

PREDICTING EMPLOYEE HEALTH INSURANCE SELECTIONS
IN A FLEXIBLE BENEFITS ENVIRONMENT

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ABSTRACT

Firms are increasingly introducing flexible benefits programs into their employee compensation packages, yet very little is known about program outcomes. This study investigated the determinants of employees' selections among six different health insurance options. Using employee-specific selection and demographic data provided by a large manufacturing firm, we estimated a logistic regression model to analyze the effects of employee and plan characteristics on choice of health care plan. Results suggest that employees' decisions about health insurance are significantly influenced by their age, gender, salary, and marital status. Employee premiums (cost to the employee) did not have a significant effect on health care decisions in this study.

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Firms are increasingly turning to flexible benefit plans to meet the benefits needs of a diverse workforce, and to contain spiralling health insurance costs. Flex plans allow employees to select, from among multiple types and levels of employer provided benefits options, that package that best meets their needs. Supporters believe that offering employees the opportunity to make choices improves attitudes, and that the benefits options can be structured so as to control costs to employers. Yet the extent to which flexible benefits plans actually meet these goals is far from clear. There is some empirical evidence that employee satisfaction with benefits increases with improved coverage and decreases with higher employee costs (Dreher, Ash and Bretz, 1988), suggesting that employees can make the kinds of trade-offs between coverage and costs that are typical of flexible benefits plans. Survey evidence suggests that employee reactions to flex plans have been quite positive, and that the medical care costs of employers offering flex have been lower than those of employers offering traditional plans (Foster Higgins, 1988; Hewitt Associates, 1989). However, little empirical research investigates the relationship between program implementation and these outcomes. Even less is known about how employees make the choices which are so fundamental to flex plans. Empirical evidence is sparse regarding the factors that may influence employees' decisions, and hence the costs and satisfaction with flex benefits.

This study examines individual employees' health care decision-making in a flexible benefits environment. The goal is to identify factors that influence employees' decisions about health insurance plans. Further, the study assesses the nature of the relationship between these factors and employees' decisions. The focus of the study is on health plan decisions because the escalating cost of medical care has generated considerable interest in developing methods of managing and containing rising health care costs. The capacity of flexible benefits programs to induce employees to share in the costs of their medical care is a highly salient issue to both employers and policy-makers. Moreover, managers' projections of benefits expenditures, and their ability to meet overall cost objectives, depend, in part, on being able to reasonably estimate participation rates among health care options.

EMPLOYEE DECISIONS ABOUT HEALTH BENEFIT CHOICES

Flexible benefit plans give employees the opportunity to select their benefits from among multiple employer-provided options. Where multiple health insurance options are offered, employees typically have choices among different types and levels of coverage. There are two general *types* of health insurance: (1) Fee-for-service (FFS) plans, such as Blue Cross/Blue Shield, are those in which reimbursement of health care providers is based on actual utilization of their services by the insured; and (2) prepaid plans, such as Health Maintenance Organizations (HMOs) or Independent Practice Associations (IPAs). In a prepaid plan, an initial fee is paid at the time of enrollment and there are no, or very small, additional charges for services received during the enrollment period. IPAs are health plans that contract directly with physicians operating independent private practices, whereas HMOs are generally organized as group practices. The *level* of coverage for medical expenses may vary across and within health plan types. Prepaid plans may have lower cost-sharing provisions (deductibles and coinsurance), but tend to cover fewer types of care (e.g., they often limit mental health treatment) as compared to FFS plans. Also, FFS plans typically offer a range of deductible (amount the employee must pay before the insurance plan begins to pay) and coinsurance (percent of costs the insurance plan will pay after the deductible is met) amounts.

Empirical evidence is sparse regarding the factors that may influence employees' decisions among such a myriad of health plan options. A few studies have examined selections among multiple FFS health plans. They showed that choices among health plans with varying levels of medical coverage are relatively insensitive to out-of-pocket premium differentials (Friedman, 1974; Holmer, 1984; Marquis and Holmer, 1986). There is also some evidence that employees' health care choices are related to their income levels (Friedman, 1974; Holmer, 1984). For example, Friedman (1974) found that employees with relatively low salaries were more averse to exposing themselves to the risk of incurring uncovered medical expenses than were employees with relatively high salaries, and were willing to pay higher premiums for complete insurance. Holmer (1984) found that decisions made by low-income

employees were somewhat more sensitive to out-of-pocket premium differentials than were high-income employees.

Several studies have investigated individuals' choices between a single FFS plan and one or more prepaid plans. The results have been contradictory. Some researchers have found evidence that employees who join prepaid plans tend to be younger and healthier than those who select FFS plans (Dowd and Feldman, 1985; Jackson-Beeck and Kleinman, 1983). Others discerned no significant differences in health status between FFS and prepaid plan enrollees (Lairson and Herd, 1987; Welch and Frank, 1986). Similarly, some efforts to study the effect of option premiums (price charged to employees) on health plan decisions have concluded that premium differentials have an insignificant effect on these decisions (Juba, Lave and Shaddy, 1980), but others contended that the effect is significant (Feldman, Finch, Dowd and Cassou, 1989; McGuire, 1981; Piontkowski and Butler, 1980; Welch, 1986;). Merrill, Jackson and Reuter (1985) analyzed employee health care plan decisions and found that the effects of out-of-pocket premiums, health risk, and other demographic factors varied according to characteristics of the health care options.

