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Issue BRIEF

What Do We Really Know About Consumer-Driven Health Plans?

By Paul Fronstin, Employee Benefit Research Institute

EXECUTIVE SUMMARY

ABOUT CDHPs: Employers began offering consumer-driven health plans (CDHPs) in 2001 when a handful started offering health reimbursement arrangements (HRAs). They then started offering health savings account (HSA)-eligible plans after the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 included a provision to allow individuals with certain high-deductible health plans to contribute to an HSA. This report summarizes what is known about CDHPs, which include both HRAs and HSAs.

OFFER RATES: Surveys show that employers offering a CDHP increased from less than 5 percent in 2005 to between 12–15 percent by 2009. Growth in offer rates can be seen across all firm sizes. Recently, the percentage of small firms that offered a CDHP declined while larger firms continued to add a CDHP as an option.

ENROLLMENT: Overall, 19.1 million, or 11 percent of individuals with private insurance, were enrolled in a CDHP in 2009. More recent data suggest that by 2010, 10 million people were in an HSA-eligible plan.

PREMIUMS: Generally, premiums for CDHPs were lower than premiums for non-CDHPs. A number of studies have tried to explain the differences in premiums. One found savings ranged from 15.5 percent to a low of –4.7 percent, with average savings of 4.8 percent. However, the study found that most of the savings was due to younger, healthier workers choosing CDHPs and concluded that once typical risk- and benefit-adjustment factors were taken into account, CDHPs saved only 1.5 percent. There is strong evidence that initially CDHP enrollees will be healthier than non-CDHP enrollees, but that over time the CDHP population has a significantly higher illness burden.

IMPACT OF CDHPs ON PREVENTIVE SERVICES: The studies agree that use of preventive services did not change (upward or downward) as a result of the CDHP.

IMPACT OF CDHPs ON MEDICATION ADHERENCE: The studies found that overall use of brand-name prescription drugs fell and, while there was some offset from increased use of generic drugs, some enrollees stopped their use of prescription drugs. CDHP enrollees increased their use of the mail-order pharmacy option. Overall use of prescription drugs among CDHP enrollees with certain chronic conditions fell, or did not increase when enrollees met their deductible. One study found that the financial incentives of the plan are not sufficient in driving behavior, and that educational outreach also matters.

NEED FOR FURTHER RESEARCH: Despite the growing body of evidence on the effect of CDHPs on cost and quality, there are many unanswered questions about these plans. Most of the research to date has focused on HRA-based plans. Little systematic research has been conducted on HSA-eligible enrollees. The differences between these plans are significant enough to warrant separate analyses. Also, most of the research to date has ignored the impact of the account on the use of services and on spending. Individuals may use health care services differently depending on how much money is being contributed to the account, especially relative to the deductible, amounts rolled over, and portability of the account.

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Introduction

In 2001, a handful of employers started offering health reimbursement arrangements (HRAs)—a then-new type of health plan known as a consumer-driven health plan (CDHP) or an account-based health plan. These plans were offered by self-insured employers and administered by a third-party.[1] HRAs were provided under then-existing tax law, although because of the newness of their plan design and potential legalities, employers were generally hesitant to offer HRAs until the release of IRS Revenue Ruling 2002-41 and Notice 2002-45, which provided guidance clarifying the general tax treatment of HRAs; the benefits offered under an HRA; the interaction between HRAs and cafeteria plans, flexible spending accounts (FSAs), and coverage under COBRA (Consolidated Omnibus Budget Reconciliation Act of 1985); and other matters under current law.[2]

Ultimately, HRAs paved the way for health savings accounts (HSAs). The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 included a provision to allow individuals with certain high-deductible health plans to contribute to an HSA. These plans are known as *HSA-eligible plans* because not all persons eligible to contribute to an HSA do, in fact, have one. Advocates of HRAs and HSA-eligible plans claimed that they simultaneously provided consumers with broader choices than were currently available, while their aggregate decisions would cap costs more effectively than top-down, conventionally managed care plans had done. But some analysts warned that consumers lacked the discipline and sophistication to successfully navigate an increasingly complex health care system and understand what care is truly necessary. They saw the initiative as an opportunity for employers to transfer a growing portion of rising costs to employees (Jaffe 2002).

