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# Consumer-driven impact study





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- General Mills
- ICI Group
- Kroger Co.
- Medtronic Inc.
- PPG Industries Inc.
- Textron Inc.
- Union Pacific Corporation
- Wendy's International Inc.

We were impressed that each of these companies has expressed and acted with a genuine concern for fairness and for the health outcomes of its covered employees.

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## EXECUTIVE SUMMARY

### Do consumer-driven health plans (CDHPs) help reduce costs?

CDHPs have become a polarizing topic, provoking disagreement. Some have predicted CDHPs can help reduce healthcare costs; others fear these plans may result in adverse consequences.

Milliman undertook this study in an effort to provide an independent analysis of the value of CDHPs. This study, based on a quantitative analysis of six employer programs with approximately 30,000 employees enrolled in some type of CDHP, found that the savings that are gained from CDHPs come from the reduced utilization and higher cost sharing that high-deductible health plans (HDHPs) historically promote; healthier lives that select to enroll in the CDHP also contribute to the apparent savings.

### Study results

Overall, this study found that when adjustments are made for typical risk and benefit factors, CDHPs deliver cost savings that are modestly better than non-CDHPs. Specifically, these plans produce 1.5% in savings beyond non-CDHPs. This contrasts with the more dramatic savings that CDHPs appear to bring if certain adjustments are not taken into account.

Key findings from our study include:

- **CDHPs are performing as predicted.** CDHPs behave as expected by traditional actuarial analysis, which should alleviate some of the concerns about their adoption.
- **Health plan paid claims per member per month (PMPM) are very low for CDHP populations.** Most CDHPs, however, come with high deductibles, which pay out less in claims and increase member cost sharing, which makes health plan paid claims not particularly meaningful as a measure of savings.
- **Allowed claims PMPM for the CDHP population are also low.** Allowed claims are the total that the plan and the member pay to providers. For the plans we examined, CDHPs' allowed claims were about 41% lower than allowed claims in the non-CDHP plans. Allowed claims were consistently lower across each CDHP, with reductions in claims ranging from 27% to 48%. However, this reduction does not yet account for various risk factors of people choosing CDHPs, as discussed below.
- **The risk profile of the population choosing CDHPs is younger and healthier.** After adjusting for characteristics of the two populations that correlate with claim cost—risk, age, gender, and geography—CDHP allowed claims are about 4.8% lower than they are for the non-CDHPs.
- **CDHP results also reflect the utilization impact of high-deductible plans.** Higher cost sharing discourages utilization, and adjusting for this brings the savings to 1.5%. After all these adjustments, CDHP allowed claims are only slightly better than would be predicted by typical risk- and benefit-design factors.

#### RATIO OF ADJUSTED CDHP TO NON-CDHP ALLOWED CLAIMS, BY EMPLOYER AND IN TOTAL

COMPANY	UNADJUSTED ALLOWED CLAIMS	COMBINED ADJUSTMENTS	ADJUSTED ALLOWED CLAIMS	ACTUAL SAVINGS (1-ADJUSTED ALLOWED CLAIMS)	SAVINGS BEYOND HDHP
A	67%	77%	86.9%	13.1%	9.7%
B	56%	58%	97.4%	2.6%	0.4%
C	54%	64%	84.5%	15.5%	12.1%
D	73%	70%	104.7%	-4.7%	-5.3%
E	54%	57%	96.1%	3.9%	0.6%
F	52%	56%	93.9%	6.1%	-2.9%
<b>AVERAGE*</b>	<b>59%</b>	<b>62%</b>	<b>95.2%</b>	<b>4.8%</b>	<b>1.5%</b>
<b>RANGE OF RESULTS</b>	<b>52%-73%</b>	<b>56%-77%</b>	<b>85-105%</b>	<b>15%-(5%)</b>	<b>12%-(5%)</b>

\*Weighted by members enrolled in CDHPs.  
Negative savings mean that costs increased.

As is apparent in this exhibit, the results varied from one organization to another. (See pages 13 and 14 for further analysis.)

### CDHPs and take-up rates of new options

Healthier people are choosing CDHPs, but others are less likely to migrate from old plans. This trend is consistent with historical models of change in healthcare options, in particular HMOs and managed care. CDHPs are not the first healthcare option whose early adopters are healthier, and this fact should neither discourage supporters nor bolster opponents. With time and further enrollment growth, some of the favorable risk difference between CDHPs and other plans may diminish. For years, health insurers and employers have, successfully managed the transition to new options despite the adverse selection issues.

