IBM Watson Health™

WHITE PAPER

The impact of consumer-directed health plans on costs, utilization and care

Research highlights

- CDHP members experienced consistently lower overall healthcare costs—ranging from $457 to $532 per member per year (PMPY) lower on an allowed basis over a three-year study period
- Lower claims costs resulted primarily from lower utilization rates
- CDHP members were less likely to receive care for their chronic conditions
- Based on this research, recommendations for employers and health plans include:
- Carefully consider the impact of employee enrollment incentives on expected CDHP savings
- Confirm members understand their preventive care benefits and are offered support in managing their chronic conditions
- Provide tools that support member selection of high-quality, cost-effective services
- Help members select the right plan for their specific health situations?

Consumer-directed health plans (CDHPs) are one of the fastest-growing benefit options for US employees. Data from the robust database of commercial insurance claims, Truven Health MarketScan®, (now known as the IBM® MarketScan® Commercial Database), shows that the number of organizations offering a CDHP has almost doubled from 2007 to 2013, and the number of members enrolled in a CDHP nearly quadrupled during that same period.

Study objective

The guiding objective of this study by Truven Health (aquired by IBM in 2016 and now part of the IBM® Watson Health™ business) was to provide employer and health plan decision-makers, and others in the healthcare industry, with key insights on the effectiveness of CDHPs in terms of multi-year cost, care and utilization changes.

To do so, the following questions were explored, using a methodology that accounts for observable differences in the demographic and risk mix between populations:

Cohorts →?

How do CDHPs compare to other plan designs in terms of cost trends?

How do member utilization patterns vary between CDHPs and other plan designs?

How is preventive care impacted by CDHPs relative to other plan designs?

How is care for chronic conditions impacted by CDHPs relative to other plan designs?

CDHP defined

A CDHP is a high-deductible preferred provider organization (PPO) that is combined with either a health reimbursement arrangement (HRA) or health savings account (HSA). Fund contributions are made by plan members or sponsors annually; unused amounts are typically carried over to the next plan year. Participants are encouraged to use decision support tools to make more informed healthcare decisions and efficiently manage their fund.

Study design and methods

Our researchers used data from the proprietary MarketScan Commercial Database, which contains the healthcare experience of more than 120 million privately insured individuals spanning 18 years.

A cohort group of approximately 183,000 continuously enrolled members was followed from 2009 to 2012. These group members were enrolled in a non-CDHP in 2009—and then continuously enrolled in a CDHP in 2010, 2011 and 2012.

Each enrollee was then carefully matched to an enrollee from a company that did not offer a CDHP during the same timeframe. The match selection was based on a propensity score comprised of demographics, geographic region, spending and general health status in 2009. After matching members, we found the two populations were statistically similar in terms of observable differences. It is necessary to note that there may be unobservable differences in the underlying populations generating selection bias and influencing the results.

Healthcare cost, utilization and care metrics were evaluated over the four years, and a difference-in-difference methodology was used to quantify the impact of the CDHP. Regressions were employed to determine the confidence intervals and statistical significance of the difference-in-difference results.

This study did not include any full replacement CDHPs, so these results only reflect members who chose a CDHP from a selection of benefit plan options and cannot be extrapolated to determine the effects of a CDHP if that were the only option for a population. Furthermore, the study does not reflect the experience of individuals who initially enrolled in a CDHP and then decided to switch back to a non-CDHP plan option.