Initially, projections for growth in HRAs and HSA-eligible plans (referred to collectively as CDHPs) were strong. A 2002 survey found that 44 percent of large employers were expected to offer an HRA by 2004.[3] A 2004 survey of mostly large employers found that more than two-fifths of respondents reported that they were either very likely (8 percent) or somewhat likely (35 percent) to offer an HSA-eligible plan in 2005 (Mercer 2004). The same survey found that 73 percent were very likely (19 percent) or somewhat likely (54 percent) to offer such a plan in 2006. Another survey conducted at about the same time found that 61 percent of large employers were likely to offer an HSA in the near future.[4]

Predictions for strong growth in CDHPs continued. In 2005, the U.S. Treasury Department predicted that 25–30 million people would be covered by an HSA-eligible plan and would have an account by 2010.[5] Similarly, in 2005, Forrester Research predicted that CDHP enrollment could account for 19 percent of the market in 2009 and 24 percent by 2010 (or about 42 million people).[6]

This report summarizes what is known about CDHPs. It examines trends in offer rates and enrollment. It looks at differences in premiums between CDHPs and other types of insurance, and discusses the drivers of the premium differences. The literature on CDHPs' impact on use of preventive services, medication adherence, and quality of care is summarized, as are other studies.

CDHP Offer Rates

There are many surveys that track the percentage of employers offering a CDHP plan—either as the only health coverage option or as one among other options. The annual Kaiser Family Foundation (KFF)[7] survey and the Mercer[8] survey are perhaps the two most well-known. Both surveys are nationally representative. The KFF survey examines offer rates for employers with three–199 employees, 200–999 employees, and 1,000 or more employees. Mercer does not collect data for the smallest employers (those with fewer than 10 workers), but has detailed data for the larger employers by the following sizes: 10–49, 50–199, 200–499, 500–999, 1,000–4,999, 5,000–9,999, 10,000–19,999, and 20,000 or more. Other surveys tend to be more focused on a specific slice of the employer market, such as the large-group or small-group market, or are based on relatively small sample sizes.

Since the introduction of CDHPs in 2001, the percentage of employers offering them has grown. Both the KFF and the Mercer surveys show that the percentage of employers offering an HRA- or HSA-eligible plan increased from below

5 percent in 2005 to between 12–15 percent by 2009 (Figure 1). Growth in offer rates can be seen across all firm sizes. Among small firms, those with 3–199 workers, the percentage offering a CDHP increased from 4 percent in 2005 to 11 percent in 2009. Among mid-size firms, those with 500–999 workers, the percentage offering a CDHP option increased from 4 percent in 2005 to 16 percent in 2009. And among the largest, or jumbo firms, 22 percent were already offering a CDHP option by 2005, increasing to 43 percent by 2009.

Figure 1

Offer Rates for HRAs[a] and HSA[b]-Eligible High-Deductible Health Plans, 2005–2010

	KFF/HRET[c]				Mercer[d]								
Universe	Three or more workers				500 or more workers								
Type of CDHP[e]	HRA[a] or HSA[b]-eligible plan				HRA[a] or HSA[b]-eligible plan								
Year	Total	3–199	200–999	1,000 or more	Total	10–49	50–199	200-499	500–999	1,000–4,999	5,000–9,999	10,000–19,999	20,000 or more
2005	4%	4%	4%	10%	2%	2%	1%	5%	4%	4%	10%	19%	22%
2006	7	7	5	17	6	5	7	7	6	12	18	21	37
2007	10	10	13	18	7	6	9	6	9	16	22	36	41
2008	13	13	15	22	10	8	14	11	14	22	28	40	45
2009	12	11	18	28	15	15	18	16	16	20	42	39	43
2010[e]						17	19	20	19	24	43	43	47

Sources: Kaiser Family Foundation, Mercer.
[a] Health reimbursement arrangements.
[b] Health savings account.
[c] Kaiser Family Foundation and the Health Research and Educational Trust (HRET).
[d] 2010 data from Mercer represent the percentage of employers very likely to offer an HRA or HSA-eligible plan in 2010, as reported in 2009.
[e] Consumer-directed health plan.

Analysis of offer rate changes between 2005 and 2009 masks important variation that has occurred during the 2005–2009 period. When examining the entire employment-based market, what had been steady growth in offer rates appears to have slowed in most firm size categories. Between 2008 and 2009, the percentage of small firms (three–199 workers) that offered a CDHP declined from 13 percent to 11 percent (although the change was not statistically significant). However, larger firms continued to add a CDHP as an option. The percentage of firms with 1,000 or more workers that offered a CDHP increased from 22 percent in 2008 to 28 percent in 2009.