Applying the findings of earlier studies to a flexible benefits setting is problematic, not only because the results have been inconsistent, but also because of the studies' limited generalizability to other decision settings. Factors that influence choices between a single FFS plan and a prepaid plan, or between varying levels of FFS coverage, may not have the same effect in the more complex decision framework typically offered in a flexible benefits environment. When the choice set consists of a single FFS plan and prepaid plans, for example, employees are primarily deciding among *types* of coverage; while the cost-sharing provisions embedded in these two plans are not equivalent, cross plan differences in employees' out-of-pocket expenses can be somewhat low.¹ In contrast, coverage levels typically offered in a flexible benefits scenario can range from relatively high (e.g., \$120/low deductible) to relatively low (e.g., \$2000 deductible).² Hence, the consequences of individuals' choices among flexible benefits health care options can be quite different from those of choices among a single FFS plan and a

prepaid plan. In the former case, the level of individuals' out-of-pocket expenditures on medical care can vary considerably across options. In the latter case, differences across options in the level of individuals' out-of-pocket medical care expenses may be less substantial.

Factors that affect decisions between health plans in one setting cannot be assumed to have similar effects in settings involving different choices. Individual preferences might drive decisions among types of coverage, while expectations about medical care needs may drive decisions among levels of coverage. For example, an individual with a chronic medical condition requiring extensive health care services might be financially better off in a prepaid plan with no deductible or coinsurance than in a FFS plan. If the individual has a prior relationship with a physician who is not in the prepaid plan network, and the cost-sharing provisions of the FFS plan are relatively low, then the individual's preference for a delivery system that allows choice of physician may exert more of an influence than expected health care needs. However if there were not one but multiple FFS options, with varying levels of coverage, then the individual's choice among the FFS options would probably be influenced by expected health care needs. An individual with a chronic medical condition can minimize out-of-pocket expenditures by paying a relatively high premium for a high level of coverage, while a healthy individual can minimize out-of-pocket expenditures by paying a low premium for a low level of coverage. If factors associated with tastes and preferences are not similarly associated with expected health care needs, then the observed effects of these factors may vary across types of decision settings. If age is more closely related to health risk than to health plan preferences, for example, then its observed effect on health care decisions might be stronger in a plan offering multiple levels of coverage than in a plan offering different types, but not different levels, of coverage.

We know of no studies which have analyzed decisions among the multiple types and levels of health care plans typically offered in a flexible benefits program. Holmer (1984) examined decisions among HMOs and low-premium, medium-premium, and high-premium FFS plans. He focused, however, on assessing the effect of the favorable tax treatment afforded employer benefits expenditures on health plan decisions, and did not consider the effects of differences in

coverage across plans. The extent of variation in coverage levels in his study is unclear, and it cannot be determined whether his findings can be generalized to a benefits setting such as that associated with flex, where coverage levels vary considerably across choices. Unless health plan decisions are examined in a flexible benefits environment, knowledge of the factors that influence these decisions will be incomplete.

Theoretic Rationale and Hypotheses

The theory of expected utility maximization (EUM) predicts that, when deciding among options of unknown consequences, individuals will select the one with the highest expected utility (Friedman and Savage, 1948). The expected utility of each option is assumed to be a function of the value (utility) of expected outcomes and the probabilities of their occurrence. An option's utility is thus the sum of the values of all possible outcomes weighted by their objective probabilities. The outcomes evaluated are the employee's final wealth position (net disposable income after paying premiums and other out-of-pocket expenses). Factors which affect the value of outcomes and/or the probability of their occurrence will affect the expected utility of the options, and hence the parameters of the decision. In the case of health insurance options, the value attached to possible outcomes is posited to be a function of the premium charged to the employee for each of the health insurance options, income, out-of-pocket health care expenditures, and individual tastes and preferences.

Under flexible benefits plans, employees face a variety of choices among health insurance options. These plan options may vary in terms of the type of coverage (prepaid plan or FFS), level of coverage (amount of cost-sharing), and the price (premium) charged to the employee. Employees are not typically permitted to change their selection more than once a year. Since employees cannot know for certain what all their health care needs will be during the enrollment period, their choices therefore involve some risk. The risk derives from the fact that the benefits to individuals of selecting a particular option may be lower than anticipated, and that they will end up losing more than they are gaining by selecting it. For

example, employees who select a low level of coverage (e.g., \$2000 deductible) take the risk of paying higher out-of-pocket expenses (because of greater cost-sharing) than they save from the lower premium, if medical expenses are significantly higher than anticipated. Employees who have only infrequently required medical care in the past might select this type of coverage and use the credits saved from opting down (from the high coverage plan) to purchase other benefits (e.g., life insurance, vacation days). In the event of a serious injury or illness requiring extensive medical attention, these employees would be liable for a substantial amount of the expenses. If the deductible were \$2,000, for example, out-of-pocket expenses would be \$2580 (\$580 premium plus \$2000 deductible), compared to \$1241 (\$933 premium plus \$308 employee copayment on \$2000 worth of medical care)³ had they selected the high coverage plan. These employees would have been financially better off paying a high premium for more generous coverage. Alternatively, individuals selecting high level coverage (e.g., \$120 deductible, 10% employee copayment) may pay higher premiums than they receive in medical care reimbursements if medical care needs are lower than expected.

Employee premium. EUM theory assumes that utility rises with income (Friedman and Savage, 1948). All else equal, the more employees must pay to purchase a health care option, the lower their net income, and the lower the expected utility of the option. Thus,

H1: As the premium charged to employees for an option increases, the probability that they will select it will decrease.

Income. Assuming that high levels of coverage for medical expenses are valued by employees, then, as coverage increases, utility should also increase. Employees should therefore prefer the health plan with the highest level of coverage. However, the combination of health care coverage and other valued goods that employees are able to purchase is constrained by their income. The more income spent on health care, the less there is to spend on other goods. Employees with relatively low incomes may find that the purchase of high coverage leaves them with inadequate funds for their other needs. As income increases, employees can purchase greater amounts of all valued goods, including health care coverage. Thus, as income

increases, the probability that the option with the highest amount of coverage will be selected should also increase. On the other hand, there is some evidence that the willingness of employees to expose themselves to the risk of incurring uncovered medical expenses varies with their income (Friedman, 1974). That is, employees with relatively low incomes may be more risk averse, and place a higher value on complete health care coverage, compared to employees with relatively high incomes. This suggests that the probability of selecting the health plan with the highest level of coverage will *decrease* as employee income increases.