Overall, we believe the value of CDHPs will not be clear until consumers have better information to make healthcare choices. At this early stage in CDHP evolution, patient education resources are not yet fully in place, nor do most plans provide members with detailed and useful cost and quality information about physicians, hospitals, and other providers. Proponents believe this information will enable consumers to make more informed, timely, and cost-efficient purchasing choices. Future availability of this information may well turn these plans into clear cost reducers. We believe that until members can truly compare and shop for providers based on quality and cost, realized CDHP savings are likely to remain limited to the induced utilization expected from high-deductible plans.

### About this analysis

In this study, we compare the actual experience of employer groups offering CDHPs to what can be expected for the risk characteristics of those choosing CDHPs or non-CDHPs. For the purposes of this research, we define a CDHP as a high-deductible health plan with access to a funding account—either a health reimbursement arrangement (HRA) or a qualified HDHP with the availability (whether or not a member chooses to use it) of an accompanying health savings account (HSA). A “qualified HDHP” is one that meets criteria established in the Internal Revenue Code permitting an accompanying HSA to be tax-advantaged. While there are a number of ways an employer may offer a healthcare benefit option that encourages consumerism outside of this definition of a CDHP (such as tiered networks), our definition requires the presence of, or the eligibility to add, an account to fund a portion of the member’s cost share with pre-tax dollars.

Our analysis was based on six employer programs that offer their employees a choice of CDHPs or non-CDHPs. These programs covered approximately 225,000 members with more than 30,000 enrolled in a CDHP. The actual CDHP penetration of the six employers ranged from 4.4% to 76%.

The methodology, described in the report, adjusts actual experience for the following factors:

- Benefit design, including the impact of benefits on utilization
- Age
- Gender
- Risk score, based on conditions
- Geographic area

These adjustments are made for both the CDHPs and non-CDHPs. The adjusted (or normalized) cost results are compared with each other, and with the total for the employer.

*This report reflects the findings of the authors; Milliman does not intend to endorse any product or policy through this work. The reader should consider information in the body of this report and obtain professional advice in making benefit decisions. Because our results, if taken out of context, can be easily misinterpreted, we ask that this report be disseminated in its entirety. In addition, the reader should carefully review the section on assumptions and caveats (p.10).*

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## BACKGROUND

### CDHPs: Interest and concerns

Consumer-driven health plans have captured the attention of the healthcare community, from patients to payers to providers. The concept has generated both hope and concern. For some, consumer-driven healthcare (CDH) promises to control healthcare costs. Others predict that consumer-driven healthcare benefits will segregate risk pools, cause the collapse of healthcare insurance protections, and result in deteriorating health as members forgo needed care.

Headlines convey both the promise and the concern:

“U.S. Doctors Warn on Costly ‘Consumer’ Insurance”<sup>i</sup>

“CDHPs Save Money, But Effects on Quality Uncertain, According to RAND”<sup>ii</sup>

“Three-Year Study Shows Consumer-Driven Health Plans Continue to Stimulate Positive Changes in Consumer Health Behavior”<sup>iii</sup>

“Health Savings Accounts: Early Successes with HSAs and CDHC”<sup>iv</sup>

“Consumer-Directed Health Plan Report—Early Evidence is Promising”<sup>v</sup>

“HSAs More than Double in Six Months, New AHIP Study Shows”<sup>vi</sup>

“HSAs: Need Only the Healthy and Wealthy Apply?”<sup>vii</sup>

The range of perspectives probably reflects differences in beliefs about healthcare economics and political philosophy. The scarcity of reliable information about CDH effectiveness has made advocates and opponents alike appear prone to biased and self-serving arguments.

### A brief history of adoption trends in health plans

In spite of the great amount of attention that CDHPs have received, most employers have so far shown caution in making them part of their health plan offerings. The slow adoption of CDHPs is consistent with historical models of change in healthcare products. We have seen similar patterns with the introductions of HMOs and other health plan strategies related to managed care, including point of service (POS), preferred provider organizations (PPOs), and disease management programs.

As an example, HMOs have a long history that dates back to the 1920s. But it was not until 1973 that they started to show more widespread adoption and significant growth, the result of federal legislation requiring any employer with 25 or more employees to offer HMOs in its mix of health plans.

For the first 15 or 20 years following this legislation, employers proceeded cautiously. They and locally dominant insurers feared that offering employees a choice of plans could lead to “breaking the pool”—that is, that healthier people would join the HMO, leaving the employer or insurer with an ever-rising tab for those who stayed behind in the more traditional plans.

Employers and insurers adapted, and HMOs saw their number of members approximately double every five years into the 1990s.

Clearly, inertia is at play in the decision to stay with the existing choices or move to a new health plan, particularly given the complexities of most plans. “If it ain’t broke, don’t fix it,” may well be the attitude of members who have come to know and understand the plan they have been in, often for years. It’s what they know.

But the other side of the pattern is equally clear. As employers add incentives for members to leave old plans in favor of new ones, and as early adopters report back positive experiences, we expect to see rising migrations. Unless something significant changes, we expect this pattern to repeat itself with CDHPs.