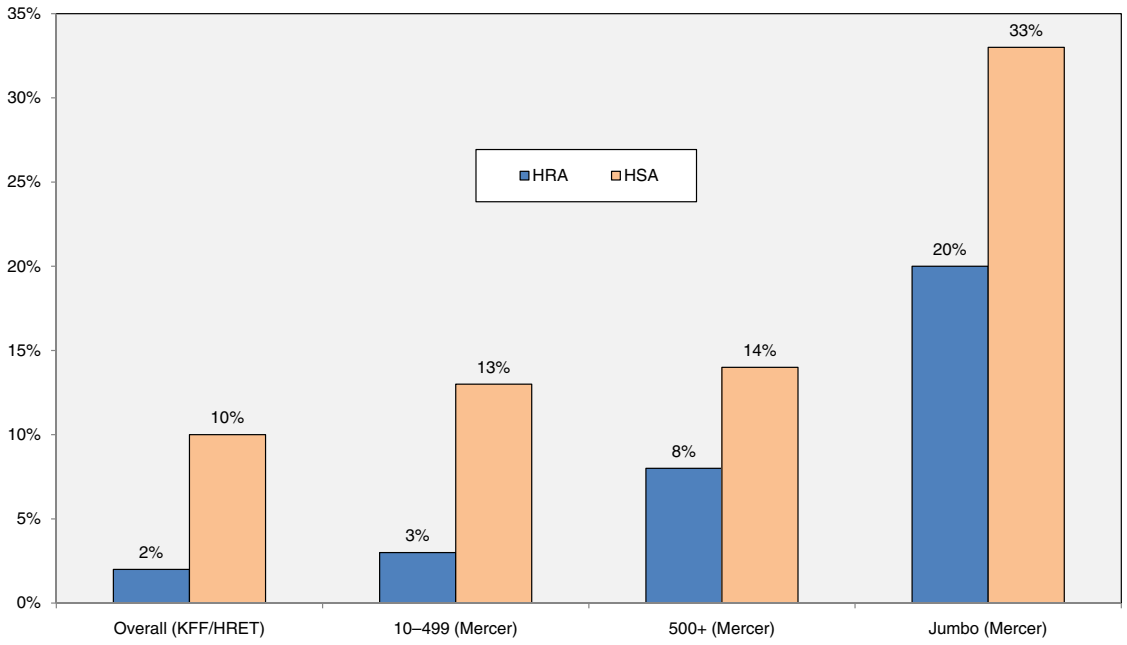
However, even among large employers, offer rates and growth rates vary by firm size. In 2009, 42 percent of employers with 5,000–9,999 workers offered a CDHP option, and 43 percent of firms with 20,000 or more workers offered it. Unlike small businesses, where the CDHP tends to be the only option available to workers, large businesses tend to offer the CDHP alongside other available options such as a health maintenance organization (HMO) and preferred provider organization (PPO).

While the overall offer rate may have peaked, increases in offer rates have stalled in some areas. The KFF survey does not find an increase in offer rates among firms with three–199 workers between 2008 and 2009, but Mercer shows an increase from 8 percent to 15 percent among firms with 10–49 workers, and an increase from 14 percent to 18 percent among firms with 50–199 workers. In contrast, Mercer shows slight declines in the CDHP offer rates among firms with 1,000–4,999, 10,000–19,999, and 20,000 or more, and a large increase in the offer rate among firms with 5,000–9,999, where it increased from 28 percent to 42 percent between 2008 and 2009. Yet, KFF shows an overall increase in offer rates among firms with 1,000 or more workers, increasing from 22 percent in 2008 to 28 percent in 2009.

When it comes to the type of CDHP offered, by 2009, employers were more likely to offer an HSA than an HRA across all firm sizes. Overall, 2 percent of employers offered an HRA while 10 percent offered an HSA (Figure 2). Even among jumbo employers, 20 percent offered an HRA and 33 percent offered an HSA. As will be discussed below, worker preferences for the type of CDHP do not correspond with employer preferences for which type to offer.

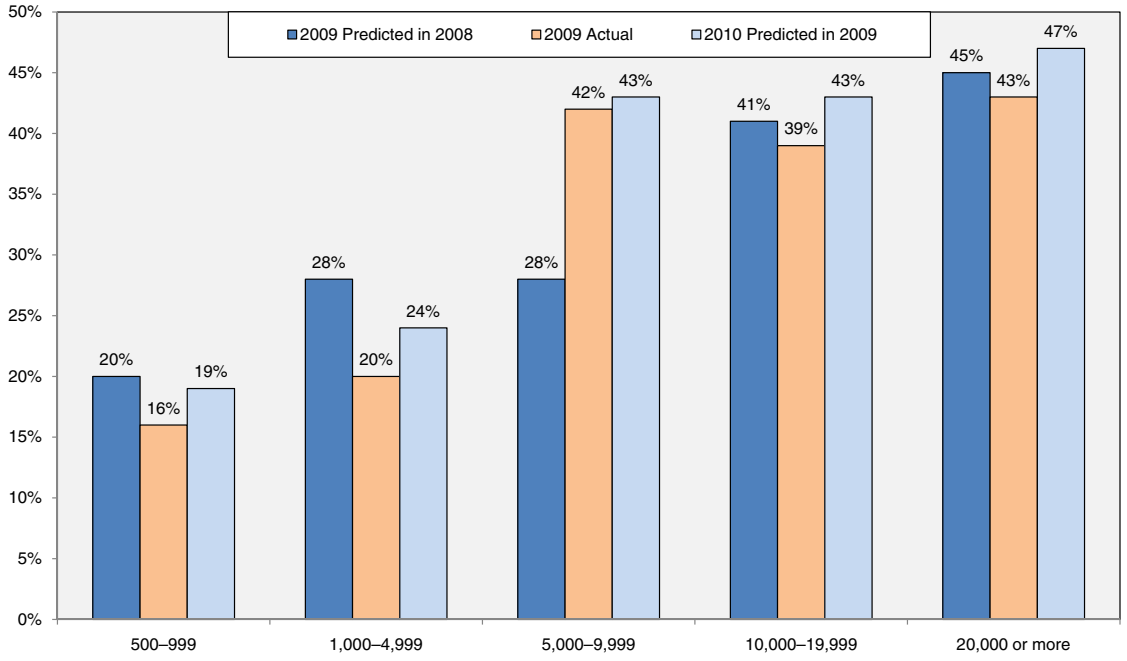
In 2008, employers were asked their likelihood of offering a CDHP option in 2009. The percentage of employers reporting in 2008 that they were very likely to offer a CDHP in 2009 is shown in Figure 3 alongside actual offer rates for 2009. In all but one firm size category (5,000–9,999), the percentage reporting that they were very likely to offer a

