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Why do Employees Keep Choosing the Expensive Health Care Plan? An Investigation of the Quality and Logic of Employee Health Care Plan Selections

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Working Paper 95-18

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This research was funded by CAHRS

Abstract[1]

In 1991, The Dannon Company provided 287 of its employees with a choice of health care plans. The new plan was less expensive and designed to fit employees' needs better. Contrary to managerial expectation, three-quarters of employees continued to choose the more expensive plan. To study why this was occurring and to determine if these choices reflected employee "mistakes," a cooperative effort was begun between The Dannon Company and Cornell University. This cooperative effort allowed us to investigate this problem using actual employee medical claims.

Analysis revealed employees strive not only to minimize costs, but also to avoid risk in their health care plan decisions. Overall, employees with the most significant cost difference chose the plan with the lowest total costs. This effect translated into financial savings for the employees. Employees were better off as a group with the freedom to make their own selections than they would have been if they had been forced into either of the two available health care options. Thus, this study demonstrated that choice is valuable to employees. Implications for Dannon and for future research are discussed.

[1] This research was funded by both the Center for Advanced Human Resource Studies and The Dannon Company. The authors would also like to thank Penny Boyd for her assistance on this project.

At The Dannon Company, as for many other companies, costs associated with the health care benefit were growing out of control. One way to manage these costs was to allocate a fixed amount of money for employee health care benefits and provide a choice of health care options, giving employees a chance to share a portion of their health care costs based on their need. Previously, all employees were enrolled in a comprehensive health care plan. This was a typical fee-for-service health care plan that covered 100% of all hospital-related claims. In 1991, Dannon introduced a second plan that had a lower premium but covered less than 100% of hospital claims.

Some research on health care plan decisions suggests that employees are very sensitive to premium changes (Barringer & Mitchell, 1994; Feldman, Finch, Dowd & Cassou, 1989; Welch, 1986). Additionally, it was believed by managers that many employees simply would not need the additional hospital coverage because most employees were healthy. It was thus expected that many employees would select the new plan and cash in on the premium savings.

However, this did not occur. Less than 25% of the employees chose the new plan. Why was this occurring? Was the premium difference not large enough? Were employees making poor decisions? Or perhaps employees were making good decisions and managerial expectations were off? Simply looking at enrollment rates was insufficient to develop any answers.

To investigate these questions, a cooperative effort was begun between The Dannon Company and Cornell University. The study would delve into the characteristics and consequences of employees' decisions. In addition to demographic variables frequently included in other studies of health care choice (Barringer & Mitchell, 1994; Davis, Giles & Feild, 1988; Feldman et al., 1989; McGuire, 1981; Piontkowski & Butler, 1980; Welch, 1986), the financial consequences of employees' decisions would be determined. Specifically, actual medical claims data would be used to determine how costs affected each employee's decisions. Due to the confidentiality of medical claims data, researchers could only perform this study with the full cooperation of the organization. However, due to limits on managers' time and tools for performing such studies, only with the help of researchers could Dannon managers carefully investigate employee behaviors. The parties' cooperation lead to a better understanding of an applied issue and contributed to the theoretical development of the study of health care decision making.

The Health Care Choice Situation

Flexible benefit plans supposedly allow employees "to choose their own reward package so that it is sure to fit their needs and desires (Lawler & Jenkins, 1992, pg. 1046)." However, some evidence suggests that employees may not make such choices. Indeed, the initial purpose of the cooperative study was to understand why the majority of employees were choosing the more expensive health care plan when this behavior was contrary to initial expectations based on both experience and research.

Selecting benefits in a flexible benefits environment is difficult (Besser & Frank, 1989; Mamorsky, 1990; McCaffery, 1992; Rosenbloom & Hallman, 1981), and many have observed that humans are not always rational decision makers (Baron, 1988; Bazerman, 1994; Tversky & Kahneman, 1982). Thus, there are ample reasons to question whether employees are actually selecting benefit plans for good reasons. If not, understanding the reasons can direct policy changes to help achieve the desired behaviors, either by helping employees make better benefits decisions or by changing plans so to better fit employees' needs.