> Proponents of [CDHPs] believe that they give healthcare consumers more "skin in the game," through greater cost exposure, which will promote more cost-effective utilization decisions.[1]

Figure 1: CDHP and matched non-CDHP cohorts

2009	CDHP	Non-CDHP	% Difference
Members	183,368	183,368	—
Average age	35.02	35.08	-0.2%
% Male	46.6%	46.5%	0.2% pts
Average CCI	0.22	0.22	-1.4%
Average number of PDGs	0.14	0.14	-1.1%
% Rural	13%	13%	0.1% pts
Northeast	15%	15%	0% pts
Northwest	40%	40%	0% pts
South	37%	37%	0% pts
West	8%	8%	0% pts
Employee	47%	47%	0.3% pts
Spouse	22%	22%	-0.4% pts**
Dependent	31%	31%	0.1% pts
% with CAD	1.4%	1.4%	0.0% pts
% with diabetes	4.1%	4.1%	-0.1% pts
% with a delivery	0.9%	1.0%	0.0% pts
Allowed amount PMPY	$4,075	$4,094	-0.5%
Inpatient	$717	$734	-2.3%
Outpatient	$2,484	$2,501	-0.7%
Rx	$874	$859	1.7%
Net pay PMPY med & Rx	$3,423	$3,408	0.4%

** Statistical significance p<0.05

Results

Overall summary

As expected per the rigorous matching process, the two cohorts had similar costs in 2009 (that is, the year prior to CDHP enrollment). In all three subsequent years, overall patient healthcare costs were lower for CDHP enrollees than for their matched non-CDHP counterparts.

The majority of the cost differential between the CDHP and non-CDHP populations was a result of lower utilization rates among the CDHPs. Utilization rates were lower among CDHPs for both low-cost services (for example, labs) and high-cost services (for example, radiology).

In the three years after CDHP enrollment, rates of adherence to recommended guidelines were generally lower than expected for the CDHP population (per experience of matched non-CDHP cohort).

Detailed results

How do CDHPs compare to other plan designs in terms of cost trends?

On an allowed basis (claims cost to the plan sponsor and member combined), our research found costs trended downward in the initial year of CDHP enrollment, then rose in the subsequent two years, but remained below non-CDHP costs in all three years.

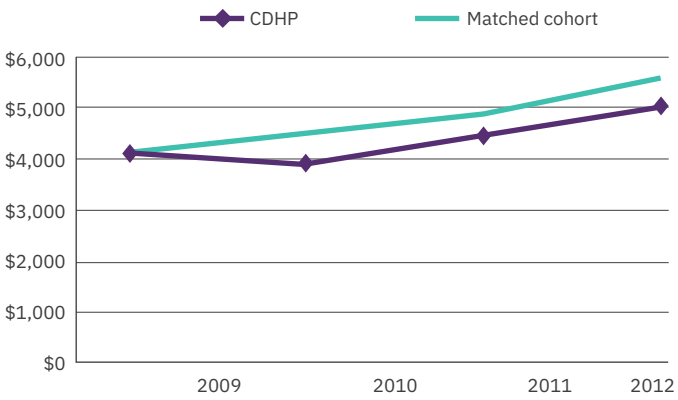
Based on the experience of the matched cohort, CDHP costs were below expectations by between $457 and $532 PMPY over the three years measured. This indicates that the CDHP design had an impact on member behavior that translates to lower costs.

The lower allowed costs for CDHP enrollees were observed across all service settings—inpatient, outpatient and prescription drug—with the highest difference seen in prescription drug.

Cohorts → $ **CDHPs 457-532 PMPY** Lower than Cohorts

CDHP members had consistently lower overall allowed amounts PMPY

Figure 2: Allowed amounts PMPY

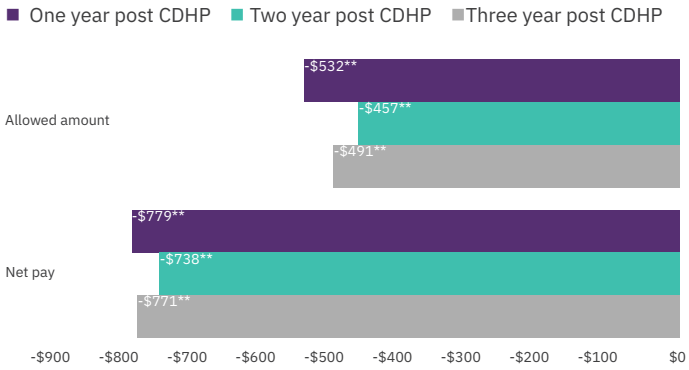


Allowed amount calculations include medical and pharmacy.