Figure 2
Offer Rates, by Type of CDHP and Firm Size, 2009



Sources: Kaiser Family Foundation, Mercer.

Figure 3
2009 CDHP Offer Rates, 2009 and 2010 Predictions, Selected Firm Sizes



Source: Mercer.

CDHP in 2009 was higher than the percentage that actually offered it. Employers with 500–999 were the only group to experience an increase in offer rates between 2008 and 2009. For each of the other firm size categories (except 5,000–9,999), not only was the expected offer rate lower than the actual offer rate, but the offer rate had declined slightly from 2008 to 2009.

Expected offer rates for 2010 are slightly higher than the actual offer rates in 2009, but they do not come close to the growth rates seen in 2006 and 2007, and based on past history they may not materialize. In fact, predicting growth at this point is complicated by the timing of health reform. Some employers may not make any changes and may take a wait-and-see approach before making changes. Others may adopt changes sooner than they would have. For instance, if they expect to be affected by the excise tax on high-cost health coverage that takes effect in 2018, they may start moving toward CDHPs today as a way to avoid the tax in the future.[9]

CDHP Enrollment

There are a number of different sources for enrollment rates and for the number of people with access to and enrolled in a CDHP. Selected available estimates, as shown in Figure 4, are discussed in this section.

AHIP: Since 2005, America's Health Insurance Plans (AHIP) has conducted an annual census of health plans to determine the number of people enrolled in HSA-eligible plans. The estimates include both people with an HSA and the number who are in a plan that makes them eligible to contribute to an HSA. The latter group may or may not have opened an HSA. AHIP's census does not include any HRA enrollees.

AHIP found 1 million people were enrolled in an HSA-eligible plan in 2005, when it first started the census.[10] By 2010, 10 million people were in an HSA-eligible plan, up from 8 million in 2009 and 6.1 million in 2008. Enrollment in HSA-eligible plans grew by 25 percent in 2010 after growing 33 percent in 2009 and 2008.

Nearly 8 million people had coverage through the employment-based market, while an additional 2 million had it through the individual market. AHIP's analysis includes workers, nonworking adults, and children. The AHIP estimate of 10 million individuals in HSA-eligible plans represents about 6 percent of the combined employment-based and individual markets.

AAPPO: The Association of Preferred Provider Organizations (AAPPO) reports that there were 23 million people enrolled in a CDHP in 2009, up from 18 million in 2008.[11] The report does not contain a methodology section and it is unclear how it arrived at the 23 million estimate; it presents data from Mercer in its 2009 report but does not cite a source for the data in its 2008 report. In the 2009, AAPPO refers to Mercer's estimate that CDHP enrollment accounted for 9 percent of the market. To derive an estimate that 23 million people were enrolled in a CDHP when CDHP enrollment accounted for 9 percent of the market, AAPPO would have to assume that the market included 255 million people. However, according to EBRI estimates of Census data, the combined employment-based and nongroup markets covered about 177 million individuals under age 65 in 2008 (Fronstin 2009). If the population insured under Medicare and Medicaid were included in the "market," there would be 255 million individuals with coverage, but the 9 percent of workers with a CDHP should not take into account the Medicare and Medicaid populations as those populations in large part are not eligible for CDHPs.

CDMR: According to enrollment estimates from the Consumer Driven Market Report (CDMR), 11.4 million individuals were in an HSA-eligible plan by early 2010.[12] Another 7.7 million were enrolled in HRA-based plans.[13] Overall, CDMR finds that 19 million people were enrolled in HRAs or HSA-eligible plans as of January 2010, up from 15.1 million in January 2009. The CDMR estimates are about 10 percent larger than the AHIP estimates for HSA-eligible enrollees.