#### **What are CDHPs?**

The market exhibits wide variation in CDHP design. For the purposes of this research into costs and savings, a CDHP is defined as a high-deductible health plan with a funding account—either a health reimbursement arrangement (HRA) or a qualified high-deductible health plan (HDHP) with the availability (whether or not the member chooses to use it) of an accompanying health savings account (HSA). A “qualified HDHP” is one that meets criteria established in the Internal Revenue Code permitting an accompanying HSA to be tax-advantaged. While there are a number of ways an employer may offer a healthcare benefit option that encourages consumerism outside of this definition of a CDHP (such as tiered networks), our definition requires the presence of, or the eligibility to add, an account to fund a portion of the member’s cost share with pre-tax dollars.

“Non-CDHPs,” as used here, are the other plans offered as an option by the same employer; they typically have smaller member cost sharing, no accompanying funding accounts, and higher member premiums.

#### **Problems with prior studies assessing CDHPs**

Several studies have attempted to examine the impact of CDHPs. In general, they tell of highly successful consumer-driven health plans with low cost, low utilization of discretionary services, little or no reduction in preventive care, and satisfied purchasers. Though useful in many ways, these reports often have potential or actual weaknesses:

1. *No adjustment for favorable or unfavorable selection.*

Most do not address a fundamental criticism of CDHPs: that favorable experience may be due to healthier, lower-cost enrollees. Perhaps many of the resulting favorable results can be explained, or indeed predicted, by such favorable selection.

2. *Results published by a player with a stake in the game.*

Many of the published experience results come from carriers administering the CDHPs. Readers may suspect a purpose of publishing is to help market the product.

We note that Milliman provides actuarial consulting to many organizations that sell traditional or CDHP benefits, or both.



### The Milliman consumer-driven impact study

The Milliman consumer-driven impact (CDI) study was launched to provide much-needed information about the effectiveness of CDHPs from an independent source. Milliman is an independent actuarial consulting firm with a reputation for objective analyses.

The CDI study applies actuarial adjustments to the claims data it received from participating employers. The information received was adjusted for influences such as plan design, age/gender, geography, and morbidity of the populations choosing each CDHP and non-CDHP plan. This permits comparisons of results from multiple employers with varying characteristics.

With support from the National Business Group on Health, a number of employers provided data for the CDI analysis. The CDHPs we analyzed involved several carriers and consumer-driven health plan designs. We believe that the multiple sources of data combined with actuarial adjustments permit our results to be interpreted for CDHPs in general, and not for one specific employer, carrier, or plan design.

This analysis does not address whether CDHP members avoided needed care or improved their use of appropriate care, nor does it consider the impact of patient education resources and consumer research tools. It examines if cost reduction is merely cost shifting and is designed to answer whether the programs save money, compared with the existing products offered alongside it.

### Apparent cost savings

Apparent cost savings for CDHPs can derive from several sources:

#### Plan design

CDHPs with high cost sharing reduce the amount paid by the health plan, compared with traditional benefit designs with lower cost sharing. Results from the high cost sharing will certainly show “savings.” However, this is simply the cost shifting to members for which CDHPs are often criticized. These savings are illusory unless only the plan’s perspective is considered. In these circumstances, the plan cost goes down significantly, but the member share goes up. An example of this is shown in Table 1. To avoid this issue, we look at “allowed” costs rather than “paid” costs to determine total cost of both the employer and member.

TABLE 1

SIMPLE ILLUSTRATION OF ALLOWED VERSUS PAID CLAIMS FOR AN INDIVIDUAL

	CDHP WITH \$1,000 DEDUCTIBLE AND 20% MEMBER COINSURANCE	NON-CDHP WITH \$250 DEDUCTIBLE AND 20% MEMBER COINSURANCE
<b>ANNUAL ALLOWED CLAIMS</b>	\$4,400	\$4,400
<b>MEMBER COST SHARING</b>	<b>\$1,000 DEDUCTIBLE</b> <b>\$ 680 COINSURANCE</b> <small>{.20 X (\$4,400 - \$1,000)}</small>	<b>\$ 250 DEDUCTIBLE</b> <b>\$ 830 COINSURANCE</b> <small>{.20 X (\$4,400 - \$250)}</small>
	<b>\$1,680 TOTAL MEMBER COST SHARING</b>	<b>\$1,080 TOTAL MEMBER COST SHARING</b>
<b>PAID CLAIMS</b>	<b>\$2,720</b> <small>(\$4,400 - \$1,680)</small>	<b>\$3,320</b> <small>(\$4,400 - \$1,080)</small>

In Table 1, the savings to the employer of the CDHP is \$600 (\$3,320-\$2,720). This is exactly the increase in member cost sharing (\$1,680-\$1,080). However, the combined cost to the member and employer is the same: \$4,400.