We set out to determine why employees in the company were not as responsive to the reduced premium as might be expected. We investigated whether employee decisions reflected a desire or an ability to minimize out-of-pocket costs. Our aim was to understand why the majority of employees chose the expensive health care plan. This objective lead to the more general goal of determining whether providing employees with a choice of health care options was actually good for employees.

Health Care Plan Decision Making

Many factors enter into employee medical plan choices, including quality of care, access to a certain doctor, and financial protection in case of a catastrophe. Expectancy theory (Friedman & Savage, 1948) suggests that employees will select the health care plan that maximizes their expected utility. Multi-attribute utility theory (Newman & Warren, 1977) more specifically suggests that employees will weight the importance of each characteristic, evaluate how each plan satisfies these criteria, and choose the plan that has the highest value. The two plans offered in this case differ in how they reimburse. They are both provided by the same insurer, marketed similarly, have similar claims procedures, etc. The only differences between the plans are their premium, deductible, and the fact that the old plan reimburses 100% of hospital claims instead of 80%. Because the differences are primarily financial, this was a good chance to explore whether financial differences affect choice. Yet, because employees cannot perfectly predict their future medical needs at the time they make their health care decisions, uncertainty plays a key role. Employees must balance their desire to minimize their

out-of-pocket expenses against minimizing their financial burden if they have a medical calamity. In other words, employees were faced with potentially two objectives: minimizing costs and minimizing risk.

To study patterns of employee choices, we needed to develop a measure to quantify the quality of benefit choices. Although a measure such as benefit satisfaction captures employee opinions about their benefit choices, it does not ascertain whether employees choose benefits to meet their needs. Because we were dealing with health care plans that only differed with respect to how they reimburse, we developed a measure of the extent to which the chosen benefit met the employees' financial needs. We calculated the actual costs that each employee would have to pay under each benefit alternative. We called this measure "out-of-pocket costs" (OPC).

Out-of-Pocket Costs as a Measure of Decision Consequences

Employee health care benefit decisions produce very different financial results, depending on the characteristics of the selected plan and the employee's future medical costs. Examining only the employee's choice or only the plan characteristics cannot reflect these financial implications. To really understand each employee's costs, one must examine actual employees' claims and calculate the actual out-of-pocket costs (OPC) associated with employees' choices. We can then use OPC to determine how well employees' choices meet their needs.

Estimating OPC requires three pieces of information (Sturman & Boudreau, 1995): (1) plan premium, (2) individual medical charges, and (3) the reimbursement characteristics of the plan. For example, suppose an employee pays a premium of $100 for a medical insurance plan that will pay 80% of the first $1000 of medical expenses, and 100% thereafter. Such a plan creates an OPC function that has a minimum of $100, rises by 0.20 for each dollar of medical expenses up to $1000, and reaches a maximum of $300 (i.e., the $100 premium plus 0.20 times $1000). Similar functions can be constructed for any medical plan, if the data are available. Using OPC, we can calculate Regret, defined as the financial consequence of making a not-cost-optimal choice. With an individual's actual medical cost experience, we can calculate OPC for each available choice. If the employee chose the option that minimizes their OPC, then Regret equals zero. If the employee chose a different option, Regret equals the difference between the OPC of their chosen plan and the cost-minimizing plan.

Research on employee health care selection has shown that employees are sensitive to costs (Barringer & Mitchell, 1994; Feldman, Finch, Dowd & Cassou, 1989; Holmer, 1984; Marquis & Holmer, 1986; Short & Taylor, 1989; Welch, 1986). While the magnitude of this price

sensitivity has varied extensively, these studies have consistently shown a negative relationship between expenses (such as premiums and co-payments) and plan selection. However, these studies have not directly addressed OPC. Instead, they have either examined only plan characteristics such as premium, deductible, and co-payment (Barringer & Mitchell, 1994; Feldman et al., 1989; Holmer, 1984; Short & Taylor, 1989; Welch, 1986), or have approximated medical expenses (Friedman, 1974; Marquis & Holmer, 1986). By calculating OPC and Regret directly, we would be able to compute the ramifications of making the not-cost-optimal choice, and thus better examine the extent to which employees are sensitive to the financial consequences of their decisions. These measures also enable us to determine which employees faced the greatest cost consequences.

