Selection of High-Deductible Health Plans
Attributes Influencing Likelihood and Implications for Consumer-Driven Approaches

Wendy Lynch, PhD
Harold H. Gardner, MD
Nathan Kleinman, PhD
Introduction

What characteristics influence whether employees will choose a health plan that carries the risk of a large, unanticipated cost? Is it the likelihood of needing care, or the affordability of the cost that determines selection?

Consumer-driven health plans (CDHPs) have evolved to include several components. Generally, a consumer-driven plan includes three types of features: a high-deductible or catastrophic-type insurance policy, a personal spending account (HSA, HRA), and tools to support informed decisions about health care consumption.

The purpose of combining a high deductible with a spending account is to assign consumers more responsibility for both using and paying for their own medical care. In becoming the payer, and having an opportunity to benefit from unspent money in their own accounts, consumers have an extra incentive to use services wisely. Economists point out that excess spending when someone else pays (also known as moral hazard) can be as high as 30 to 40 percent in some instances. Such figures have generated significant enthusiasm for using CDHPs, especially among large employers.

In most cases, the amount of money deposited in a savings account by employers will fall short of the full cost of the deductible. This ‘gap’ cost serves as a mid-range expenditure borne completely by the consumer and is covered either with accrued savings in the spending account from previous years, or as a direct out-of-pocket cost. A large majority of employees do not reach a deductible of $1,500 in any given year, making the probability of accrued savings very high.

However, experts continue to debate the merits and limitations of consumer-driven approaches. There is concern that such plans place an unfair burden on lower-paid, older, and unhealthy individuals, who are most likely in need of their funds. Further, as healthier people choose consumer-driven plans, some fear that traditional plans will be left with only the unhealthiest members. With fewer healthier members over which to spread costs, traditional health plan costs could become unaffordable due to this selection bias issue.

While some of these issues will be sorted out over time as more employers experience the impact of consumer-driven plans, today employers face decisions about how to introduce and offer these new plans, and how much and what type of selection bias to expect. Although consumer-driven plans include both personal spending accounts as well as high-deductible insurance policies, much can be learned about individual choice of health plans from past experiences with high-deductible plans.

The present report highlights characteristics and circumstances that influence an individual’s likelihood of selecting a high-deductible health plan (HDHP) that exposes him or her to a possibility of significant out-of-pocket expenses. By knowing who is most likely to select a higher deductible option, employers may understand better which employees will be most
open to plans that may be perceived as more financially ‘risky’. Further, these findings will help employers understand the degree to which adverse selection (meaning that healthier people select out of the traditional plans) occurs and whether voluntary participation in consumer-driven plans is a reasonable cost management strategy.

A Framework for Thinking about HDHP Selection

One can think about enrollment in a high-deductible health plan (HDHP) as a complex choice that requires a personal assessment of risk and reward. Assuming that the high-deductible plan has a lower monthly premium cost to the employee (as is usually the case), he or she must assess whether the risk of higher potential costs is worth the monthly savings accrued by selecting the HDHP. For single employees in one part of this investigation, those selecting a HDHP would save $800 to $1,000 in annual premium costs. However, they were at risk for up to $1,500 before they reached their deductible and eligibility for the catastrophic insurance coverage. Was spending $65 to $85 less per month worth the risk of spending up to $1,500, possibly all at one time?

Many Factors Influence

Many factors will influence this personal risk assessment, including but not limited to:

1. **Known, increased likelihood of spending.** Logically, a person who anticipates increased spending—because of past experience, an ongoing condition, or knowledge of an upcoming event—will choose a plan that best minimizes the personal impact of that spending. Theoretically, one would expect some individuals to select HDHPs at a lower rate. For example, older people, people with chronic illnesses, and individuals with families would expect higher costs, and thus choose HDHPs less often. *Several components of this premise will be tested in current investigation.*

2. **Financial means: ability to handle unanticipated costs or willingness to gamble against the risk.** The perceived risk of incurring a large, unanticipated expense is directly proportional to how large the expense is relative to one’s earnings and assets. As such, individuals having a greater means to absorb an expense equal to the high deductible will perceive the absolute risk as smaller, relative to their situation. Theoretically, at the same level of reward (lower premiums), we would expect that individuals with a higher salary would be more likely to risk the unanticipated cost of a high deductible. In contrast, some individuals with low income may be willing to accept the risk because of the opportunity cost of paying higher premiums. *Several aspects of this premise will be tested in current investigation.*

3. **Involvement in an active choice.** Changes in behavior require overcoming inertia. Not having to make a choice is usually preferable to the effort required to make a new one. Consequently, one would expect that when a
choice is not required, fewer people take on the risk of a high-deductible plan than when a choice is required. This premise is demonstrated in the current investigation.

