huge differences in dollar benefits, in definitions of covered nursing facilities, in the length of time benefits are paid, in limitations on coverage, and in eligibility for benefits."

Though a certain amount of supply heterogeneity is characteristic of any product/market, particularly a mature one, much of the diversity among long-term care policies appears to stem from insurers' lack of knowledge about what consumers want. Insurers do not know which policy attributes are most important to consumers or how decreases (increases) in the benefit level of one attribute serve to offset increases (decreases) in the benefit level of other attributes. In the absence of such knowledge, it is naturally difficult for insurers to know how to design long-term care products.

Some research, such as that by Meiners (1982; Meiners and Tave 1984, 1985), has shed light on issues related to the demand for long-term care insurance among the elderly. For example, Meiners and Tave (1985) concluded that a perceived lack of need for such coverage among the elderly is a barrier to market development. They reported that a large number of respondents probably

would not purchase long-term care insurance **because** of the belief that Medicare and private medical health insurance provide adequate coverage-a commonly held misconception. They also reported that, in a comparison of hypothetical policies, respondents appeared to consider length of coverage to be more important than premium price and length of deductible (waiting) period. Overall, however, the lack of rigorous empirical research into the inter- and intra-attribute tradeoffs made by consumers is a gap in the literature.

METHOD

The value consumers attach to policy attributes could be assessed by asking respondents directly for their evaluation of the relative importance of the attributes. Unfortunately, the "direct" approach **does** not always yield valid or reliable information, because respondents often "find it very difficult to state which attributes they were using and how they were combining them to form overall judgments" (Churchill 1987).

An alternative and more realistic approach to measuring consumer preference is conjoint analysis. Its advantages over the direct approach are several. As Malhotra and Jain (1982, p. 43) note:

> **It provides quantitative and 'unbiased information about the relative importance of the various attributes and utility values associated with various levels of each of the attributes' (Wind and Spitz 1976). It also gives a picture of the psychological tradeoffs respondents make when they evaluate several attributes together. Moreover, such results are obtained by soliciting only rank order information from respondents.**

In a conjoint study, respondents first rank a set of multiattribute alternatives. The global or overall judgments then are decomposed to ascertain the utility of each level of each attribute. On the basis of these utility values, the relative importance of each attribute is estimated. Consequently, conjoint analysis is a valuable tool for diagnos-

ing how consumers make tradeoffs among alternative products and its use is well established in the health care literature (Carroll and Gagon 1983; Malhotra and Jain 1982; Rosko et al. 1985).

Salient Long-Term Insurance Attributes

The first step in the analysis was identification of attributes, or characteristics, that consumers use to evaluate long-term policies. The guidelines used to identify policy attributes were derived from the conjoint literature (Green and Srinivasan 1978; Malhotra and Jain 1982). Attributes were selected for their salience (i.e., importance) to potential consumers and their actionability (i.e., implementability) by insurers. On the basis of focus groups with elderly persons, insurance industry focus groups, industry expert opinion, and the literature on long-term care issues (e.g., Meiners and Tave 1985), four attributes were chosen for examination: monthly premium, waiting (deductible) period, daily benefit, and length of coverage.

The attribute monthly premium refers to the amount of money (per month) a consumer must pay to maintain an individual long-term care insurance policy. Waiting period is the number of months of care one must receive before long-term care insurance benefits **begin**. If more than one stay in the health care facility is required, the number of days for each stay will accumulate to meet the policy waiting time. Daily benefit is the payment an individual is to receive from the insurance policy for each day care is required. Finally, length of coverage is the number of years of care in a health care facility for which an individual will receive a daily benefit from the insurance policy.

The ranges of the attributes wete chosen to be representative of policies available in the market, with sufficient variation to elicit tradeoffs consumers

might make. The levels of the attributes selected for examination were a daily benefit of $25 and $50 per day; a waiting period of 3 and 6 months; 3-year, S-year, and lifetime coverage; and a monthly premium (price) of $50, $100, and $150. One would expect consumers to prefer policies with higher benefits and years of coverage, and lower waiting periods and monthly premiums. However, finding a metric (i.e., interval-scaled) representation of the utility values associated with each attribute is a complex task.