Although research has not directly investigated employee sensitivity to OPC, the research suggests that employees will be sensitive to it. So, we expect that the greater the impact of making a decision that is not cost-optimal, the more likely an employee is to make a cost-optimal decision.

Lowering Costs Versus Lowering Risk

Of course, even simple health care choices involve more than just price. For example, employees must often balance minimizing costs against minimizing risk. Researchers have frequently noted that risk-aversion plays a crucial role in the choice of health care plans (Barringer & Mitchell, 1994; Friedman, 1974; Marquis & Holmer, 1986; Short & Taylor, 1989). Consistently, these researchers have found that employees have a strong preference for minimizing risk, often demonstrated through a high willingness to pay larger premiums for protection against catastrophic expenses. Even though plans frequently limit maximum out-of-pocket expenses, the risk-aversion tendency is still prevalent.

In summary, our closer look at theory and prior research showed that expecting a large reaction to the lower premium plan may have been too simple. Our more complete theory suggests that when price differences were small, employees would select the comprehensive plan to minimize risk. When price differences were larger, the lower-cost plan would be chosen.

The Value of Choice?

We have argued that employees face formidable challenges to making cost-optimal decisions, but we are not proposing that choice offers no value. Flexible benefits plans are based on the premise that employees can make good choices (Lawler & Jenkins, 1992). Some research indicates that providing employees with flexible benefits leads to higher benefits satisfaction (Barber, Dunham & Formisano, 1992), but it is unclear why this occurs. We do not know if choices really add value for employees.

One reason that providing choices may not always help employees is that future medical expenses cannot be perfectly predicted. Indeed, some research shows that at least 80% of the variance in future medical expenses remains unpredictable (van Vliet, 1992). Thus, a low cost choice with less risk protection may not seem valuable to those who feel they must protect themselves against a catastrophe, even if a catastrophe is so unlikely that they could probably save money with the low-cost option.

The literature suggests that there might be systematic reasons to explain why more employees did not choose the low-premium option. The direction of these forces, though, depends on the circumstances of the decision. If an employee foresees medical expenses that are best met by the comprehensive plan (Plan A), then both price-sensitivity and risk-aversion push the individual to choose the comprehensive plan. However, if the employee foresees the other plan (Plan B) as being cost-optimal, then they face a conflict. Price-sensitivity pushes the employee toward that less-expensive plan, while risk-aversion pushes the employee toward the comprehensive plan. The relative strengths of these forces were unknown, but we set out to analyze them to find out if giving employees a choice financially benefits employees.

If uncertainty prevents employees from benefiting from a low-cost option, an obvious alternative to providing employees with choice was to choose a medical plan for them. This strategy is not necessarily inconsistent with the goal of helping employees control costs. For example, the employer could choose to offer the single plan that minimizes the total expected costs for the entire employee population. Because our data reflect a situation with two alternatives, we will refer to this as the Require Plan A Rule or Require Plan B Rule, Plan A being the plan covering 100% of hospital-related claims. If choice help employees, the OPC of actual employee decisions will be less than the OPC resulting from forcing all employees into either Plan A or Plan B.

Method

Sample

At the time of this study, The Dannon Company had two manufacturing plants in the United States in addition to its headquarters location, employing roughly 650 people. Beginning in 1991, one plant with 340 employees offered the choice between the two aforementioned health care plans. Data on employee choices, medical billings, and demographic characteristics were collected for 1991 and 1992 from the plant that offered the choice. Data were collected on individuals employed for both of these years from both the company and the medical insurance provider. This sort of cooperation between Dannon and the insurance provider demonstrates the value of multi-organization partnerships. Although Dannon out-sources certain aspects of

the benefit administration function to specialists, information easily flows to and from these sources. This information can be used to aid managerial decision making, support policy decisions, or be used to conduct research. Thus, while outsourcing allows Dannon to take advantage of specialist efficiency, Dannon does not lose the ability to retain critical information that can add value in other human resource activities.