There is some evidence that higher incomes are associated with relatively lower probabilities of selecting a prepaid plan over a FFS plan (Juba et al., 1980; Merrill et al., 1985). Since prepaid plans typically offer a somewhat higher level of coverage (due to minimal cost-sharing provisions, coverage for preventive care) than do FFS plans, the finding that low income employees prefer prepaid plans suggests that they are indeed more risk averse than are high income employees and are more likely to select the health care option with the highest level of coverage. It also suggests that low income employees would be the least likely to select a low coverage option, were it to be offered. Alternatively, this finding may indicate that there are other elements of health care plans, in addition to coverage levels, that employees value and that selections are based on ability to purchase these elements, rather than on level of risk aversion. Higher income employees may purchase higher quality health plans. Quality may be evaluated along a number of dimensions. Where different types of health care delivery systems (FFS and prepaid) are offered, for example, health plan options can differ in terms of convenience (e.g., paperwork requirements, waiting times, travel time), or choice of health care providers (Feldman et al., 1989; Merrill et al., 1985). The perceived quality of FFS plans may be higher than that of prepaid plans, because FFS plans do not constrain employees' choice of physician, or because they are more convenient, but because FFS plans provide somewhat lower coverage, only high income employees can afford them. From this perspective, we would expect higher income employees to purchase the highest coverage FFS plan over all

other plans, since it provides the greatest combination of quality and coverage. This means that *high* income employees would be the least likely to select a low coverage option.

Theory and evidence thus imply that health care decisions will be influenced by the decision-maker's income level. The direction of this effect is ambiguous. Hence,

H2: The probability that employees will select a particular health plan will vary with their salary.

Expected Health Care Expenditures. As stated above, EUM theory assumes that utility rises with income (Friedman and Savage, 1948). Since increases in out-of-pocket expenditures on health care imply decreases in employees' net income, then it follows that the value attached to plan options under the EUM perspective will also be affected by expected out-of-pocket health care expenditures. The more the employee expects to pay for medical care under a particular option, the lower the expected utility of that option. Out-of-pocket medical care expenditures can be expected to vary according to characteristics of the individual employee and the plan. Thus, variation across options in the services covered and the amount of cost-sharing via the deductible and coinsurance rate will be associated with variations in out-of-pocket expenditures.

Even when plan provisions are known, out-of-pocket expenditures cannot be predicted with certainty because of the variability of health care needs. On the other hand, the probabilities of health care episodes occurring appear to be systematically related to a variety of social and demographic characteristics of individuals. Thus, expectations about medical care needs, and the utility of options with variable levels of coverage for those needs, may vary with employee characteristics. For instance, age is positively related to medical expenditures (Friedman, 1974; Taubman and Rosen, 1982), and health care utilization rates are higher among women than men (Sindelar, 1982). Health status also varies as a function of marital status; specifically, married individuals are in better health than unmarried individuals (Taubman and Rosen, 1982).

There is some evidence that younger, healthier individuals are more likely to join prepaid plans than are older, less healthy individuals (Dowd and Feldman, 1985; Feldman et al., 1989; Jackson-Beeck & Kleinman, 1983). Perhaps this is because, having had minimal contact with health care providers, young, healthy individuals have not developed strong preferences for a particular physician and thus are not constrained by the limited number of physicians typically participating in a prepaid plan. In fact, such individuals may prefer a plan that does not require them to "shop" for a physician, since they may have limited information upon which to base their decisions.

Theory and evidence thus suggest a preference for the high coverage FFS plan will increase as expected medical care expenditures increase. Hence,

H3: The probability that an employee will select a high coverage FFS plan will increase with age, all else equal.

H4: The probability that an employee will select a high coverage FFS plan will be lower among married than among single employees, all else equal.

H5: The probability that an employee will select a high coverage FFS plan will be higher among female than among male employees, all else equal.

Individual Preferences. EUM theory assumes that individuals respond to risky choices in terms of a utility function that is unique to the individual (Friedman and Savage, 1948). That is, the utility that two individuals assign to the same combination of net income and health care will not necessarily be the same. An employee who valued income over health care, for example, would be expected to derive less utility from a high cost/high medical care outcome than an employee who placed a relatively high value on health care. Nevertheless, attitudes can be shaped or influenced by social peers (Costello and Zalkind, 1963). Attitudes about health care may therefore vary systematically with employee characteristics, such as age, education, occupation, and place of residence, which can determine peer group membership. In order to isolate the independent effects of explanatory variables on health care decisions, it will be necessary to control for the effects of peer group membership.

METHODS

Data and Setting

Actual health plan decisions made by participants in the flexible benefits program offered by a large manufacturing firm were analyzed. Employee-specific selection and demographic information was provided for the 1989 benefit enrollment period. Plan documents detailing procedures, plan options, employer costs and employee premiums were also provided. Since prepaid plan choices varied according to employees' geographic location, and plan documents describing each of these plans were not available, analysis was confined to a single location to control for the effects of unmeasured characteristics of the prepaid plans on health plan choice. The population consisted of 5194 employees.