CDHP costs were also lower across all years on a net payment basis (plan sponsor cost only). Employers spent between $738 and $779 less per CDHP member than expected if these members remained in a non-CDHP plan. (Note that this represents claims payments made by the plan sponsor inclusive of reimbursements from an HRA, but does not include unused HRA funds or any HSA funds.)

CDHP costs were lower than expected (per experience of matched cohort) in all years studied

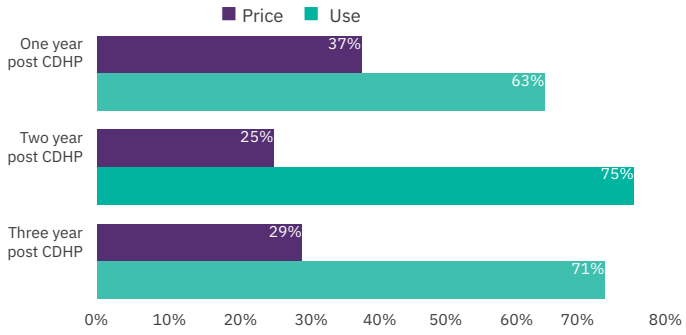
Figure 3: Impact of CDHP on allowed costs PMPY relative to matched cohort



Cost calculations include medical and pharmacy.
** Statistical significance p<0.05

Lower utilization rates among CDHPs drove between 63 percent and 75 percent of the cost differential between CDHPs and non-CDHPs

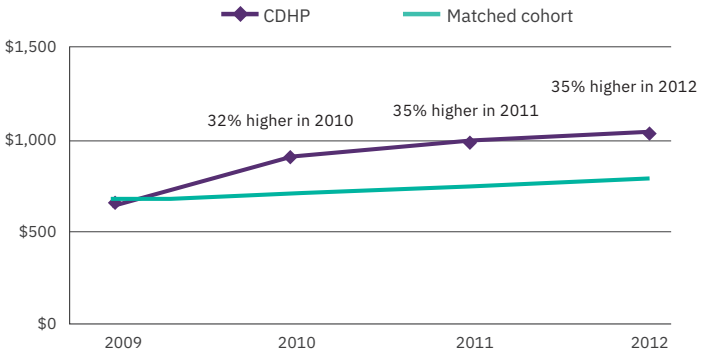
Figure 4: Relative impact of price and use on the cost differential between CDHPs and matched cohort



CDHP members saw a 69-percent increase in claims-based, out-of-pocket costs over the three years, compared to a 23-percent increase for non-CDHP members. This represented between $220 and $272, on average, in additional out-of-pocket costs for CDHP members per year. (Note that these rates include the copayments, coinsurance and deductible payments made by the members. These rates do not include employee paycheck contributions or accounts funded by the employer (that is, HRAs or HSAs).)

CDHP out-of-pocket PMPY costs were consistently higher than the matched cohort

Figure 5: Out-of-pocket amounts PMPY



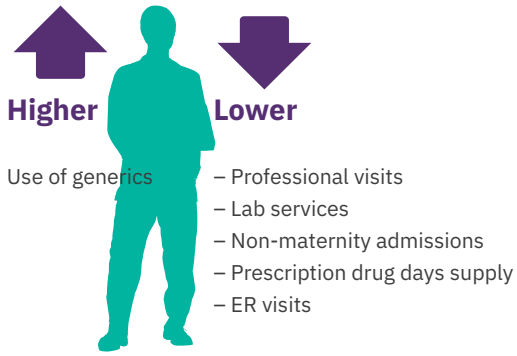
Out-of-pocket calculations include medical and pharmacy and represent copayments, coinsurance and deductibles.

How do utilization patterns vary between CDHPs and other plan designs?