A total of 287 cases was thus obtained, in both 1991 and 1992. Data included employee age, sex, marital status, number of children, and medical billings. The average employee age was 34 years, 63% were male, 78% were married, and each employee had roughly 2 children (mean = 1.7; ranging from 0 - 7). Medical expenses averaged $4052, with individual expenses ranging from $0 to $191,786.

Nature of the Choice Situation

From an experimental standpoint, the data from this study reflected a decision situation that had many advantages. The situation provided many controls that may not be available in other field settings. Each individual faced the same choice between two health care plans. The health care plans were both fee for service plans, provided the same access to doctors, were provided through the same organization, were similarly marketed, and had the same claims procedure. This control allowed us to isolate the effects of cost on choice.

This control, though, did not occur because of experimental manipulations. When Dannon provided employees with choices, Dannon managers wanted employees to continue to receive the same flexibility and quality of care that they had previously received. The purpose of providing choice was to give employees an opportunity to lower their costs. Thus, Dannon offered two plans that only differ in their premiums, deductibles, and rates of reimbursement. Table 1 provides the specific characteristics of the plans.

TABLE 1: Summary of Health Care Plans' Characteristics

	Plan A			Plan B		
	EE Only	EE + 1 Dependent	EE + >1 Dependent	EE Only	EE + 1 Dependent	EE + >1 Dependent
Premium	$231.36	$461.28	$530.40	$79.56	$80.64	$170.52
Deductible	$100	$200	$200	$200	$400	$400
Co-Payment Rate on Non-Hospital Charges	20%	20%	20%	20%	20%	20%
Co-Payment Rate on Hospital-Related Charges	0%	0%	0%	20%	20%	20%
Out-of-Pocket Cap	$1100	$2200	$2200	$1200	$2400	$2400

Although this choice situation may be limited, there is, in fact, no such thing as a typical health care choice situation. Within flexible benefit plans, health care choices are the most common benefit offered (EBRI, 1993), but plans can also include myriad of other benefit types (e.g., dental, disability, 401(k), etc.). For health care benefits, there is also no typical choice situation. The typical range of options includes the choice of two to four plans, plus HMOs and PPOs (EBRI, 1991). Although HMOs and PPOs are growing as a percentage of the types of health insurance plans offered, FFS plans are still the most prevalent kind of medical insurance (U.S. Bureau of Labor Statistics, 1990). Thus, the choice provided here is arguably simple, but not atypical. This choice situation provided us with the means to determine the effect of costs on benefit choices without having inappropriate comparisons across choice types and without having to control for other potential criteria that would be present in more complicated decision situations.

Measures

As described earlier, the OPC measure was designed to help quantify the financial ramifications of employee benefit decisions to allow us to understand the pattern of employee choices. OPC was calculated for each employee under each plan based on their total medical expenses (e.g., hospital and non-hospital) and plan characteristics (see Table 1). For example, if a single employee had $1000 in non-hospital-related medical expenses and $5000 in hospital-related medical expenses, the OPC for Plan A and Plan B would be calculated as follows. Under Plan A, the premium is $231.36. Of the $1000 in non-hospital-related medical expenses, the employee must pay a deductible of $100, and then of the remaining $900, the employee pays a 20% co-payment leading to an additional $180 that the employee must spend. Thus, the total OPC for this employee under Plan A is $511.36. Under Plan B, the hospital and non-hospital medical expenses are treated the same. The premium is $79.56, the employee meets a deductible of $200, and then the employee pays a 20% co-payment on the remaining $5800 medical expenses (i.e., $1160). Thus, the OPC under Plan B is $1439.56.