4. Personality regarding risk-taking and future versus present orientation. Individuals vary in their tolerance of risk, and their preference for immediate versus future rewards. These personality attributes will influence one’s choice of risk. When health and financial factors reach an equilibrium, the risk-taker will be more likely to choose the HDHP. An orientation toward the future also seems to influence financial and health decisions. This premise is not considered directly in the current investigation.

5. Awareness and understanding of the implications of choice. If individuals are not aware or do not understand the implications of choosing a HDHP or a low-deductible plan, it will influence their choice. If individuals do not have enough information to assess personal risk, they may choose an option that does not fit their desired balance of risk and return. Consequently, one would expect that individuals who received better information and education about the implications of their choices would make more logical choices than those for whom education was not provided. This premise is not considered directly in the current investigation.

Populations and Methods

One large population (population 1) and one focused population (population 2) of employees were used for this set of analyses. First, a population was created from three employers within the HCMS Research Reference Database (RRDb). Each employer offered multiple health plan options (at least one of which had a deductible of $1,000 or more), covering over 76,000 employees in the database during the year 2002. The employees were dispersed across the U.S. Of these, 1,455 selected a HDHP. To eliminate the effects of region, employer, premium differences and other factors, a matched comparison group was extracted, such that four employees were selected at random to match each HDHP member from the same employer and region.

The second more focused and longitudinal population consisted of employees from one of the large employers (N=20,000) that offered only a HDHP ($1,500) or a zero-deductible plan for a four-year period from 2001 to 2004. In this instance, some characteristics of high-deductible enrollees could be examined more specifically. For a subgroup of this population, self-reported health perceptions and behaviors were also available and were used to test how such factors influenced HDHP choice.

Several advanced statistical techniques were used to test hypotheses in this investigation. In most analyses, the dependent variable was a binomial choice of selecting a HDHP or not. Multivariate logistic regression was used to test independent variables of interest, while controlling for others. Odds ratios were calculated to express the expected increase or decrease in the rate of choosing a HDHP for specific subgroups of employees.
The Measured Influence of Specific Selection Factors

Only a small portion of employees will choose a high-deductible health plan when it is offered as one option. Enrollment rates among the three employers included in the overall population ranged from 1.4 to 5.1 percent of employees. In order to understand who these individuals are, we will describe how each factor influenced selection.

1. Known, increased likelihood of spending. As expected, findings confirmed that individuals with a greater likelihood of high spending are less likely to select a high-deductible plan.

Starting with basic demographic characteristics, factors that increase one’s average health care costs also decrease the likelihood of choosing a high deductible plan. Seen in figures 1 through 4, controlling for other factors, individuals over 49 years of age were 25-30 percent less likely to select the HDHP; females were 25 percent less likely to choose the HDHP; married employees were 15 percent less likely to choose a HDHP; and for each child dependent, there was an approximate 15 percent decrease in the odds of choosing the HDHP. Younger, single employees (who can expect lower costs) are more willing to take the risk of a high deductible. Women, and people with dependents, have a higher likelihood of spending and thus perceive a HDHP as a higher financial risk.
Health factors also play a significant role, as shown in figures 5 through 8. Presuming that the more employees anticipate spending, the lower their odds of selecting a HDHP, it appears that employees anticipate their costs quite well. Figure 5 shows that the selection rate for HDHP is progressively and consistently lower as spending increases. Further, a high score on the Charlson Index (a claims-based score of serious illness which reliably predicts mortality in the following year) decreases the likelihood of selecting a HDHP by 35 percent. Factors that can be considered reasonable proxies for health also indicate that individuals who anticipate spending are less likely to enroll in a HDHP. A high cost of absences in the past year (days multiplied by salary) reduces HDHP likelihood by 40 percent, and a workers’ compensation claim in the last year decreases the likelihood by 50 percent.

**Figure 5**

![Percent of Employees in High-Deductible Health Plan by Employee Medical Cost Range](image)

**Figure 6**

![Odds Ratios for High-Deductible Health Plan Selection by Employee Sick Leave Cost Group](image)

**Figure 7**

![Odds Ratios for High-Deductible Health Plan Selection by Employee Charlson Comorbidity Index Group](image)

**Figure 8**

![Odds Ratios for High-Deductible Health Plan Selection by Workers’ Compensation Cost Group](image)

**Note:** Significantly different than comparison group (P<0.05).

Odds Ratios adjusted for differences in age, tenure, salary, number of child claimants, exempt status, race, prior sick leave, disability, and workers’ compensation costs, and prior highest Charlson comorbidity index in family.
Lastly, some self-reported health factors were strongly associated with enrollment in a HDHP. Individuals who rated themselves in poor or fair health were 27 percent less likely to enroll in a HDHP (figure 9).