After switching to a CDHP, members experienced lower utilization rates than expected if they had remained in a non-CDHP. Areas of lower-than-expected utilization include professional visits, lab services, non-maternity admissions and prescription drug days supply.

CDHP members also had a statically significantly lower use of radiology services in all three years, including lower rates of magnetic resonance imaging (MRIs) and computed axial tomography (CAT) scans.

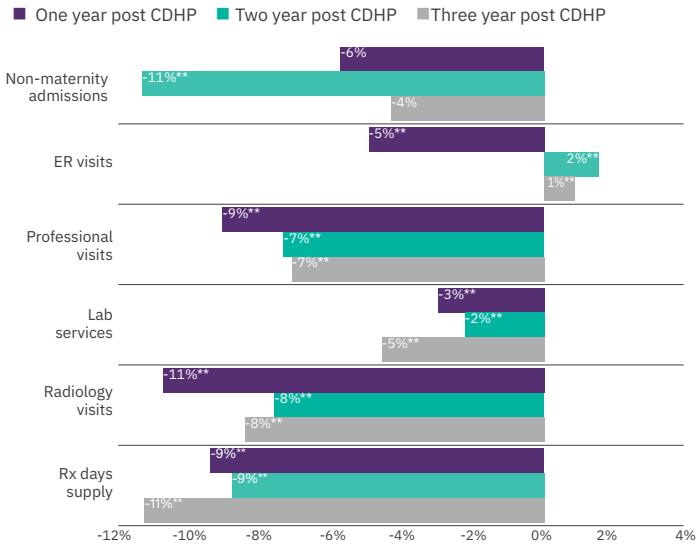
Use of generic medications was higher in the CDHP cohort after enrollment than in the non-CDHP comparison group, indicating CDHP members were likely making wise choices in the use of brand-name prescription drugs.



Emergency room (ER) use declined in the first year of CDHP enrollment to a rate below expectations (per the experience of the matched cohort), but then increased to rates slightly above expectations in the subsequent two years. However, when looking solely at ER visits for potentially avoidable diagnoses, CDHP ER use was below expectations in all three years.

Most CDHP utilization rates were lower than expected (per experience of matched cohort)

Figure 6: Impact of CDHP on utilization rates relative to matched cohort



** Statistical significance p<0.05.

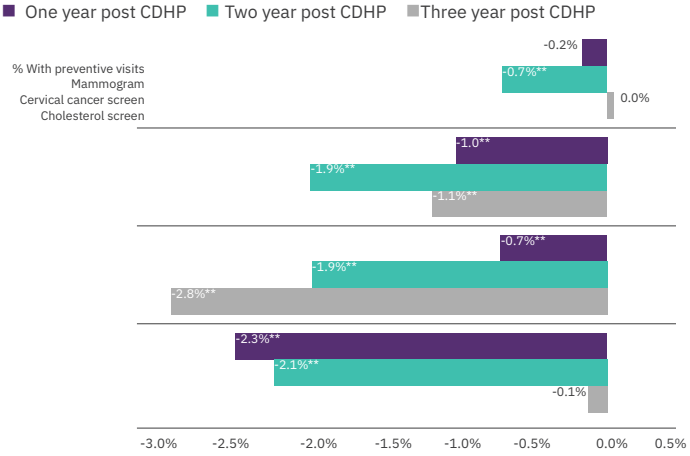
The challenges of educating enrollees about their plan provisions are well known, and ongoing communication with plan enrollees may be necessary to improve their understanding and use of preventive service benefits.[2]

How is preventive care impacted by CDHPs relative to other plan designs?

In 2009 (that is, the year prior to CDHP enrollment), preventive care and screening rates were higher for the future CDHP members than for the cohort that would remain in non-CDHPs. By the third year post-CDHP enrollment, the CDHP preventive visit and cholesterol screening rates were on par with expectations, while the mammogram and cervical cancer screening rates were below expectations (per the experience of the matched cohort).