EBRI/MGA: According to the 2009 EBRI/MGA Consumer Engagement in Health Care Survey, 11.2 million *adults* ages 21–64, with either employment-based coverage or individually purchased insurance, were enrolled in an HRA- or HSA-eligible plan, up from 9.8 million in 2008. This estimate represents 8.9 percent of adults ages 21–64 with private insurance (up from 7.9 percent in 2008).

Figure 4

Enrollment in HRAs[a] and HSA[b]-Eligible High-Deductible Health Plans, 2005–2010

Survey	AHIP[c]	AAPPO[d]	CDMR[e]	EBRI/MGA[f]	ICDC[g]	KFF/HRET[h]		
Universe	All	All	All	Adults 21–64	All	Workers		
Type of CDHP[j]	HSA-eligible	HRA or HSA-eligible plan	HRA or HSA-eligible plan	HRA or HSA-eligible plan	HRA or HSA-eligible plan	HRA or HSA-eligible plan		
Source of Insurance	Employment-based and direct purchase	Employment-based and direct purchase	Employment-based and direct purchase	Employment-based and direct purchase	Employment-based and direct purchase	Employment-based		
	HSA-eligible	Total	Total	Total	Total	Total	HRAs	HSA-eligible
				(millions)				
2005	1			4.7		2.4	–	–
2006	3.2	10	6.0	3.8		2.7	1.3	1.4
2007	4.5	12.5	8.4	8.3	7.8	3.8	1.9	1.9
2008	6.1	18	11.9	9.8	10.7	5.4	2.2	3.2
2009	8		15.1	11.2				
2010	10		19					
				(percentage)				
2005	1%			3.9%		4%	2%	2%
2006	2	6%	3%	3.2		4	2	2
2007	3	7	5	6.6	4%	5	3	3
2008	3	10	7	7.9	6%	8	3	4
2009	5		9	8.9		8	3	6
2010	6		11					

[a] Health reimbursement arrangements.
[b] Health savings account.
[c] America's Health Insurance Plans, www.ahipresearch.org/pdfs/hsa2010.pdf
[d] American Association of Preferred Provider Organizations, www.aappo.org/userfiles/File/2009%20CDHP%20Study/CDHP_Final_Sm.pdf (last accessed March 2010).
[e] *Consumer Driven Market Report,* personal communication, Sept. 2009.
[f] EBRI/MGA. See Fronstin (2009).
[g] Inside Consumer-Directed Care (not available online).
[h] Kaiser Family Foundation/Health Research and Educational Trust, http://ehbs.kff.org/pdf/2009/7936.pdf
[j] Consumer-driven health plans.

The EBRI/MGA survey does not include children in its 11.2 million estimate. However, the survey included a question regarding who else was covered by the health plan. According to the survey, 7.9 million children were enrolled in an HRA- or HSA-eligible plan. Thus, overall, 19.1 million, or 11 percent of people with either employment-based coverage or individually purchased insurance, were enrolled in a CDHP in 2009, according to the EBRI/MGA survey.[14]

ICDC: *Inside Consumer-Directed Care* (ICDC), a now-defunct industry newsletter published by Atlantic Information Services through mid-2009, followed the movement to consumerism and growth in CDHPs. Various reports provided detailed enrollment data for specific insurers. The most recent data come from a combination of the Aug. 8, 2008, report for 24 of the largest insurers and the Aug. 22, 2008, report for BlueCross BlueShield plans. According to the data for these two issues, 10.7 million persons were enrolled in HRA- or HSA-eligible plans. While many insurers were not included in the ICDC estimates, Aetna, the Blues, Cigna, Humana, and United were included. Collectively, they account for about 140 million lives, and 9.3 million of the 10.7 million persons covered by CDHPs. While there are no comparable data for 2009 from ICDC, the 2008 data are included for comparison purposes only.

KFF/HRET: In 2009, the Kaiser Family Foundation/Health Research and Educational Trust (KFF/HRET) annual survey of nearly 2,000 employers of all sizes found that 8 percent were enrolled in either an HRA or HSA-based plan. Unlike other studies, the survey did not find growth in enrollment between 2008 and 2009. The KFF/HRET survey does not include nonworking adults or children in its estimates. It also does not include federal employees or workers in firms with fewer than three employees. The lack of growth may be due to large margins of error for data related to CDHPs in this survey. The lack of growth may also be due to the fact that, while the survey shows growth in offer rates in large firms, it shows a decline in offer rates among small firms (contrary to the Mercer findings). Because there are many more small firms than large firms, the overall offer rate declined slightly as well.