Developing Policy Profiles

With the inclusion of two policy attributes at two levels and two policy attributes at three levels, 36 (2 X 2 X 3 X 3) possible policy configurations were available for assessment by sample respondents. Given the age composition of the respondents (the average age was over 75 years), we believed mental fatigue and intrarater inconsistency might pose a problem if a full factorial (36-profile) experimental design were used. To keep the number of policy profiles evaluated by subjects to a manageable number, an orthogonal main-effect plan for the 2 X 2 X 3 X 3 asymmetric factorial experiment was employed (Addelman 1962). Whenever the interaction between attributes is negligible, a reasonable approximating assumption in our study, an orthogonal plan permits uncorrelated estimates of all main effects of a factorial experiment (Addelman 1962). As Green, Helsen, and Shandler (1988) observe, in virtually all marketing applications of conjoint analysis to date, orthogonal plans have been used to implement full-profile presentations.

In Table 1 are the policy combinations constituting the orthogonal main-effect plan. Consistent with this plan, each subject was presented the profiles of nine different long-term care insurance policies. The dependent variable consisted of **subjects'** preference rankings of the nine hypothetical products.

Aggregate-Led Findings: Direction and Magnitude of Results

TABLE 1
Policy Combinations in Orthogonal Main-Effect Plan

Policy	Years of Coverage	Daily Benefit ($)	Waiting Period (months)	Monthly Premium ($)
A	3	25	3	50
B	5	50	3	150
C	Lifetime	25	3	100
D	5	25	6	100
E	Lifetime	50	6	50
F	3	25	6	150
G	Lifetime	25	3	150
H	3	50	3	100
I	5	25	3	50

The average estimated part-worths, pooled across all respondents, are reported in Table 2. As expected, the utility values increase as daily benefit and years of coverage increase, and decrease as waiting period and monthly premium increase. These findings hold irrespective of whether the respondents are policy owners or nonowners.

Because the part-worths are expressed in terms of a common unit and are intervally scaled (i.e., a zero part-worth does not indicate the absence of utility; Green and Wind 1975), an estimate of the total utility of any particular policy based on the average values can be calculated. As an illustration, consider the case of an insurance company contemplating the introduction of a new policy. Suppose two policies are under consideration, but only one can be selected. Policy 1 is defined in terms of a $25 daily benefit, a 3-month waiting period, 5 years of coverage, and $100 premiums. Policy 2 is defined in terms of a $50 daily benefit, a 6-month waiting period, lifetime coverage, and $50 premiums. The question is: Which policy will consumers find most desirable, 1 or 2?

The average part-worths provide an answer at the aggregate level. Because the total utility of policy 2 (for all respondents) is 6.77 (.73 + .00 + 1.57 + 4.47) and the utility of policy 1 is only 2.92 (.00 + .13 + .56 + 2.23), policy 2 is clearly preferred. In general, the part-worths indicate how a change in the level of any attribute will affect overall utility.

Determining the relative importance of each attribute from the part-worth estimates is easy. First, the utility range of each attribute is calculated. The ranges then are summed across all of the attributes to compute total utility range. Finally, the percentage of total utility range accounted for by each at-

Sample

Data were collected from a sample of 114 residents living at a retirement community in southwestern Ohio. Of the 114 responses, 100 were used in subsequent analyses (the remaining 14 were omitted because of missing data). The retirement community offers both independent living arrangements (houses, duplexes, and congregate living apartments) and three levels of on-site nursing home care (personal care, intermediate nursing care, and skilled nursing care). Because the target market for long-term care insurance consists of persons who currently are not disabled, the sample was restricted to the independent living residents (about 400 persons) in the community.

To prevent respondent confusion, data collection was performed in person in small groups. Moreover, each participant was given a printed copy of the attribute definitions and an administrator read aloud the definitions of the policy features to ensure that all persons understood their meaning. The ranking task then was explained with the aid of an overhead to illustrate the process. Each respondent was instructed to rank the policies from most liked to least liked.

A few years prior to the study, the community from which the sample was obtained had participated in a pilot program in which long-term care insurance was made available to independent living residents. As a result of this program, 58% of the sample owned a long-term care policy at the time the study was conducted ("policy owners") and 42% did not ("nonowners"). Though not the focus of the study, the different product-related usage experiences of the respondents afforded an opportunity to assess whether differences in utility associated with policy attributes are a function of ownership status.