CDHP screening rates were generally lower than expected (per experience of matched cohort)

Figure 7: Impact of CDHP on preventive care rates relative to matched cohort



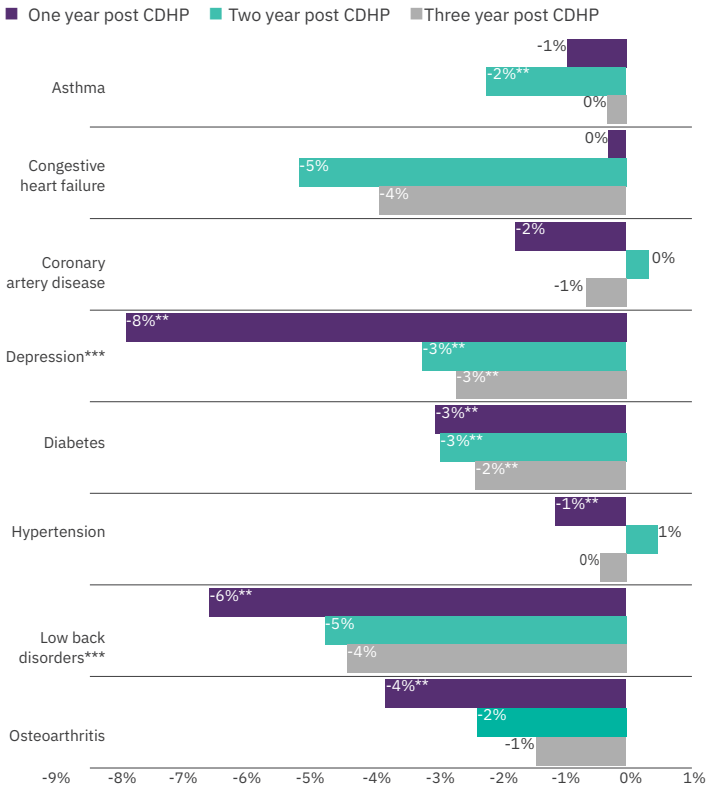
** Statistical significance p<0.05.

How is care for chronic conditions impacted by CDHPs relative to other plan designs?

Members enrolled in CDHPs were less likely to receive care for existing chronic conditions (diagnosed in 2009) than their non-CDHP counterparts based on a review of eight common conditions (Ref. Figure 8).

Of members with chronic conditions in 2009, CDHP enrollees were less likely to continue to receive condition-specific care in subsequent years than the matched cohort

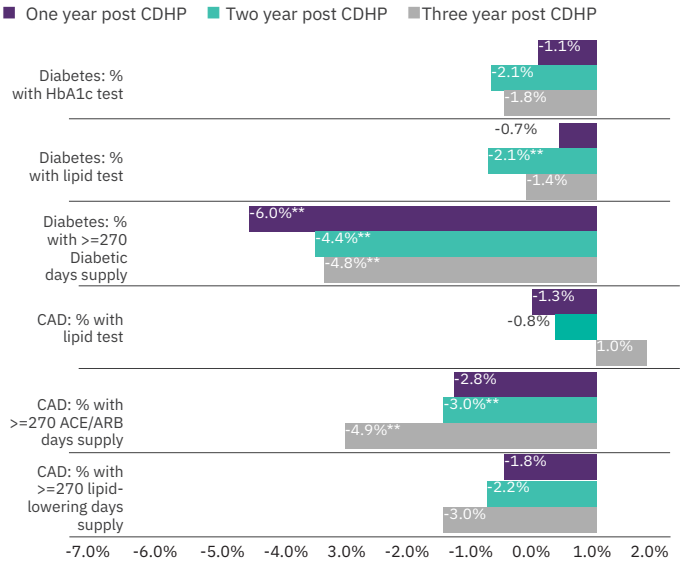
Figure 8: Impact of CDHP on percent of members with care for their chronic conditions* relative to matched cohort



* Limited to members diagnosed with the condition in 2009.
** Statistical significance p<0.05
*** Although labeled as chronic conditions in this study, depression and low back disorders can be either chronic or acute.