Enrollment by Firm Size

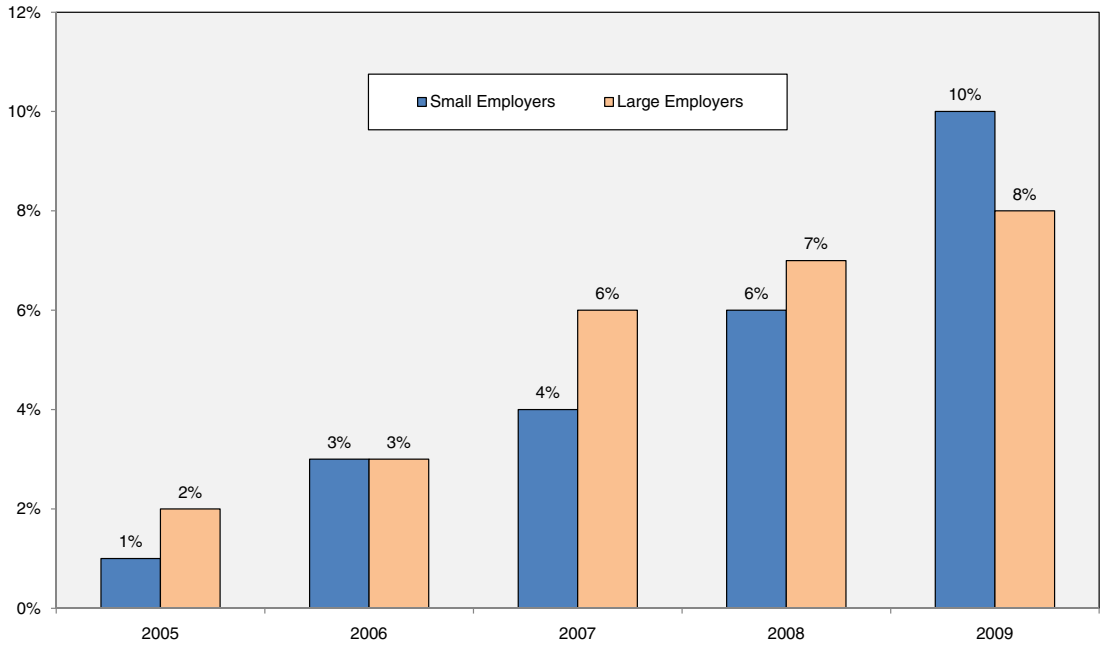
Despite the fact that large firms are much more likely than small firms to offer a CDHP, workers in large firms are much more likely to have a choice of plans, whereas workers in small firms that offer health coverage are typically offered only one plan. As a result, the percentage of workers with coverage in a CDHP is higher in small firms than in large firms. By 2009, 10 percent of workers in small firms were enrolled in a CDHP, compared with 8 percent of workers in large firms (Figure 5).

Enrollment by Choice of Plan

When workers are offered a choice of CDHP they are more likely to choose an HRA over an HSA. Figure 6 shows that HRA enrollment averages 27 percent in a choice environment, whereas HSA enrollment averages 16 percent. Workers might be more likely to choose an HRA over an HSA because they do not have to contribute their own money to the HRA, whereas the employer may choose to not contribute to the workers' HSA.

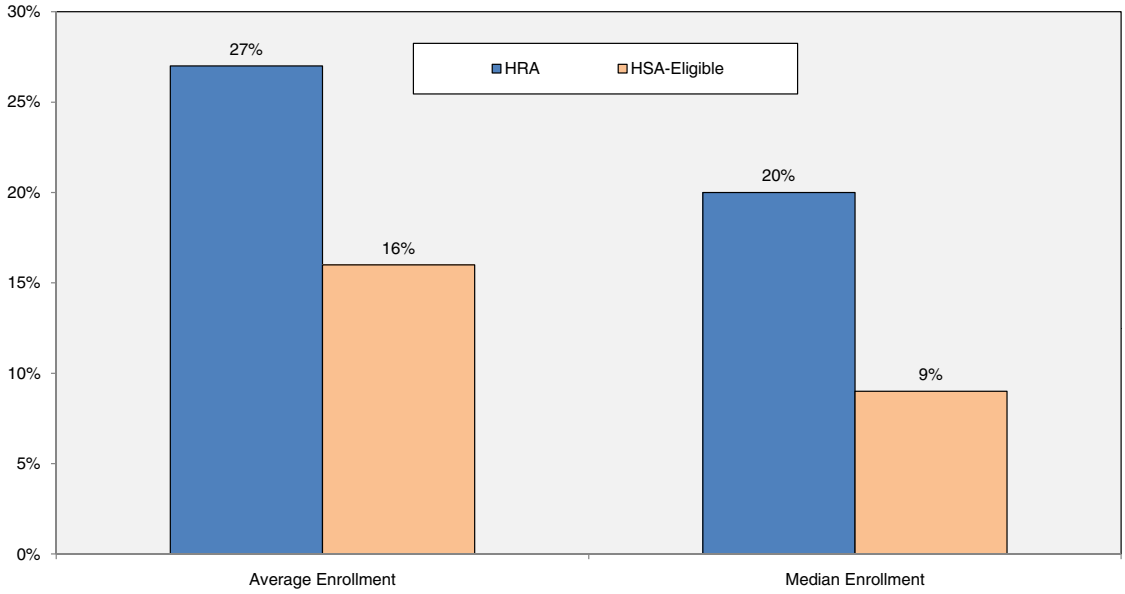
Enrollment may be driven by the employee share and level of the premium. According to data from Mercer, on average, employers that offer a CDHP price it preferentially as compared with the other plan options. Employers are more likely not to require any premium contribution in a CDHP than in an HMO or PPO. Payroll deductions are lower for workers choosing a CDHP over an HMO or PPO. For example, with respect to employee-only coverage, the average premium was $64/month in the CDHP and $110/month in the PPO in 2009 (Figure 7). Furthermore, on average, the portion of the premium paid by workers is lower in the CDHP than in the HMO or PPO. Workers paid an average of 20 percent of the premium in the CDHP, 23 percent of the premium in the HMO, and 24 percent of the premium in the PPO in 2009.