RESULTS

Utility values (or part-worths) for each level of each policy attribute were estimated by an ordinary least squares–based (OLS) procedure *(Conjoint Analyzer* 1987). As data were collected at the individual-respondent level, separate part-worths were estimated for each respondent. The data were analyzed at both an aggregate (pooled) and disaggregate (individual) level. In the aggregate analysis, the part-worths were averaged across all respondents to obtain one overall utility function (Churchill 1987). In the disaggregate analysis, the part-worths for each respondent were used as input in a simulation analysis to estimate the percentage of respondents who would prefer any specific policy.

TABLE 2
Average Estimated Utility Values Obtained From Conjoint Analysis

Attribute	AU Respondents	Policy Owners	Nonowners
Daily Benefit ($)			
25	.00	.00	.00
50	.73	.64	.86
Waiting Period (months)			
3	.13	.14	.12
6	.00	.00	.00
Years of Coverage			
3	.00	.00	.00
5	.56	.73	.33
Lifetime	1.57	1.64	1.48
Monthly Premium ($)			
50	4.47	4.74	4.10
100	2.23	2.32	2.03
150	.00	.00	.00

tribute is calculated, indicating the relative importance of each attribute. Table 3 shows the relative importance of the attributes in our study.

For our sample, monthly premium dominates the other attributes (64.8%) in importance, accounting for almost two-thirds of the total range in utility. Years of coverage (22.7%) and daily benefit (10.6%) are the second and third most important attributes, respectively, accounting for about one third of the total range in utility. Waiting period is perceived by the sample to be of little importance (1.9%). The relative importance of the attributes does not differ substantively as a function of ownership status (i.e., whether the respondents are policy owners or nonowners).

Disaggregate-Level Findings: Simulations

A drawback of pooling respondents' part-worths and working with a single overall utility function is that any heterogeneity in preference among respondents is ignored and the predictive power of the model is reduced (Churchill 1987). It is therefore useful to work also with the disaggregated (i.e., individual) part-worths. One particularly

valuable disaggregate analysis involves using each respondent's attribute part-worths to calculate the utility of each alternative policy being considered for possible introduction. Assuming that respondents will choose the policy that maximizes their utility (i.e., a "first-choice" rule), the analyst can simulate the percentage of consumers who will prefer any specific product (Green, Helsen, and Shandler 1988).

Such a "choice simulation" can be an extremely valuable diagnostic tool for a product manager. A manager can use it to simulate any number of alternative scenarios that he ot she expects to occur in the marketplace. On the basis of experience and knowledge, the man-

ager can specify how many different competitors' policies are expected in the marketplace, as well as the specific features (attributes) most likely to be offered. With the help of the simulator, alternative policies then can be checked to see how each product offering would fare in the marketplace. The results of the simulations can be used to help select and offer the policy that best meets the company's objectives. Possible objectives in selecting a policy for introduction include maximizing market share, maximizing profit, or some combination (relative weighting) of the two.

The results of a choice simulation involving the nine policies in the orthogonal main-effect plan are reported in Table 4. The percentage of respondents picking each of the nine policies (when the first-choice rule is in effect and individual, not aggregate, part-worths are being used) is indicated. Product E is clearly the most preferred policy by an overwhelming margin (83.5%).

Actually 36 possible policies are defined on the four attributes in the study. Moreover, the policy that would have been the "most preferred" by respondents, on the basis of the part-worths reported in Table 2, was not included in the orthogonal set presented to respondents. This policy, which we refer to as policy X, would have the following features: daily benefit of $50, waiting period of 3 months, lifetime cov-

TABLE 3
Relative Importance of Attributes

Attribute	All Respondents (%)	Policy Owners (%)	Nonowners (%)
Daily benefit	10.6	8.9	13.1
Waiting period	1.9	2.0	1.8
Years of coverage	22.1	22.9	22.6
Monthly premium	64.8	66.2	62.5
Total	**100.0**	**100.0**	**100.0**

TABLE 4
Simulation Results Using First-Choice Rule

Policy	First Choice (%)
Simulation Based on Nine Policies in Orthogonal Plan	
A	2.0
B	1.0
C	3.5
D	.0
E	83.5
F	1.0
G	.5
H	1.0
1	7.5
Total	100.0
Simulation Based on Nine Policies and Policy X	
A	1.5
B	1.0
C	2.0
D	.0
E	40.5
F	1.0
G	.5
H	1.0
1	5.5
X	47.0
Total	100.0
Simulation Based on Policy E and Policy X	
E	43.0
X	57.0
Total	100.0

We report the results of an empirical study examining how long-term care policy attributes affect consumer preference. For a sample of elderly citizens living in a retirement community in Ohio, we used conjoint measurement to estimate the utility associated with different levels of long-term care policy attributes, as well as the importance of the attributes in relation to one another. We also performed simulations assessing the percentage of consumers who would prefer specific long-term care policies.