We note that the employer can offset higher copayments (deductibles, coinsurance, and copays) with higher account contributions and/or lower member premiums. Thus, high cost sharing does not automatically represent true cost shifting. Increases in cost sharing can be offset by increases in other, nonhealth insurance benefits or even salary. An employer may do this to encourage more responsible health spending patterns without “shifting” the cost burden. The total employee benefit or employee compensation picture may not show within the medical insurance plan.

### Benefit richness (induced utilization)

Over the course of the last seven decades, as patient cost sharing as a percent of the total health bill has decreased, utilization and healthcare spending as a portion of GNP has dramatically risen. The rightmost column in the following table combines those two thoughts. That is, out-of-pocket spending as a percent of total income has remained remarkably consistent and low.

TABLE 2 <sup>viii</sup>

YEAR	OUT-OF-POCKET AS A % OF TOTAL NATIONAL HEALTHCARE EXPENDITURES	NATIONAL HEALTHCARE EXPENDITURES AS A % OF DISPOSABLE PERSONAL INCOME	OUT-OF-POCKET PAYMENTS AS A % OF DPI (PRODUCT)
1950	56.3%	6.0%	3.4%
1960	46.9%	7.5%	3.5%
1970	33.2%	10.2%	3.4%
1980	22.9%	12.6%	2.9%
1990	19.1%	16.7%	3.2%
2000	14.3%	18.8%	2.7%
2006	12.2%	21.9%	2.7%

Although the figures in Table 2 cannot prove causality, they support the view that the less people have to pay themselves, the more they will consume.

For people with health benefits, the payer (insurer or employer) is not the true consumer (patient). Some health economists have identified this lack of true consumer dynamics as helping drive the relentless rise in health costs. Although increasing cost shifting may not significantly decrease healthcare as a percent of GNP, some believe an increase in member cost sharing encourages consumerism, which can affect healthcare spending. The lack of consumerism has two components:

- **Lack of information:** Consumer research tools providing solid metrics on cost and quality of particular providers and medical suppliers have yet to fully emerge. Most employers and health plans are still unable to provide good, current measures of quality and price, which makes it hard for members to develop into active consumers, even though that has been a critical selling point of the CDHP package.
- **Lack of incentive:** By having costs shifted to a third-party payer (such as an employer or insurer), the consumer becomes insensitive to the cost of care. This cost insensitivity drives up utilization and cost per service. It is a well-established concept in pricing insurance plans that higher deductibles encourage lower utilization.

Milliman has developed benefit richness or induced utilization factors that health plans use in pricing benefit designs. In this analysis, we find that part of the savings can be explained by reductions in use predicted by these utilization factors. These are valid savings, but they are savings that a high-deductible health plan (with no funding account to pay for services under the deductible) could achieve. Ideally, we would want a CDHP package to provide savings beyond that which an HDHP alone might provide. That is, we would expect that providing consumer research tools, such as quality and price comparison data, along with patient education resources and the incentives that an HDHP provides, would produce more savings than the HDHP alone.

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## Favorable selection

Savings from healthier lives choosing one program usually mean higher cost for the employer in other programs, and total costs can easily increase. In other words, the savings in the CDHP from selection are illusory. When members of a group can select from among a variety of plans, the healthier members often tend to select the less rich (and less expensive) plans. To the extent the less rich plan is chosen by the lowest-cost members, the higher average cost of the remaining members is reflected as a higher cost in the richer plans. Whoever is assuming the risk—a health plan or a self-insured employer—will absorb that cost. One technique to minimize such anti-selection is to minimize the difference in the value of plan choices available. Allowing employees the choice of very high-deductible and much lower cost-sharing plans, however, exacerbates the problem. Published CDHP results often report the low-cost results of such favorable selection without considering what happens to the cost of the non-CDHPs.

## Recognizing illusory savings

Milliman's analysis adjusts for:

**Cost shifting:** Employer and member paid amounts are combined into allowed amounts.

**Age and sex:** Claims have a strong correlation with age and sex. We used Milliman's Health Cost Guidelines™ age/sex factors to adjust costs for different age/sex compositions in CDHPs and the richer non-CDHPs. Average age alone is a poor adjuster, as claims do not increase in linear fashion as age increases.

**Health risk score:** Using diagnoses, we adjusted for the health status risk of the population that chose the HDHP compared with the richer plans. The risk scores include an age/sex component as well as a diagnosis component, so we adjusted for morbidity beyond what is predicted by age/sex alone.