**Figure 9**

Relative Likelihood of Selecting a High-Deductible Health Plan

While many health behaviors had no relation to enrollment, self-reported exercise did. Those who reported only walking or not exercising were 55 percent less likely to select a HDHP than those who reported some or regular exercise (figure 10).

**Figure 10**

Relative Likelihood of Selecting a High-Deductible Health Plan

To summarize, employees appear to anticipate spending, or their likelihood of spending, quite accurately on average. Factors that increase the likelihood of paying the full deductible also decrease their tendency to select the high-deductible plan. These behaviors confirm a rational economic choice to avoid higher personal expenses. Although not known for all employees in the broad population, in population 2 the difference in annual premium between the high and low deductible plans never exceeded the $1,500 deductible. Thus, those who reached the $1,500 deductible spent more out-of-pocket in total than they would have if they had chosen the other option.
2. Financial Means—Ability to Handle Unanticipated Costs. Using salary information, it was possible to examine the likelihood of enrolling in a HDHP by income level. Although it is possible that individuals with a low salary could have substantial wealth or other sources of income, such as a spouse with a much higher salary, this investigation assumed that the burden of a high deductible changed according to its size relative to an employee’s salary. Consequently, the risk of being financially compromised by an unexpected bill for $1,000 or more in health care expenses would be highest for individuals with the lowest income. Based on this premise, we would expect fewer lower-paid workers to choose the HDHP option, despite some ability to save money on a monthly basis.

Evidently, employees do assess and avoid this risk in direct proportion to their income. Comparing the matched sets of employees, HDHP enrollees differed from other plan enrollees most dramatically in their income level. The average income for those in the HDHP was $80,874, compared to an average salary of $66,681 in the other plans. Figure 11 shows that controlling for all other factors, employees with salaries above $50,000 have significantly higher odds of selecting the HDHP, with those making $100,000 having twice the likelihood as those making $30,000.
Figure 12 shows enrollment by salary for population 2, one large employer. While enrollment rates in the HDHP declined overall, they were strongly related to income in all four years. A higher income reduces the perceived risk associated with a larger deductible. Higher paid employees will choose HDHPs more often than lower paid employees who have the same previous health spending.

3. Involvement in an Active Choice. It is human nature to maintain the status quo unless there is specific reason to do otherwise. Because a HDHP is a more risky choice, individuals currently enrolled in other plans may have no reason or occasion to do so. Nor do they have a pressing financial reason to switch away from their current plan. Over the four-year period in the focused employer population, 14.5 percent of those in a HDHP switched to a lower deductible plan (figure 12). By contrast, only 0.2 percent of existing employees in other plans switched to a high-deductible plan. Employees who are not required to re-enroll or switch coverage are not inclined to switch toward a plan with greater risk.

To test whether those facing an active choice of plans behaved differently, this investigation examined whether, other factors being equal, new employees would choose a HDHP more often than existing employees. In fact, controlling for age, gender, salary, race and education, new employees were 2.5 times as likely to choose the HDHP than their currently employed counterparts. As seen in figure 13, this trend was consistent across all age groups with the exception of employees age 50 and over. Because past medical costs are unavailable for new employees, it is possible that new employees anticipate lower health costs. However, other factors do not suggest this is the case.
The implication of this finding is that when individuals are faced with an active selection process, a portion will choose the HDHP. Few employees, if they do not have to make a choice, will voluntarily seek an opportunity to enroll in a riskier plan.

4. Other Factors. Although it was not possible to examine aspects of personality or a person’s grasp of the implications of HDHPs, a few other attributes do add interesting insights. Most notable was the large difference in enrollment rates by education level (see figure 14). Employees having a four-year college degree were 45 percent more likely to choose a HDHP than those having fewer or no years of college education.
Because this analysis controlled for differences in salary, age, job status, and family, the differences attributed to education do not reflect financial means (with the exception that their parents may have been able to afford college tuition). It is possible that education serves as a proxy for characteristics that allow greater risk-taking than less-educated employees, despite equal levels of income. Further, more-educated employees may have a greater familiarity with financial or health matters, which promotes a better understanding of the features of a HDHP.

It should be noted that when prior health care costs are included in prediction models, education level is no longer a significant independent variable (same direction, p=0.16). Consequently, it is plausible that education is sufficiently related to health care consumption to confound this relationship. Future research is necessary to determine the mechanisms underlying the relationship between education level and HDHP enrollment.

Another factor affecting HDHP enrollment was race. Once again, controlling for differences in age, gender, salary, education, job status, and prior health costs, a person identifying himself as Hispanic was less than half as likely to enroll in a HDHP as a person identifying himself as Caucasian. African American employees did not differ in rates of enrollment from Caucasian employees, other things being equal. Why the Hispanic ethnic group was so much less likely to enroll is unknown, but evidently the group has some associated characteristic or circumstance that increases the perceived risk of HDHP.
Implications

As employers consider the option of offering consumer-driven health plans, these findings regarding HDHPs underscore several important implications.