If the OPC for the employee's chosen plan was less than or equal to the OPC of the non-chosen plan, then the decision was cost-optimal and Regret equaled zero. Otherwise, Regret equaled the difference between these two values. Continuing the above example, if the employee chose Plan A, then Regret equaled $0; if the employee chose Plan B, then Regret equaled $928.20. The Potential Regret was also computed for each individual, equaling the amount of Regret associated with the not-cost-optimal decision. For this example, Potential Regret equaled $928.20.

Two variables were created to represent the optimality of the Require Plan A Rule and the Require Plan B Rule: "A-optimal" and "B-optimal." For each employee, A-optimal was coded as 1 if Plan A was the cost-minimizing choice, and 0 otherwise. B-optimal was coded as 1 if Plan B was the cost-minimizing choice, and 0 otherwise. Each employee's OPC was calculated for the Require Plan A Rule and the Require Plan B Rule. The definitions used in this paper are summarized in Table 2.

TABLE 2: Summary of Terms

OPC: Out-of-Pocket Costs. The total amount an employee must spend to purchase and use a given health care plan.

Cost-Optimal Decision The health care plan that has the lowest OPC is the cost-optimal decision.

Regret: The difference in OPC between the Cost-Optimal Decision and the plan that the employee actually selected.

Potential Regret: The amount of Regret that an employee could face if he or she did not make the cost-optimal decision.

Require Plan A Rule: This rule refers to a hypothetical policy of making all employees either choosing or being forced to choose the comprehensive plan, Plan A. This policy was in effect before 1991, when employees were not provided a choice of their health care benefits.

Require Plan B Rule: Like the Require Plan A Rule, this rule refers to a hypothetical situation where all employees were forced into the lower-premium plan, Plan B. Dannon has not implemented this policy. When Plan B was introduced, employees were provided the option of selecting Plan A.

Results

Table 3 summarizes the optimality frequencies and consequences of actual employee decisions for each year, as well as what would have happened had all employees been forced into either plan. The rows of Table 3 correspond to the different choices or choice rules, and the two different years. The first three rows reflect the results based on the actual choices for those employees who chose Plan A in 1991, those who chose Plan B in 1991, and the combined sample for 1991. The next three rows show the same information for 1992. The seventh row shows the combined sample for both plans in both years. Rows eight through ten show the results of assuming that every employee chose, or was forced into, Plan A. Row eight reflects the results for 1991, row nine shows results for 1992, and row ten shows the combined results for both years. Rows eleven through thirteen are similar, except that the decision rule assumes that all employees chose, or were forced into, Plan B.

TABLE 3: Frequency and Consequences of Actual and Decision Rule Selections

	N	Number Optimal	Percent Optimal	Mean OPC (SD)	Mean Regret (SD)
Actual Plan A, 1991	220	82	37%	987 (571)	125 (134)
Actual Plan B,1991	67	47	70%	725 (696)	170 (352)
Actual A and B,1991	287	129	45%	926 (611)	136 (206)
Actual Plan A,1992	224	86	38%	939 (526)	115 (128)
Actual Plan B,1992	63	61	97%	623 (616)	12 (78)
Actual A and B,1992	287	147	51%	870 (561)	93 (126)
Actual A and B, '91 & '92	574	276	48%	899 (587)	114 (172)
"Require Plan A" Rule, 1991	287	102	36%	926 (553)	135 (138)
"Require Plan A" Rule, 1992	287	88	31%	919 (546)	143 (133)
"Require Plan A" Rule, '91 & '92	574	190	33%	923 (994)	139 (135)
"Require Plan B" Rule, 1991	287	185	64%	994 (834)	204 (357)
"Require Plan B" Rule, 1992	287	199	69%	930 (756)	153 (321)
"Require Plan B" Rule, '91 & '92	574	384	67%	962 (796)	178 (340)