We used the University of California Chronic Illness and Disability Payment System (CDPS) model, recalibrated to a commercial population.<sup>1</sup> We applied the recalibrated condition and age/gender weights to the actual members in each plan. We use a concurrent<sup>2</sup> model to explain the results among the plans in a given year. We also separately calibrated and ran the prospective model so that we could analyze patterns in members' selection of plans. If we assume the prospective model reflects the morbidities known to the members when members choose among the plans at open enrollment, the results reflect how employees choose their plans using such knowledge.

**Geography:** The members who choose the less rich plan may live in lower-cost areas. We adjusted for this using the Health Cost Guidelines area factors. However, as a modifying factor, this had significantly less influence on the results than health risk and age/sex adjustments.

## CDI methodology

We received complete data from seven large employers and partial data from several more. One of the seven employers had implemented a full-replacement plan, so there were no non-CDHPs for comparison. For its main findings, this report uses the information from the six large employers with complete data from both CDHP and non-CDHP plans.

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1 Although CDPS was designed for a Medicaid population, it has features that we believe make it useful for this analysis. In calibrating the weights to the commercial population (using a database of commercial claims in 2004 and 2005 for 10 million members), we essentially ignored the disability conditions and assigned medical condition values, or weights, appropriate for the commercial population.

CDPS has at least two features that were useful for this analysis. It is an open-source program, so the calculation of the weights is transparent. Also, the CDPS categories are slightly broader than other commercial risk adjusters. Because the consumer-driven plans are intended to modify behavior, we did not want such behavior modification to appear as a change in risk score, as it might with more detailed diagnosis codes. By limiting the risk measure to chronic conditions, we believe we avoided that issue.

The resulting risk score is close to the leading commercial risk scores in accuracy. The R-squared for the concurrent risk adjuster is 0.42 and 0.18 for the prospective risk score.

2 A concurrent model uses diagnoses in a given year to explain the variation in health costs among members for the same year. A prospective model uses diagnoses in one year to predict health costs for the following year.

The data we received came from each employer's CDHP and the major, self-insured richer plans (typically a PPO or POS plan). For several employers, we did not receive the experience for small HMOs (as measured by employer enrollment) offered to employees in some cities.

We excluded Medicare primary members from the analysis, as their paid claims reflect complex interactions of Medicare with the employer's plan. Even if allowed claims were available and complete (which can be a challenge with Medicare secondary payer claims), the presence of a Medicare primary plan changes the economic incentives for the covered member.

We requested data for the year prior to CDHP implementation through the most recent year available. Generally, 2005 data were available from each plan. In some cases, 2006 data were also complete and available. We used the most recent year with complete data in this analysis. However, we also compared that data to prior and subsequent years for consistency and reasonableness, even if those years were not complete, or were for a different product. In the summaries that follow, 2006 results are shown for one of the six plans and 2005 results appear for the others.

The data included allowed and paid claims along with demographic, geographic, and benefit details. We normalized for age/sex, health risk, geography, and plan design. Our normalization included adjustments for induced utilization. We compared the adjusted CDHP results to the adjusted non-CDHP results. This essentially compares each CDHP result to those of an equivalent population with an equivalent HDHP benefit design. This last comparison was to identify any residual, unexplained savings, which could reflect consumerism impact—savings beyond those produced by cost sharing and selection.

We identified the amount of induced utilization savings we expected from actuarial factors and provided a normalized value without considering induced utilization. Comparing these two gives another measure of effectiveness: the credit an HDHP can take for the savings induced by the higher deductible (or other increased cost sharing). If an HDHP produces the same costs as the "matched" CDHP after adjusting for all factors including induced utilization, this implies that the CDHP was no more cost-effective than just giving the employees a high-deductible plan.

#### **Assumptions and caveats**

We relied on data supplied by the participating employers and by their health and prescription drug claim payers. We did not audit this data, although we performed a number of reasonability checks. We also presented the data we received in summarized form to the employers so that each could confirm that the summary was consistent with its knowledge of its health plan's cost. However, to the extent that the data is incomplete or incorrect, our conclusions may similarly be incomplete or incorrect.

We report the experience for a number of large employers that voluntarily created a CDHP option for their employees. The employers who provided data did so voluntarily, and this and other factors may lead to biases in our results. Also, data variability among vendors could affect the accuracy or generalizability of our results, even if each vendor is accurate within itself. An organization making decisions about its benefit plans should obtain competent professional advice in interpreting the relevance of this report for its particular situation.

*Because our results, if taken out of context, can be easily misinterpreted, we ask that this report be disseminated in its entirety.*

## RESULTS

Most employers we examined showed savings in the CDHP plan before adjusting for risk and plan design characteristics; however, the bulk of the apparent savings was explained by these adjustments. *After adjustments, the reduction in combined employer and employee costs averaged 4.8% before accounting for the utilization-dampening impact of the high deductible. Accounting for the high deductible made the reduction 1.5%.* Some employers showed significantly greater reductions.