The firm's flexible benefits plan offered employees multiple FFS and prepaid health insurance options. Employees were required to select one of the health plans offered; they could not waive health insurance coverage. The FFS options included a high coverage (low deductible and coinsurance), medium coverage (moderate deductible and coinsurance) and low coverage (high deductible, no employee copayment) plans. The firm provided the FFS options under a self-insurance arrangement, and all claims were reimbursed by the firm rather than a third-party (insurance) agent. Prepaid plans were provided by contractual arrangement with external agencies. Two of the plans were Independent Practice Associations (IPAs), in which participants could choose their health care provider from among a network of independently operating practitioners under contract to provide services to plan participants. These two plans were offered by the same agency and differed only in the amount of cost-sharing for medical services received. The third prepaid plan was a Health Maintenance Organization (HMO); participants received medical services from one of the plan's medical centers and choice of physicians was limited to those employed by the plan.

Cost-sharing provisions and employee premiums for all of the health care options are summarized in Table 1. The lowest overall levels of employee cost-sharing were provided by prepaid plans. There were no deductibles, and copayment for outpatient care was limited to a

five or ten dollar per visit fee. The HMO paid 100% of hospital charges, and the IPAs paid 80%. All of the FFS plans imposed a deductible, and copayments of ten or twenty percent were required of participants in the high and medium coverage plans. Employee premiums were highest for prepaid plans, and lowest for the low coverage FFS plan. The mean price for the HMO is \$1963, \$1519 for the IPA Plan 2, \$1222 for the IPA Plan 1, \$1980 for the low coverage FFS plan, \$2032 for the medium coverage FFS plan, and \$2271 for the high coverage FFS plan.

Insert Table 1 about here

Benefits were purchased with credits provided by the employer, and employees could purchase additional credits by selling vacation days and/or by taking pre-tax salary reductions. Benefits credits provided by the firm were allocated based on the dependent status selected by the employee (employee only, employee plus one dependent, employee plus two or more dependents). In each dependent status category, employees received enough credits to purchase the benefits package they received prior to the implementation of the flex plan (high coverage health insurance indemnity plan, and pre-flex levels of life, accidental death and dismemberment, and long term disability insurance). Employees' choices had to be consistent with the dependent status category they selected. For example, an employee who selected the employee plus one category could not select the "employee only" health or dental plan.

In addition to health care plans, employees could select from among multiple dental, disability and life insurance options. They could also elect to participate in health care and dependent care flexible spending accounts, or to purchase additional vacation days. There was no cash option and unused benefit credits were forfeited at the end of each year.

Measures

The dependent variable was a categorical discrete choice variable describing the menu of health plans available to the employee. For purposes of estimation, the dependent variable was expressed as the probability that a particular health plan was selected. There were six choices: a high coverage FFS plan, a moderate coverage FFS plan, a low coverage FFS plan, and three prepaid plans.

Independent variables used to examine employee health insurance choice included both factors that vary across options and factors that vary across individuals. Employee premiums, the option-specific factor, reflected the full cost to the employer of providing each of the health plan options. Factors common across option, but specific to the individual, are employee characteristics including age, gender, marital status, and salary.

As discussed above, variables such as age, education, occupation, and place of residence may determine peer group membership, and they may therefore be related to attitudes about health insurance that vary systematically with peer groups. Effects of peer group membership on health care decisions were accounted for by the salary variable, which we assume is related to education and occupation effects, and the age variable. The effects of place of residence were controlled for by confining the analysis to a single geographic area.

Analyses

Logistic regression procedures were used to estimate the effects of the explanatory variables on the probability of choosing each of the health care options. Logistic regression is an analytic tool used to assess the effects of a set of independent variables on a non-continuous, or categorical, dependent variable (Maddala, 1983). Ordinary least squares regression is inappropriate where the dependent variable takes on discrete values; because the linear regression model imposes no constraint on estimated coefficients, out of range predictions can result.

In the logit model, estimated coefficients reflect the effect of a one unit change in the independent variables on the probability of choosing each of the J alternatives.. The nonlinear effects of each explanatory variable depends on where, in the range of possible values of the variable, the change is being evaluated. Thus, the effect of an increase in salary on an employee with relatively low earnings will be different from the effect of an equivalent increase on an employee relatively high earnings. To estimate the average effect of the explanatory variables, derivatives are computed as the change in the dependent variable associated with a change in the independent variable, calculated for all employees in the sample, and then averaged. This average represents the mean effect of a one unit change in the explanatory variable on the probability of choosing a particular health plan.

RESULTS

Table 2 reports the means, standard deviations, and correlations between the dependent variable, employee plan choice, and all employee-specific explanatory variables.⁴ Approximately 70% of the study population was married and about 36% was female. The average age was 40 years and the average salary was \$39,000 per year. The dependent variable, plan choice, could take on a value between 1 and 6 (see table 1); approximately 4% selected the HMO (j=1), 27% the IPA Plan 2 (j=2), 9% the IPA Plan 1 (j=3), 7% the low coverage FFS plan (j=4), 13% the medium coverage FFS plan (j=5), and 40% the high coverage FFS plan (j=6).

 Insert Table 2 about here

Results of the logistic analyses are shown in Table 3. Note that, because employee characteristics do not vary across choices, logistic regression procedures involving employee-specific variables and more than two choices are conducted as a series of pairwise analyses of the probability of selecting a reference option (here the high coverage FFS plan) versus each of

the other five options. The analyses thus yielded one coefficient on the choice-specific variable (employee premium), and five coefficients on the employee-specific variables (age, marital status, salary and gender). The coefficient on the choice-specific price variable indicates how a change in the premium for any of the options will affect the probability of selecting that option. A coefficient on an employee-specific variable provides information about the effects of employee characteristics on a comparison between two options only. The age coefficient for the medium coverage FFS plan, for example, describes the effect of age on the probability of selecting that plan versus the reference plan, here the high coverage FFS plan. This coefficient provides no information about the effect of age on decisions among the reference plan and other options (e.g., the prepaid plans).

 Insert Table 3 about here

We found no support for Hypothesis 1, which states that the probability of selecting a health care option will decrease as the premium charged to the employee increases. The estimated coefficient on employee premium was positive and not statistically significant.