Note: OPC = Out-of-pocket costs; Regret = Actual OPC minus Cost-Minimal OPC

Results from t-tests largely support the notion that providing employees with choice allows them to select more cost-optimal plans. Although the rate of cost-optimality of actual decisions was less than half (48%) over the two years, employee decisions translated into savings for the employee population. The OPC associated with actual decisions were less then the OPC associated with the Require Plan A Rule ($t = 3.37$; $p < .001$) and the Require Plan B Rule ($t = 3.96$; $p < .0001$) over the two years. Analyses of the results within each year are mostly the same except that the OPC associated with actual decisions were not significantly different from the OPC of the Require Plan A Rule in 1991 ($t = .04$; n.s.). The OPC of actual decisions were significantly lower than the OPC of the Require Plan A Rule in 1992 ($t = 7.19$; $p < .0001$), and lower than the OPC of the Require Plan B Rule in 1991 ($t = 2.93$; $p < .01$) and 1992 ($t = 2.67$; $p < .01$). These Regret levels translated into substantial consequences for employees. By providing employees with a choice instead of continuing the policy of giving employees only the comprehensive plan (i.e., the Require Plan A Rule), employees saved a

total of $14,236. By not requiring all employees to select the new plan (i.e. by avoiding the Require Plan B Rule), the employee population saved $36,699.

The data in this study did not allow us to calculated a risk-aversion value as has been performed in other studies (Friedman, 1974; Marquis & Holmer, 1986); however, analysis of choice patterns does suggest that employees do care about risk. As shown in Table 3, employees were more likely to choose the comprehensive plan, regardless of which plan was cost-optimal. The tendency to choose the comprehensive plan, though, was more pronounced when Plan A was cost-optimal than when Plan B was cost-optimal ($t = 4.53$, $p < .0001$). Table 3 illustrates this because the probability of cost-optimality was much higher for those choosing Plan B than for those choosing Plan A. Thus, it seems that cost drives the selection of Plan B, but more factors are influencing the selection of Plan A.

We used logistic regression to determine how strongly Potential Regret affected whether employees made cost-optimal decisions after removing the possible effects of personal characteristics, such as age, sex, etc. Table 4 reports results for the models that predicted the cost-optimality of employee choices using employees' sex, marital status, number of children, age, year in which decision was made, the log of Potential Regret, and the squared log of Potential Regret. Note that the natural logarithm, or "log," was used to make the distribution of Potential Regret more compatible with this statistical technique.

TABLE 4: Determinants of Cost-Optimality: Logistic Regression Model
(Probability of Employee Making a Cost-Optimal Decision as Reference Category)

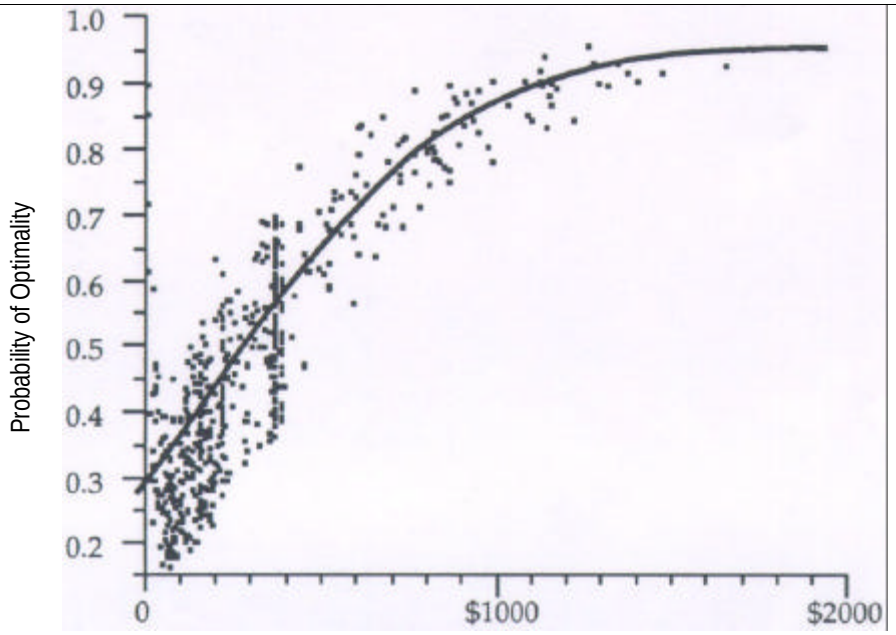
Variable	β (t-value)
Sex	-0.24**
(Male = 0; Female =1)	(2.59)
Married	0.17
(Single = 0; Married =1)	(1.20)
#Children	0.087
	(1.29)
Age	0.014
	(1.35)
Year	0.41*
(1991 = 0;1992 =1)	(2.22)
Ln Potential Regret	-2.67**
	(4.01)
$(\text{Ln Potential Regret})^2$	0.34**
	(5.07)
Pseudo R^2	0.12
Log Likelihood	-350.07
N=574	