### Employer-paid costs are lower

Consistent with other reported results, the employer-paid experience for the CDHPs was much lower than for the non-CDHPs—about 50% lower.<sup>3</sup> The ratios of CDHP to non-CDHP paid claims ranged from a low of 42% to a high of 73%.

However, the lower paid claims are expected because of the much higher cost sharing for CDHPs. In fact, based on the Health Cost Guidelines benefit design relationships, the average expected paid claims of the CDHPs solely due to increased cost sharing would be about 80% of the paid claims of the non-CDHPs—a 20% reduction. But this does not account for favorable selection or the expected lower utilization for a given population due to the weaker benefit.

The consumer-driven plan designs clearly have greater cost sharing. Whether or not the employer has shifted more of the total costs to the employee also depends on member premiums, account contributions, and other plan characteristics.

### Members avoid services to avoid costs

Because the CDHP has less rich benefits, we expect somewhat lower utilization, as members will avoid some services to avoid out-of-pocket costs. For these plans, the induced utilization cost relativities generated by Milliman's Consumer-Driven Rating Tool predict an approximately 3.3% lower cost for the CDHPs.

It makes sense to consider savings only to the extent that they exceed the savings a high-deductible plan would produce. We also present the "traditional" savings, which are produced by greater cost sharing, as this overly simple measure is frequently presented by CDHP advocates. Thus, this analysis measures:

- Savings before consideration of expected induced utilization savings
- Savings beyond that predicted by induced utilization due to cost sharing

Please note that our induced utilization estimates consider employers' annual contributions to the related funding accounts. In theory, if an employee has a funding account dedicated to the use of medical costs, he or she may be more likely to incur medical expenses than if such an account did not exist. In developing the induced utilization factors, the authors considered whether the account was an HSA (which is owned by the employee) or an HRA (which may have more restrictive rules for employees regarding portability upon quitting or retiring). If these funding accounts were not considered, the induced utilization reduction due to the plans' cost sharing alone would have been somewhat higher than the 3.3% average used.

### A better way to analyze costs

One easy way to avoid the complications of trying to compare the net paid claims for very different plans is to measure "allowed claims." Allowed claims are medical costs after negotiated network discounts, but before member cost sharing is removed. Allowed claims do not include billed claims that are noncovered, such as for noncovered tests or physical therapy beyond the visit limits, etc.

<sup>3</sup> Throughout this analysis, when reporting on combined results across multiple employers, the ratios reported are the weighted average of ratios, rather than a weighted average of \$PMPMs. For example, if we took the weighted average of paid claims for all CDHPs and compared it to the weighted average of paid claims for all non-CDHPs, the result would be 68%, rather than 50%, as shown here. However, this would reflect differences among employers that we would not want to influence the result. For example, one employer has locations in areas with 10% lower expected costs, and has very high enrollment in the non-CDHP. Another has age/gender factors that are 15% to 20% higher than the others, so the blended average would be affected by these higher age/gender factors. By weighting the ratios, differences due to these employer characteristics are ameliorated.

The allowed claims for plans designated as consumer-driven were about 41% lower than allowed claims for the non-CDHP-designated plans. Even after considering the expected 3.3% reduction due to induced utilization, the allowed claims are still 39% lower. The results were consistently lower across each study participant, with a range of “savings” that varied from 27% to 48%.

We also found that the ratio of paid claims to allowed claims (the plans’ portion of the liability) is quite low for the CDHPs. The overall ratio, at about 66%, exceeds the expected plan cost-sharing ratio of about 82%. No significant conclusion can be drawn from this ratio without considering the risk profiles of the members choosing from among the options.

If CDHPs save healthcare costs, the shares of cost borne by the employer and employee could be adjusted by reducing the employee contributions required or by increasing the employer’s contribution to the funding account. Some of the participating employers expressed a desire to encourage CDHP participation with higher employer contributions or lower employee premiums. Needless to say, making such adjustments requires an accurate assessment of costs and savings, or the employees may receive an inappropriate windfall or penalty.

To illustrate, we use the example of Company C, where, combining lower premiums and an employer contribution to an account, employees paid \$42 less per member per month (PMPM) toward their benefit plan. Because the plan (employer) paid, on average, \$92 less in claims per member month for CDHP members, it may seem like a less expensive option for both the employee and the company. However, the members who chose the HDHP were healthier than average, which accounted for some of the \$92 PMPM lower cost. After adjusting for health status, instead of \$92, the savings for switching plans averaged approximately \$38. The employer, in this case, contributed \$42 PMPM to save about \$38 PMPM.

Compare this with Company A, which also saw higher levels of savings than the others, or Company D, which appears to have sustained a small loss in actual savings. It is possible that differences as simple as the way these companies offered prescription drug coverage may explain the anomalies. Larger and more statistically significant samples will be needed to determine that definitively.