Hypothesis 2 states that the probability of selecting a health plan will vary with employees' income. Estimated salary coefficients were statistically significant on all but the medium coverage FFS plan, thus providing support for Hypothesis 2. The signs of all of the coefficients are negative, indicating that the probability of selecting a plan other than the high coverage FFS plan decreases as income increases. This means that when considering the choice between the high coverage FFS plan and the HMO, for example, an increase in employee salary will decrease the probability of selecting the HMO. If the average salary of the workforce were to increase, then we would expect to see a higher proportion of employees selecting the high coverage FFS plan, and a lower proportion selecting the HMO, than is currently the case. To the extent that HMO coverage is more (less) costly than the high coverage FFS plan, then salary

increases have cost implications beyond those associated with higher wages and payroll-related taxes (e.g., Social Security).

We also found support for Hypothesis 3, which states that the probability that an employee will select a plan other than the high coverage FFS plan will decrease with age. Estimated coefficients are negative and statistically significant for the three prepaid plans, the low coverage FFS plan, and the medium coverage FFS plan. Thus, as age increases, the probability of selecting any one of these options over the high coverage fee-for-service plans decreases. If the average age of the workforce were to increase, we would expect to see a shift in participation rates away from the prepaid plans, for example, and into the high coverage FFS plan, all else constant.

Hypothesis 4 states that the probability that an employee will select the high coverage FFS plan will be lower among married than among single employees. We found positive and significant coefficients for the three prepaid plans and the low FFS plan, suggesting that marriage increases the probability of selecting one of these plans over the high coverage FFS plan. Thus, if the proportion of married workers were to increase, we would expect to find a higher percentage of the workforce selecting a prepaid plan, for example, and a lower percentage selecting the high coverage FFS plan.

Our hypothesis about the effect of employee gender was not confirmed. Hypothesis 5 asserted that the probability that an employee will select the high coverage FFS plan will be higher among female than among male employees. Estimated coefficients were not significant for three options, and the significant effects are not in the direction predicted. The positive sign on the coefficients for the low coverage fee-for-service plan and one of the HMOs suggests that female employees are more likely to choose these plans than they are the high coverage plan.

To demonstrate the average effects of explanatory variables on health plan decisions, we calculated the derivatives with respect to each of the variables for all of the employees. Results are shown in Table 4. Thus, for example, a 10 year increase in age is predicted to be associated with an 8 percent decrease in the probability of selecting the medium coverage FFS plan over

the high coverage FFS plan. This means that if the average age of the workforce increased by 10 years, the percent of employees selecting the medium coverage FFS plan would decrease by 8 percentage points, while the percent selecting the high coverage FFS plans would increase by 8 percentage points. Similarly, a \$10,000 increase in the average salary paid to workers would cause the proportion of workers selecting the low coverage FFS plan to drop by 1 percentage point, and the proportion selecting the high coverage FFS plan to increase by 1 percentage point.

 Insert Table 4 about here

The figures reported in Table 4 for the categorical variables, marital status and gender, describe the probability changes associated with a 100% change in the workforce, i.e. a change from an entirely single, or male, workforce to an entirely married, or female, workforce. More realistically, if the proportion of females in the workforce were to increase by 10 percentage points (e.g., from 36% to 46%), then we would expect to see the proportion of workers selecting the low coverage FFS plan to increase by 1 percentage point, and the proportion selecting the high coverage FFS plan to decrease by 1 percentage point. Similarly, if the proportion of married workers were to increase by ten percentage points (e.g., from 70% to 80%), we would expect to see the proportion of workers selecting the HMO to increase by 0.2 percentage points, and the proportion of workers selecting the high coverage FFS plan to increase by the same amount.

An alternative way to evaluate the findings is provided in Table 5. We took representative values of explanatory variables and calculated the probabilities that employees with those characteristics would select each of the options. A single, female, 26-year old employee who earns \$30,000 per year, for example, would have a 28% probability of selecting the IPA Plan 2 option. Of all such employees, we would expect that 5% would select the HMO, 28% would select IPA Plan 2, 11% would select IPA Plan 1, 8% would select the low coverage FFS plan, 25% would select the medium coverage FFS plan, and 22% would select the high

coverage FFS plan. The highest probabilities are observed for the high coverage FFS plan and IPA Plan 2. The high coverage FFS plan is perhaps attractive because it provides a relatively high level of coverage and gives employees complete freedom to choose their own health care provider. The IPA plans also allow employees to select their own physician, although it limits the choices to providers under contract with the plan, and provide a somewhat higher level of coverage than the high FFS plan. Of the two IPA plans, Plan 2 provides the highest level of coverage.

 Insert Table 5 about here

DISCUSSION

The results of our study provide insight into the factors that influence health plan decisions in a flexible benefits environment. While a number of studies have investigated decisions among different *types* of health plan coverage (prepaid plan versus FFS), and a few have investigated decisions among different *levels* of coverage, we know of no empirical investigations of decisions among the different types and levels of coverage typically offered in flexible benefits plan. Further, previous research does not indicate whether the same factors affect all of these decisions equally, or whether their influence varies according to the nature of the choices.

This study shows that decisions among multiple health plans in a flexible benefits program are significantly influenced by employees' age, income, marital status and gender. As employee age and salary increase, the probability of selecting a plan other than the high coverage FFS plan decreases. The probability of selecting an alternative to the high coverage FFS plan is higher among married than among single employees, and lower among male than among female employees. Premiums charged to the employee did not have a significant effect on employees' health plan decisions in this study.