Figure 5
CDHP Enrollment by Firm Size, 2005–2009



Source: Mercer.

Figure 6
Percentage of Eligible Workers Enrolled in CDHP, by Type of CDHP, Among Large Employers Offering a Choice of Health Plan, 2009



Source: Mercer.

Figure 7

Worker Premium Contribution, by Type of Health Plan, Among Large Employers, 2009

	No Contribution Required	Average Monthly Dollar Amount	Average Contribution as a % of Premium
CDHP			
Employee-only	16%	$64	20%
Family	8	239	28
PPO			
Employee-only	12 110		24
Family	5 342		32
HMO			
Employee-only	11	95	23
Family	6	325	30

Source: Mercer.

Premiums

This section compares premiums by plan type. Premiums are used to describe employer costs, recognizing that self-insured employers do not pay premiums and also include the portion of total costs paid for by workers. Furthermore, reference to premiums also includes employer contributions to HSAs. Premiums do not include employer contributions to HRAs, as those are notional accounts and not funded. This section shows premium levels by plan type and growth rates over time from a number of different sources.

Figure 8 shows premiums for employee-only coverage for HRAs, HSAs, and non-CDHPs from 2005–2009 using data from the Kaiser Family Foundation annual employer survey. Generally, premiums for CDHPs were lower than premiums for non-CDHPs in all years except 2005, when premiums for HRA plans were higher than premiums for non-CDHPs. By 2009, annual premiums averaged $4,274 for HRA-based plans, $4,517 for HSA-eligible plans, and $4,902 for non-CDHP plans. Note that the $4,517 premium for HSA-eligible plans includes an average $688 employer contribution to the HSA account. Hence, premiums for HSA-eligible coverage was $3,829 for employee-only coverage in 2009.

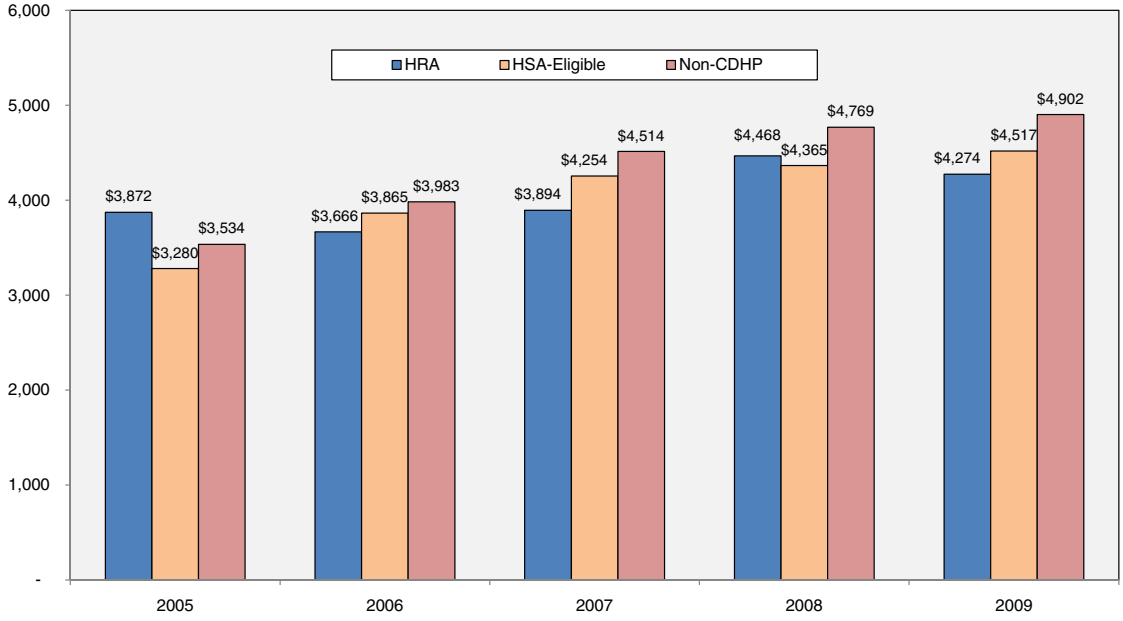
Growth in premiums varies both by type of plan and over time. Growth rates for the premiums presented in Figure 8 are shown in Figure 9. In 2006, premiums for HSA-eligible plans increased 17.8 percent, while non-CDHP premiums increased 12.7 percent, and premiums for HRA-based plans decreased 5.3 percent. HRA premiums increased by 6.2 percent in 2007 and 14.7 percent in 2008 but then fell 4.3 percent in 2009. Premiums for HSA-eligible plans increased faster than other premiums in 2006. In 2007, premiums for HSA-eligible plans increased 10.1 percent compared with 13.3 percent among non-CDHPs. Similarly, in 2008, premiums for HSA-eligible plans increased 2.6 percent compared with 5.6 percent among non-CDHPs. In 2009, HSA-eligible premiums increased slightly faster than non-CDHP premiums, increasing 3.5 percent and 2.8 percent, respectively.