CDHP quality metrics related to diabetes and Coronary Artery Disease (CAD) were lower than expected (per experience of matched cohort)

Figure 9: Impact of CDHP on adherence to evidence-based guidelines relative to matched cohort

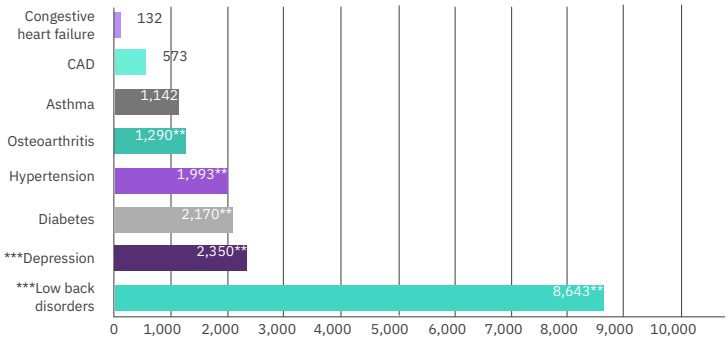


** Statistical significance p<0.05

In addition, the incidence of members newly diagnosed with chronic conditions was lower than expected for the CDHP cohort based on the eight conditions reviewed in this study. This could indicate potential under-diagnosis and under-treatment of these chronic conditions under the CDHP design. Alternatively, given that employers often incent members to participate in risk reduction programs with a considerable contribution to the member's CDHP HSA, the lower than expected incidence rates found in this study could be reflective of lifestyle risk improvements in the CDHP population. Further research is needed to understand the underlying factors driving this result.

Higher number of members with newly diagnosed chronic conditions among non-CDHP population

Figure 10: Additionally diagnosed members, from 2010 to 2012, in non-CDHPs relative to CDHPs



** Statistical significance p<0.05

*** Although labeled as chronic conditions in this study, depression and low back disorders can be either chronic or acute

Recommendations

While our research showed that CDHPs are associated with reduced healthcare costs, there are indications that members in these plans may not be receiving the recommended care for their chronic conditions—and that could lead to higher costs in the future.

As employers and health plans move forward with CDHPs, the following considerations may help avoid a future backlash in terms of declining patient health and rising costs.

Be smart about CDHP offerings:

- Carefully consider the impact of employee enrollment incentives on expected CDHP savings. Employer contributions to HRAs/HSAs in addition to sizable premium differentials favoring the CDHP may erode the financial benefit of claims-based cost reductions.
- Use relevant, timely and ongoing communications to encourage CDHP members to understand and take advantage of their benefits, especially the availability of covered preventive services, and to remind them about the importance of managing their chronic conditions.
- Provide the right tools, like healthcare cost calculators, to give members easy access to information about provider cost and quality.
- Enroll members who are a good fit. A CDHP may not be the best choice for all members. Help individuals make the best plan selection by providing enrollment decision-making tools based on their current health status and previous claims history. If offering a full replacement CDHP, ensure these members are appropriately supported.

Get connected

Our solutions range from advanced analytics that provide insights into CDHP opportunities and funding, to consumer messaging, enrollment and treatment cost decision tools.

For more information on our research, or our solutions and services:

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Produced in the United States of America
April 2018

Footnotes

1 Huckfeldt PJ, Haviland A, Mehrotra A, Wagner Z, Sood N. "Patient Responses to Incentives in Consumer-Directed Health Plans: Evidence From Pharmaceuticals," National Bureau of Economic Research. Working Paper No. 20927 (2015), http://www.nber.org/papers/w20927

2 Haviland A, Marquis MS, McDevitt RD, Sood, N. Growth of Consumer-Directed Health Plans to One-Half of All Employer-Sponsored Insurance Could Save $57 Billion Annually. Health Affairs. 31, no.5 (2012):1009-1015, http://content.healthaffairs.org/content/31/5/1009

HPW03064-USEN-01

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