Our finding that the option premiums do not significantly affect decisions among health care plans is consistent with other researchers' findings that individuals are highly risk averse when it comes to health insurance and that only a price increase of substantial magnitude will induce individuals to change health plans (Friedman, 1974; Holmer, 1984; Marquis and Holmer, 1986). It may also be true that option premiums can influence health plan decisions, but only where the coverage provided by alternative options is roughly equivalent, as Merrill et al. (1985) found. That is, level of coverage may be more important to employees than option premiums when deciding among health plan alternatives, but when the level of coverage is held constant the size of the premium may take on more importance. Thus, we might expect option premiums to affect decisions among the three prepaid health plans offered to employees in the study. However, these plans do not provide equivalent coverage; they vary in terms of services covered and choice of physician. Had the coverage levels among these plans been more similar, we might have found that price had a significant effect on choice.

Alternatively, the insignificant effect of option premiums on health plan selection found in this study may be more a function of the design of the firm's program than of the risk aversion of its employees. In the flex plan investigated in this study, employees were given enough benefits credits to purchase the core (pre-flex) benefits package, which included the high coverage fee-for-service plan. Moreover, they were not given the option of taking unused credits in cash; unused credits were forfeited. Thus, they were given the purchasing power to select the high coverage plan and a strong incentive to use it. Interestingly, a personal interview with one of the firm's benefits manager revealed that when the increase in credit allotments the following year did not fully reflect the increase in option premiums, thus reducing employees' benefits purchasing power, administrators observed a large migration of employees from the high coverage FFS plan to the moderate coverage plan. Although anecdotal, this evidence suggests that it is premature to conclude that option premiums do not influence employees' decisions among health care plans.

The fact that we found that employee premiums did not have a significant effect on choice does not necessarily imply that employees are not maximizing utility, as the EUM theory predicts. Rather, it may point to a faulty assumption about how this factor is related to the unobservable utility value assigned to options. We argued above that the higher the premium, the lower the individual's net wealth, and the lower the expected utility of the option, all else equal. Nevertheless, all else is not equal. Higher premiums are often associated with higher levels of coverage, and the loss of utility associated with the payment of the premium may be compensated for with the gain in utility associated with reducing the risk of incurring uncovered health care expenditures. Furthermore, as option premiums increase, the loss of utility associated with paying them will also increase, and at some point we would expect that this loss will not be outweighed by the gain in utility associated with high coverage. In other words, we may not have found a significant effect for option premiums here simply because the premium for high coverage is not high enough to outweigh the gains of having such coverage.

The positive effect of increasing salary on the probability of selecting the high coverage FFS plan that we found suggests that employees' capacity to bear medical costs influences health plan decisions. Those who can most afford it seem to select the high coverage FFS plan over other plans. It is perhaps preferred over lower coverage FFS plans because it provides better protection against uncertain medical care expenditures. The protection provided under the high coverage FFS plan is relatively high, however it is still somewhat lower than that provided by prepaid plans, and its advantage over these plans may therefore be based on non-pecuniary considerations. For example, employees can choose their own physician under a FFS plan, while under a prepaid plan they can only select from among the physicians under contract with the provider agency. Or, because reimbursement is not based on services provided, prepaid plans may need to limit access to physicians in order to keep costs in line with revenues.

Our finding that the preference for the high coverage FFS plan over prepaid plans increases with income is consistent with the evidence found in other studies that individuals with relatively high incomes are unlikely to select prepaid plans over FFS plans (Juba et al.,

1980; Merrill et al., 1985). Our finding that the preference for the high coverage versus low coverage FFS plans also increases with income is consistent with Holmer's (1984) finding that employees' willingness to pay for high cost medical coverage increases as income increases, and contrasts with Friedman's (1974) finding that low income employees are more risk averse than high income employees and are willing to pay relatively larger premiums for complete coverage. It may be that, due to the high rate of increase in health care costs since Friedman conducted his study, the financial consequences of incomplete health care coverage have become an equal source of concern to individuals within a much broader salary range. And, while employees may be equally risk averse, their ability to indulge their preference for high coverage may increase with income. Since a portion of the employer-allocated credits (i.e., for the purchase of the core level of life, accidental death and dismemberment, and long term and disability insurance) are based on employee salary, the benefits purchasing power of employees increases with salary.

The observed effects of age and marital status suggest that health plan decisions are influenced by expected health care needs, since these two variables are known to be related to medical expenditures (see, e.g., Sindelar, 1982; Taubman and Rosen, 1982). Thus, older, single employees, whose expected health care needs are relatively high, have a higher probability of selecting the high coverage FFS plan over all other plans than do younger, married employees, who have a greater tendency to select lower levels of FFS coverage or prepaid plans. This result is consistent with the evidence from prior studies that younger, healthier individuals tend to select prepaid plans (Dowd and Feldman, 1985; Jackson-Beeck and Kleinman, 1983). Others, however, have found that no significant differences exist in the age and health status of prepaid and FFS plan participants (Lairson and Herd, 1987; Welch and Frank, 1986). Since these studies examine different plans, it is possible that the effects of these variables vary with characteristics of the plan options. Where levels of coverage provided by the options differ substantially, as in the flex plan examined in our study, variables related to expected medical care needs may have a significant influence on health plan selection.

Our interpretation of the observed effects of age and marital status rests on the assumption that these two variables are related to employees' perceptions of their health care needs. The effects of these variables could also reflect the influence of health plan preferences that vary with characteristics of the employee. For example, there is some evidence that employees' willingness to accept human resource innovations such as flexible benefits decreases as tenure with the firm increases (Kossek, 1989). Age and tenure are highly correlated in the sample used for this study, and thus the observed tendency of older employees to select the high coverage FFS plan - the plan offered prior to the implementation of flex - may simply reflect the preference of employees who have been with the firm for an extended period of time for the health care plan with which they are the most familiar.