While high-deductible health plans do differ somewhat from a pure consumer-driven approach, there are some fundamental similarities. Consumer-driven plan designs usually include some base of funds in a spending account, above which is a ‘gap’ in coverage for which an employee will have 100 percent responsibility until the deductible is reached. Employers have discretion about the size of the account and the corresponding gap. The bigger the gap, the more these plans will resemble HDHPs and likely be perceived similarly by consumers.

Further, different types of accounts may result in different perceptions. Employers may prefer a fund that has a use-it-or-lose-it feature (e.g. Health Reimbursement Arrangements) because the employer only pays what employees use and keeps remaining funds when the employee leaves. However, compared to funds that become the permanent property of the employee (e.g. Health Savings Accounts) it is unclear if use-it-or-lose-it funds will be spent or considered differently.

Regardless of operational differences, some of the findings here have implications about fundamental aspects of behavior for any new type of plan option. Employers should expect that a very specific type of employee will select a plan that involves possible risk.

1. Choice of a health plan reflects an individual’s assessment of risk versus reward. When one plan includes more predictable and regular personal expenses than another, assessment of its relative value or risks will be specific to the individual. Employees will differ dramatically in perception of how attractive a specific plan will be.

2. Certain characteristics and circumstances will influence the employee’s perception of risk. Perceptions will differ, predictably, based on some known factors, two of which are most influential.
   a. One’s likelihood of having to spend the deductible or ‘gap’ amount. It appears that most employees are generally accurate in their prediction of what medical expenses they will need. Younger, male, single, low-income employees will risk an unanticipated expense because the likelihood is so much lower. If a plan includes a possible large expenditure (either a deductible or a ‘gap’), healthier and younger employees will be more likely to choose it on average.
   b. The size of the possible ‘risk’ (in terms of the size of the possible unanticipated expense) relative to the person’s financial situation. The greater the risk relative to one’s salary (used as a proxy for wealth), the less apt a person will be to select the more ‘risky’ plan. Clearly, this risk will be weighed against the size of the premium difference. However, this study indicates that even when 50-66 percent of the possible expense is covered by the premium difference, the likelihood of selecting the HDHP was significantly lower for people who had a
lower salary. Higher paid employees will be more likely to select the plan with the risk.

c. It appears that financial considerations may supersede factors increasing one’s likelihood of needing medical care. At the lowest salaries, even employees with lower medical spending were less likely than average to choose a high-deductible health plan. However, at weekly salaries above three times the deductible, even employees with higher medical spending were more apt to select the high-deductible plan than average. See Table 1 to see some of the interactions between salary, age, dependents and job status. The groups with the highest odds of selecting the HDHP all had higher salaries and no dependents.

Table 1

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<th>Job status</th>
<th>Age</th>
<th>Children</th>
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*Odds of selecting a high-deductible health plan in a given year
3. Active enrollment choices will result in more consideration—and likely more selection—of alternative plans than a passive enrollment process. In this investigation, almost no employees chose voluntarily to select a HDHP after having enrolled previously. Individuals who were required to sign up (because they were new) selected the plan at a higher rate. It should be noted however, that it is possible that these employees expect lower costs, despite controlling for age, gender, coverage type and salary.

4. Some demographic variables appear to influence choice of HDHPs and may require additional attention or support to encourage selection of non-traditional plans. It appears that at similar age, gender, salary and coverage levels, employees with lower education are significantly less likely to choose a plan like a HDHP.

5. Individuals of Hispanic origins, compared to Caucasians and African-Americans are less likely to choose HDHPs. Assuming that consumer-driven and high-deductible plans are good alternatives for some, employers may need to offer additional education for individuals who may not have the experience to accurately assess the value of non-traditional plans.

Although some experts have suggested that adverse selection does not occur with consumer-driven plans, evidence in this research suggest the opposite. The larger the difference between the premium savings and the increased out-of-pocket spending, the more likely it is that unhealthy employees will avoid the plan. Further, the larger the size of a potential one-time loss (gap between spending account funds and the deductible) it’s more likely that employees at lower salary levels will find the risk too great. If these plans are offered as an option among other plans, higher paid and healthier employees will enroll more often. This will leave low paid and unhealthier employees in the alternative plans.

When contemplating and designing consumer-driven plans, employers should remember to consider that consumer principles apply to the selection of plans as well as to choice and consumption of care services. Employees will generally respond in economically rational ways and consider overall value and risk. This investigation points to the need for comprehensive planning to understand how features will or will not appeal to different types of employees.