*p<.05; **p<.01

The model reveals that a number of variables are significantly related to the probability that employees will make cost-optimal decisions. Specifically, Sex, whether the decision was made in 1991 or 1992, and the Potential Regret terms were significantly related to the probability of the employee making a cost-optimal decision. The significant sex effect shows that men are more likely to make cost-optimal decisions than women. The significant effect for year shows that employees made cost-optimal decisions more often in the second year than in the first year, perhaps reflecting a learning effect. The significant non-linear result of the effect of Potential Regret shows that as employees face more significant financial consequences of their decisions, employees are more likely to select the plan that yields cost-optimality.[2]

To better illustrate the relationship between Potential Regret and cost-optimality, Figure 1 presents a graph of Potential Regret and the probability of cost-optimality as computed by the logistic regression model. This graph clearly shows the non-linear relationship and how the probability of cost-optimality increases with Potential Regret.

FIGURE 1: Probability of Cost Optimality by Potential Regret



[2] Using multiple observations of the same individuals in the analysis creates a risk of nonindependence that could bias these results. However, analyses performed on only one year's worth of data revealed the same results in both years. In all analyses (e.g.,1991 and 1992, 1991 alone, and 1992 alone), sex, potential regret, and potential regret squared were all significantly related to the probability of employees making cost-optimal decisions.

Practical Implications and Managerial Take-Aways

The initial goal of this study was to help an organization understand the choice patterns of its employees. Contrary to initial managerial and research-based expectations, employees were not as likely to switch to a lower premium plan as was expected. The investigation into this behavior, though, revealed that employees were making decisions that met their needs and were better off with the choice than without. More generally, this is the first study to show using data that flexible benefits plans are valuable to both employees and employers.

Employees are sensitive to out-of-pocket costs (OPC); however, OPC is a function of more than just the premium. Analyses show that employees as a group are making choices that are more cost-effective than no choice at all, and employees who have the most to gain (or lose) from their decisions do make cost-optimal selections. On the other hand, this study contradicts the notions that "individuals can choose their own reward package so that it is sure to fit their needs and desires (Lawler & Jenkins, 1992, pg. 1046, emphasis added)." Indeed, the majority of employees did not make cost-minimizing decisions. Those who did not make cost-optimizing decision had a mean regret of $220. Although Regret was as low as $2, it ranged as high as $1642, and its median was $167. In all, Regret amounted to an average total overpayment of $65,613 per year. Although arguably some of these results can be attributed to conscious decisions to pay an extra premium for the more comprehensive coverage, 22 employees chose Plan B and were not cost-optimal, accounting for $12,180 in Regret and thus showing that some employees could have been better off with a different choice.

In retrospect, Dannon could have made the premium difference between the two plans larger to encourage more employees to choose the less expensive plan. If this had stimulated more employees to choose the low-cost option, both Dannon and its employees could have saved money. This sort of change, though, needs to be examined in the context of broader issues of strategy and organizational culture. Providing employees with choice will not result in good will if an entitlement philosophy prevails. Thus, providing a choice such as this with a small premium difference allows the idea of choice to begin to grow. Although the full savings associated with choice may not occur immediately, a careful introduction allows the difficult issues of benefits decision making to begin to be communicated in a simpler decision making environment and provides a mechanism for controlling future growth of benefit costs.