Our hypotheses regarding the effect of employees' gender on health plan decision were not confirmed. Perhaps this is because, when evaluating health care needs, employees consider the needs of all family members, and family health care needs may not vary closely with gender of the employee. Thus, employee gender is probably not a good indicator of expected health care needs for employees with dependents. This argument does not explain why female employees are more likely than are male employees to choose an HMO or the low coverage FFS plan over the high coverage FFS plan. The preference for the low coverage FFS plan may be an indication that many of the female employees are already covered under a health insurance plan provided by their spouse's employer. The tendency to select an HMO over the FFS plan may reflect the influence of health plan preferences that vary with employee gender. There is some evidence, for example, that females value coverage for preventive care (Feldman, et al., 1989), a type of coverage which HMOs typically provide and FFS plans do not.

Our results suggest that EUM theory can help guide the identification of factors that affect health plan choice in a flexible benefits environment. We have identified four variables - age, marital status, salary, and gender - that appear to influence employees' decisions among multiple health care plans. We do not yet know precisely how these factors influence the decision-making process. The effect of age may reflect the influence of age-related health care

needs or age-related differences in tastes and preferences. Similarly, the effect of gender may reflect systematic differences in tastes and preferences, or the availability of alternative health care coverage through a spouse. To gain more specific knowledge about the decision-making process, more precise measures are required for some of the constructs that are theoretically affecting decisions. If, for example, instead of using age and marital status as proxies for health risk, actual claims data were available, or employee responses to survey questions about their health status, it might be possible to elucidate the extent to which decisions are driven by objective criteria such as health care needs.

Implications for managers

Benefits managers may be able to use the results of this study to begin making predictions about employees' health plans selections, so as to inform the effective design and administration of their benefits programs. A firm with a relatively old and largely male workforce, for example, would be unlikely to observe much voluntary migration from a traditional, high coverage FFS plan when alternative plans are offered. Firms with this type of workforce would do well to survey employee preferences before making costly investments in a flexible benefits plan. Managers that can predict participation rates among prepaid plans will be better informed when setting up contracts with the agencies providing such plans. The ability to predict participation rates will also enable benefits managers to estimate the changes in benefits costs associated with a changing workforce. For example, a firm expecting a high rate of retirement among its current employees, and a subsequent influx of young new hires, could expect an increase in participation rates in prepaid plans. Holding all else constant, if the average age of the workforce dropped by ten years, participation rates in the three prepaid plans would increase by 11 percentage points overall (see Table 4). Such a change could have a significant impact on the health care costs of a self-insured firm. Firms that have self-insured FFS plans incur costs only when the insured receives covered medical services. In contrast, payments to prepaid health plans are fixed regardless of the amount of services received by the

insured, at least in the short run. If participants in the prepaid health plans are fairly healthy, and health care episodes are therefore infrequent, then the firm would have incurred fewer costs had these individuals chosen the FFS plan. Thus, if a change to a younger workforce generates an increase in the proportion of employees joining prepaid plans, and if the new participants in these plans are generally healthy, then the firm's expenditures on employee health insurance could well exceed the value of the benefits (medical services) its employees are receiving in return. This would be an inefficient allocation of the firm's resources.

Our results suggest that the premiums employees must pay for options do not significantly affect their health plan selections, but that their ability to pay does. As employees' salaries increase, and thus their benefit credit allocations, the more likely they are to select the high coverage FFS plan. To the extent that the firm wants to contain health care costs by encouraging its employees to select plans with higher levels of cost-sharing, then it may want to consider imposing an out-of-pocket expense on employees who select high coverage plans.

Future Research

The results of our study offer a substantial contribution to our ability to predict participation rates among multiple health plan options. Nevertheless, a great deal remains to be learned about employees' health care decisions. Direct measures of employees' (and their dependents') health status might improve the prediction model, as would information about the availability of alternate health care coverage (e.g., through an employed spouse), and the attractiveness (in terms of coverage and cost) of alternative plans. Further, our study examined employees' health care decisions during one enrollment period. It would be interesting to investigate if, and how, these decisions change over time. Finally, research on other flexible benefits programs will show whether the findings in this study can be generalized to other settings.

Decisions about health care are critical to employees' well being, employers' ability to compete and public policy for society at large. We hope that this study encourages other

researchers in behavioral sciences to undertake work in employee benefits to better understand health care decision making and thereby help guide policy making. Beyond the potential for policy guidance, employee benefits offers a rich environment for research and theory development on individual decision making. In this study we used EUM as a theoretical framework. However, other perspectives such as behavioral decision theory, and social comparison models, also need to be examined. While it is almost pro forma to make a call for more research, in the field of employee benefits we feel this call is warranted.

ENDNOTES

¹ Merrill et al. (1985), for example, found no significant differences between the total benefits paid by the HMO and the FFS plans offered in Salt Lake City. They found more substantial differences in coverage in the Tallahassee plans, however the average annual out-of-pocket expenses for inpatient services were only \$57 more under the FFS plan than the HMO, and those for prescription drugs were \$29 less under the FFS plan.

² In its survey of firms offering flexible benefits plans, Hewitt Associates (1989) found that an average of three FFS options and 4 HMOs were offered per sponsoring company.

³ Figures computed based on cost-sharing provisions of an actual flexible benefits plan. The deductible for the high coverage plan is \$120, and employee copayment is 10% of covered charges.

⁴ Summary data for the employee premium variable appear in Table 1.