### Enter selection issues

On the surface, without further analysis, these results are very promising and are consistent with the results reported in the media and industry newsletters. However, the above results have yet to consider the classic criticism of consumer-driven plans: that the members who choose them are the young and healthy, leaving the older and sicker individuals in the non-CDHPs. We found that adjusting for age/sex and expected morbidity has a significant impact. The CDHPs are indeed being chosen by the younger, healthier population, as shown in Table 3 below.

**TABLE 3**

**RATIO OF CDHP TO NON-CDHP FACTORS, BY EMPLOYER AND IN TOTAL**

COMPANY	GEOGRAPHY FACTOR	AGE/SEX FACTOR	CONCURRENT RISK SCORE	PROSPECTIVE RISK SCORE
A	104.3%	93%	74%	79%
B	99.5%	89%	58%	70%
C	101.6%	92%	63%	75%
D	100.2%	83%	70%	78%
E	99.8%	76%	57%	63%
F	100.5%	90%	55%	65%
<b>AVERAGE</b>	<b>100.7%</b>	<b>84%</b>	<b>62%</b>	<b>70%</b>

The components of Table 3 are:

**Geography:** The ratio of CDHP to non-CDHP area factors for each employer is close to 1.0, which indicates that, within an employer, the choice of CDHP versus non-CDHP is not influenced significantly by employee location. The employers in the analysis are large and operate in many locations. However, the spread of individuals between the CDHPs and non-CDHPs seems to vary little by the location's relative cost, for each employer.

The average geography factor does vary by employer. The lowest average factor among study participants is about 88% of national average while the highest is about 103%. However, within each employer, the average area factors for CDHP and non-CDHP enrollees do not vary much.

**Age/sex:** These factors reflect the expected claims considering the age and sex distribution of the members choosing each plan. The CDHPs' selection produces much lower expected claims by about 16%. The fact that the CDHP factor is consistently lower for each employer than the non-CDHP factor supports the notion that younger, lower-cost members choose CDHPs. However, the average age for the CDHP enrollees is only about one or two years younger than for the non-CDHP enrollees, which highlights the limitation of measuring average age rather than the actual age/sex distribution.

**Concurrent risk score:** As described earlier, these factors reflect the effect of each member's health status on expected claim costs using the significant diagnoses of each member. While the frequency of diagnoses is age-related, we backed out the impact of age so as not to double-count age impacts. The age factor predicts claims in the absence of diagnosis information, but the risk score is a more developed prediction, taking both into account. The fact that the concurrent risk score ratio is about 62% (compared with an age/gender factor of 84%) tells us that, besides being about 16% lower cost due to demographics, the population choosing the CDHPs is also an additional 26% healthier (1-62%/84%), as measured by cost.

**Prospective risk score:** As opposed to concurrent risk score, the prospective risk score is forward-looking. A prospective model uses diagnoses in one year (in this case 2007) to predict health costs for the following year (2008).

### Putting it all together

Our approach to answering the question "Do CDHPs save money?" is to show savings in allowed claims after adjusting for the above influences (geography, age/sex, and risk), as shown in Table 4.

TABLE 4

#### RATIO OF ADJUSTED CDHP TO NON-CDHP ALLOWED CLAIMS, BY EMPLOYER AND IN TOTAL

COMPANY	UNADJUSTED ALLOWED CLAIMS	COMBINED ADJUSTMENTS	ADJUSTED ALLOWED CLAIMS	ACTUAL SAVINGS (1-ADJUSTED ALLOWED CLAIMS)	SAVINGS BEYOND HDHP
A	67%	77%	86.9%	13.1%	9.7%
B	56%	58%	97.4%	2.6%	0.4%
C	54%	64%	84.5%	15.5%	12.1%
D	73%	70%	104.7%	-4.7%	-5.3%
E	54%	57%	96.1%	3.9%	0.6%
F	52%	56%	93.9%	6.1%	-2.9%
<b>AVERAGE*</b>	<b>59%</b>	<b>62%</b>	<b>95.2%</b>	<b>4.8%</b>	<b>1.5%</b>
<b>RANGE OF RESULTS</b>	<b>52%-73%</b>	<b>56%-77%</b>	<b>85-105%</b>	<b>15%-(5%)</b>	<b>12%-(5%)</b>

\*Weighted by members enrolled in CDHPs.  
Negative savings mean that costs increased.

As shown in the Actual Savings column in Table 4, five out of the six employers had results as good as or better than predicted by the risk factors alone. Interestingly, companies A and C showed significantly better results than the others, though the number of plans involved for both is too small to base definitive judgments on. One company hypothesized that its stronger showing may be related to the fact that prescription drug coverage has been excluded from the HRA that supports their HDHP offerings; this could have the effect of slowing the rate at which a deductible is used up, especially among those with chronic conditions. While there appears to be a correlation between this type of design and savings, the cause for the degree of savings is not as clear. We believe these results are important and expect that further research into the topic will yield some important conclusions.