As expected, at an aggregate level of analysis, the evidence indicates that consumer preference (or utility) increases as daily benefit and years of coverage increase, and decreases as waiting period and monthly premium increase. Monthly premium is the dominant factor affecting utility, followed by years of coverage, daily benefit, and waiting period. At a disaggregate (individual) level of analysis, the percentage of consumers who would prefer any specific set of policies was simulated. The benefit of a choice simulation is that it utilizes the entire matrix of individual part-worths and therefore has greater predictive validity than aggregate-level analyses. By incorporating heterogeneity in consumer preferences, it avoids the pitfall of introducing a product for the "average" consumer when no such consumer actually exists.

A side benefit of our study is the finding that attribute importance is similar for policy owners and nonowners. This finding warrants attention because marketers often are concerned that some consumers may assess feature/attribute importance differently as a result of prior product experience. For instance, consider a scenario in which a former owner of an insurance policy now considers a long waiting period to be irksome. Moreover, suppose that if this person could choose again, he or she would select a different policy-one that starts to pay much sooner. Such an individual might spread negative word of

erage, and monthly premium of $50. To assess how respondents would have evaluated policy X if it had been included in the experiment, additional "choice" simulations can be run. For example, **one** can simulate the percentage of respondents who would pick policy X from a set that also includes the nine policies comprising the orthogonal set (i.e., a simulation involving 10 policies). Alternatively, one can simulate the percentage who would pick policy E in competition with policy X (i.e., a simulation involving two policies). The results of these simulations are reported in Table **4.**

Clearly, the analyst can simulate any scenario of interest, including one in which all 36 policies are considered together. As a practical matter, some product offerings are likely to be infeasible from a supplier's perspective. For example, despite its consumer appeal, policy X might be too expensive

for an insurance company to offer. Such policies can be deleted from the simulation.

DISCUSSION AND CONCLUSIONS

In recent years, private long-term care insurance has received considerable attention as a possible alternative to the traditional sources of nursing home financing-out-of-pocket expenditures, Medicaid, and Medicare. Though private insurance has grown in popularity, little empirical research has been conducted to examine how the various attributes of long-term care policies affect consumer preference. As a result, insurers do not have a clear understanding of the utility consumers derive from the different levels of policy attributes or how important the various attributes are in relation to one another.

mouth about policies with long waiting periods. If so, an insurance firm might have to advertise using favorable testimonials from current owners to influence positively nonowners' assessment of policies with long waiting periods. Our findings do not show substantive differences in utility as a function of policy ownership status, but this result may be an artifact of the sample because ease of communication among respondents (due to their proximity to one another) may have led to an equilibrium in assessments of attribute utilities. Future studies should address this issue.

Our findings suggest how insurers can design long-term care policies that are responsive to the specific wants and preferences of older adults. Several limitations of the study should be noted, however. The levels of the policy attributes offered by insurers, and examined in our study, will almost certainly change over time. In conjoint analysis, estimates of utility are sensitive to the attribute levels examined; changes therefore will necessitate reassessment of consumers' part-worths from time to time. Also, the sample of respondents used in the study, though heterogeneous in terms of educational and income/asset levels, did not precisely mirror the population of elderly persons in the U.S. Further studies are needed to generalize the findings to the nation as a whole. A related point is that a significant portion of the elderly nationwide may not be able to afford private long-term care insurance. Hence, public sector initiatives may be necessary regardless of how popular private insurance might become. The guidelines we offer should be applicable in the development of publicly funded insurance policies. The main difference is likely to be in policy development at the choice simulator level, where the objectives of public sector analysts may be different (see Rice 1989 for a discussion of public sector long-term care health issues). Finally, the policy configurations presented to the sample respondents precluded an assessment of attribute interaction. The importance of such interaction effects should be examined in future studies.

Definitely much more research is needed to examine consumer demand for private long-term care insurance. Only through such research can the insurance industry develop long-term care policies congruent with the preferences of older adults. Obtaining baseline utility values and determining tradeoffs is the logical first step toward developing a marketable product. Our study provides some essential information in that effort.

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