This kind of analysis can also help managers make better predictions of employee plan choices by isolating the influences of both risk and costs. For example, using these data, it is possible to estimate the effects of premium changes. Increasing Plan A's premium by $100 in 1992 would be expected to cause 17 more employees to choose Plan B. This change would

cost the employee population $20,700 through increased premiums (i.e., those who would pay the extra premium to stay in Plan A), and would have saved employees $7,410 (i.e., those who now chose Plan B and became cost-optimal). If instead the premium increase was $200, 52 more employees would be expected to choose Plan B. The increased premium would cost the employee population $34,400, but the changes would save switching employees $24,917. These examples show how these data can help demonstrate the impact of policy decisions, and that some employees are willing to endure premium increases to maintain risk protection.

Limitations and Future Research

These results show that both risk-aversion and price-sensitivity play a role in employee health care plan decision making. Nonetheless, there are some limitations to the generalizability of these results that offer fruitful opportunities for further replication. Because this study was a cooperative effort between The Dannon Company and Cornell, it was naturally limited in that the data only reflect a single organization. Further, because Dannon offered the health care choice at only one plant, the data only reflected a single location. If other companies are willing to make this sort of cooperative effort, further studies can replicate these results over multiple choice situations, companies, and locations.

Another limitation of this study is that, because the data are archival, we have no information on the actual decision processes followed by employees. While we can speculate about the apparent motivations for the observed decisions, clearer explanations of employee choice behavior will be possible when data on both the processes and the outcomes of employee decisions can be gathered. Additionally, we had no data on what employees expected their future expenses to be. The analyses in this study were based on actual expenditures. While this has the advantage of providing detailed data on the results of employee decisions, we were forced to assume that employees are attempting to estimate actual cost values. A fruitful area of future research would be to collect data on both employee projections of medical claims and actual employee claims.

It is also possible that employee medical claims and plan choice are recursively related. Once employees choose a certain plan, they may alter their behavior to fit that plan's characteristics. For example, those opting for a high-coverage, high premium plan may increase their use of covered services to "get their money's worth." Thus, the cost-optimality levels observed here may be somewhat biased.

To address some of these limitations, future research might investigate the antecedents and consequences of cost-optimality in employee benefits decisions. The present data provided only very limited information about employee characteristics that might influence benefit

choices. Future research might examine whether individual characteristics such as knowledge of benefits plans, cognitive ability, and motivation predict the likelihood of cost-minimization. OPC may also prove fruitful in measuring the effectiveness of interventions to improve benefits decision making, such as decision aids, benefits counseling, benefits communication, training and goal setting. How an employer presents and explains the choice could also affect employees' decisions. Such research can investigate the frequency of cost-optimality, but adding the cost consequences will provide a richer set of measures to define the concept of optimality in decision making. A key antecedent to cost-optimality may be individual employee decision processes. To date, we have very little knowledge about the factors employees consider when making benefits decisions, or whether certain decision patterns result in more cost-optimal outcomes. The analysis approach introduced here can provide more detailed information about these outcomes.

The present analysis suggests that the frequency of correct decisions can mask more complex patterns, and that the use of OPC can help to reveal them. It appears that the magnitude of the cost consequences is correlated with the probability of making cost-optimal decisions. However, future research is needed to determine whether achieving cost-optimality affects employee attitudes and behaviors. Are cost-optimal employees more satisfied, motivated or committed? Do they perform better? Do employees alter their behaviors to "fit" the benefits they have chosen, or do they attempt to choose benefits that fit their planned behaviors? Are employees who make not-cost-optimal decisions more likely to seek assistance with future decisions or more likely to change their future decisions?

There are a number of research questions such as these that need to be answered. Unfortunately, the inability of the field to address these issues is often more a function of opportunity rather than theory or tools. In situations involving highly confidential data, such as with individual medical claims, cooperative effort between industry and academia is essential to investigate these topics. This study provides but one example of such collaboration, yet the results here show the value of such efforts.

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