The combined adjustment in Table 4 is the product of the geographical adjustment and the concurrent risk score (which includes the impact of age and gender). It does not include the expected savings due to induced utilization. When induced utilization savings factors are included (rightmost column), the 4.8% savings is reduced to about 1.5%. That is, these plans produce 1.5% savings beyond those estimated to be gained due to risk factors and plan design including predicted utilization savings.

### What it means

We offer the following interpretation of our findings:

1. The bulk of the reduction in allowed claims is explained by the favorable risk profile. In addition to lower cost due to the age/sex composition of people choosing the CDHPs, much healthier people selected CDHPs, and that selection produces lower cost.
2. Most (3.3% of the 4.8% savings) of the savings can be attributed to induced utilization savings that high-deductible health plans encourage. The other 1.5% could be explained by a) higher induced utilization savings than we assumed, b) impact of patient education communications about healthy lifestyle, quality, and/or cost, c) other medical management savings initiatives, or d) random variation.<sup>4</sup>
3. Only 14% of eligible (excluding Medicare-eligible) participants are enrolled in the CDHPs, and the healthiest members are more likely to enroll. Offering CDHPs and richer plans side by side gives higher utilizers an “out” and may miss some of the induced utilization savings expected by high-deductible plans.

### Information gaps remain

As part of this analysis, we surveyed these employers about their initiatives related to or concurrent with the setup of the CDHP. As it relates to the experience of the CDHP, the following results are instructive:

- Patient education communications promoting healthy lifestyles were directed to all employees, not just CDHP participants, which suggests that the communications would affect the experience of all plans.
- None of the employers reflected in this experience agreed that their employees had access to information on provider quality.
- Only one of the employers reflected in this experience agreed that its employees had access to information about provider costs.

We believe most employers—even those who have already implemented CDHPs—understand that although CDHPs still offer the potential for significant improvements in the costs, delivery, and quality of healthcare, the plans’ promise will not be fully realized until easy-to-use consumer research tools providing cost and quality measures become available to members.

<sup>4</sup> We tested the statistical significance of these results to determine if they could be produced by random variation. For two employers, we can reject the null hypothesis that the differences shown in Table 4 are due to random variation at 95% confidence. All differences in unadjusted results are statistically significant. For adjusted results, the actual results are close enough to expected results that we cannot reject the hypothesis that the savings, or losses, are due to random occurrence.



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### The healthcare system can manage change

The Milliman CDI is the first multiemployer, multicarrier, actuarially adjusted study of consumer-driven healthcare. We found that, after adjusting for expected savings across a variety of plan designs, employer practices, workforce characteristics, and carriers, actual savings from consumer-driven health plans are modest overall. Some plans, however, have significant savings, even after considering adjustments for known risk- and plan-design characteristics.

Our results should be reassuring to payers, because it appears that existing actuarial techniques can be used to manage CDHPs. CDHP innovations are not venturing into an unknown territory. Several of the Milliman contributors to this report are veterans of other healthcare innovations, and we see many similarities to those historical early results.

We note the need for robust consumer tools. The high level of energy and commitment in producing these tools could result in programs that demonstrate more cost savings than we observed with the early adopters we examined.

Our analysis supports several predictions that others have made about CDHPs:

- Young and healthy members are choosing the CDHP, when given a choice.
- The allowed claims and especially the paid claims reflect the lower risk.
- In addition to lower risk, the higher cost sharing encourages moderately lower utilization of healthcare.

The early adopters in this study have likely earned only a partial benefit: the induced utilization savings. The healthcare industry and employers owe them a debt of gratitude for their leadership in helping provide important information to decision-makers.

## ENDNOTES

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- vi "HSAs More than Double in Six Months, New AHIP Study Shows," America's Health Insurance Plans, May 4, 2005.
- vii "HSAs: Need Only the Healthy and Wealthy Apply?" Council for Affordable Health Insurance, Issues & Answers, No. 130, April 2005.
- viii Out-of-pocket expense and national health expenditures are published by CMS. They are available at [http://www.cms.hhs.gov/NationalHealthExpendData/02\\_NationalHealthAccountsHistorical.asp](http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp), Table 3 - National Health Expenditures. Personal disposable income data is published by the Bureau of Economic Analysis and is available at [www.bea.gov/bea/dn/nipaweb/SelectTable.asp](http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp), Table 2.1 - Personal Income and Its Disposition. The oldest data for both was obtained from US Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part 1*, pg 74. The last column is calculated by multiplying the first two.

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