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TABLE 1
Cost Characteristics of Alternative Health Plan Options

	<u>Fee for Service</u>			<u>Prepaid Plans</u>		
	High Coverage (j=6)	Medium Coverage (j=5)	Low Coverage (j=4)	IPA Plan 1 (j=3)	IPA Plan 2 (j=2)	HMO (j=1)
Annual Deductible Amount:						
Employee only	\$120	\$300	\$2000	\$0	\$0	\$0
Employee +1	\$240	\$600	\$4000	\$0	\$0	\$0
Employee +2 or more	\$300	\$750	\$5000	\$0	\$0	\$0
Co-Payment Rate:						
Plan pays	90%	80%	100%	80+% ^a	80+% ^b	100% ^c
Employee pays	10%	20%	0%	\$10+ ^a	\$5+ ^b	\$5
Out-of-Pocket Maximum Dollar Amount						
Employee only	\$1250	\$1250	\$2000	None	\$500	None
Employee +1	\$2500	\$2500	\$4000	None	\$500	None
Employee +2 or more	\$2750	\$2750	\$5000	None	\$500	None
Employee Premium:						
Employee only	\$933	\$731	\$580	\$983	\$1045	\$1225
Employee +1	\$2031	\$1613	\$1261	\$2031	\$2125	\$2563
Employee +2 or more	\$2926	\$2213	\$1825	\$2926	\$2926	\$3025

^a The plan pays 80% of inpatient care charges, and the employee pays 20%. For outpatient care, the employee pays \$10 per visit, and the plan pays the remainder.

^b Employee pays 20% of inpatient care charges, up to a maximum of \$500. For outpatient care, the employee pays \$5 per visit. The plan is responsible for the remainder.

^c The plan pays 100% of charges for inpatient care. For outpatient care, the employee pays \$5 per visit, and the plan pays the remainder.

TABLE 2
DESCRIPTIVE STATISTICS^a

Variables	Means	s.d.	Correlation Matrix			
			1	2	3	4
1. Health Plan Choice ^a	4.18	1.79				
2. Age	39.71	10.90	0.15			
3. Salary(+1000)	39.05	21.34	0.17	0.27		
4. Married	0.70	0.46	-0.03	0.28	0.23	
5. Female	0.36	0.48	-0.09	-0.19	-0.40	-0.26

N = 5194

^a 1=HMO, 2=IPA Plan 2, 3=IPA Plan 1, 4=Low Coverage FFS, 5=Medium Coverage FFS, 6=High Coverage FFS

TABLE 3
 DETERMINANTS OF HEALTH PLAN CHOICE:
 Estimated Logit Coefficients (t-statistics in parentheses)^a

Explanatory Variable	HMO (j=1)	IPA Plan 2 (j=2)	IPA Plan 1 (j=3)	Low Coverage FFS (j=4)	Med Coverage FFS (j=5)
Employee Premium	.02 (.99)				
Married	0.39 (2.28)	0.70 (8.05)	0.23 (1.91)	1.60 (9.40)	-0.08 (-0.66)
Age	-0.05 (-6.52)	-0.04 (-10.50)	-0.01 (-2.15)	-0.05 (-8.46)	-0.07 (-13.40)
Female	-0.04 (-0.24)	0.07 (0.83)	0.33 (2.70)	1.37 (9.76)	0.03 (-0.29)
Salary	-0.03 (-4.90)	-0.02 (-8.31)	-0.02 (-6.38)	-0.02 (-3.64)	0.00 (-0.49)

N = 5194

Log-likelihood: -7458.74

Chi-Square(DF): 3695.32(21)

^a Average change in the probability of selecting option 1, 2, 3, 4, or 5 (versus option 6) associated with a one unit change in the explanatory variable. A negative sign means that an increase in the value of the variable will be associated with a decrease, by the amount shown, in the probability of selecting that option over the high coverage FFS plan. A positive (negative) coefficient for the Female and Married variables means that being female, or married, increases (decreases) the probability that the option will be selected over the high coverage FFS plan.

TABLE 4
 PREDICTED EFFECTS OF CHANGES IN INDIVIDUAL EXPLANATORY VARIABLES
 ON HEALTH CARE CHOICES

Explanatory Variable	CHANGE IN PROBABILITY ^a				
	HMO (j=1)	IPA Plan 2 (j=2)	IPA Plan 1 (j=3)	Low Coverage FFS (j=4)	Med Coverage FFS (j=5)
Age (unit change = 10 yrs)	-.02	-.08	-.01	-.04	-.08
Female	.00 ^b	.02 ^b	.03	.10	.00 ^b
Salary (unit change = \$10k)	-.01	-.04	-.02	-.01	.00 ^b
Married	.02	.15	.02	.11	-.01 ^b

^a Average change in the probability of selecting option 1, 2, 3, 4, or 5 (versus option 6) associated with a one unit change in the explanatory variable. A negative sign means that an increase in the value of the variable will be associated with a decrease, by the amount shown, in the probability of selecting that option over the high coverage FFS plan. A positive (negative) coefficient for the Female and Married variables means that being female, or married, increases (decreases) the probability that the option will be selected over the high coverage FFS plan.

^b Coefficient is not statistically significant.

TABLE 5
EFFECTS OF EMPLOYEE-SPECIFIC VARIABLES
ILLUSTRATIVE PROBABILITIES

EMPLOYEE CHARACTERISTICS				PREDICTED PROBABILITY OF SELECTING HEALTH PLAN ^a					
				HMO (j=1)	IPA Plan 2 (j=2)	IPA Plan 1 (j=3)	Low Cov FFS (j=4)	Med Cov FFS (j=5)	High Cov FFS (j=6)
Marital	Age	Salary	Gender						
S	26	30,000	F	.05	.28	.11	.08	.25	.22
M	40	40,000	M	.04	.38	.10	.06	.13	.28
M	55	47,000	M	.03	.28	.11	.04	.07	.47
M	36	18,000	F	.05	.38	.13	.22	.09	.14
M	39	39,000	M	.05	.39	.10	.06	.13	.27
M	46	60,000	M	.03	.30	.09	.05	.12	.41

^a Predicted probabilities are computed at stated levels of employee characteristics and using coefficient estimates from Table 3.