Similar trends can be seen with respect to premiums for family coverage. In each year during 2005–2009, premiums for HRA-based plans and HSA-eligible plans were below premiums for non-CDHPs (Figure 10). Growth rates for changes in family premiums are shown in Figure 11. Between 2006–2008, premiums for HSA-eligible plans increased less than premiums for non-CDHPs.

There was much more volatility in premiums for HRA-based plans. They increased nearly 40 percent in 2006. The growth rate fell to 9.6 percent in 2007, which was lower than the non-CDHP premium increase and higher than the premium increase for HSA-eligible plans. The premium increase for HRA-based plans fell again in 2008 to less than 1 percent, and less than the premium increase for both HSA-eligible plans and non-CDHPs. And in 2009, premiums for HRA-based plans increased by 8.5 percent, higher than the 5.4–5.6 percent increases seen in non-CDHPs and HSA-eligible plans.

Figure 8

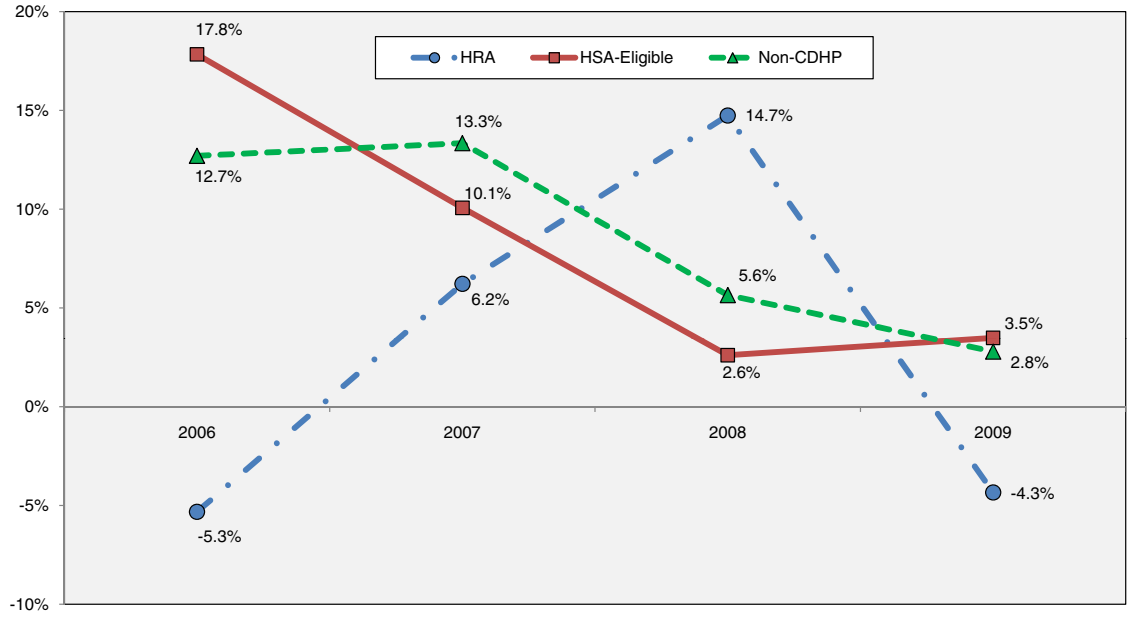
Premiums, Employee-Only Coverage, by Plan Type, 2005–2009



Source: Kaiser Family Foundation.
Note: 2005 and 2006 data for Non-CDHP represents weighted average of premiums published by Kaiser Family Foundation.

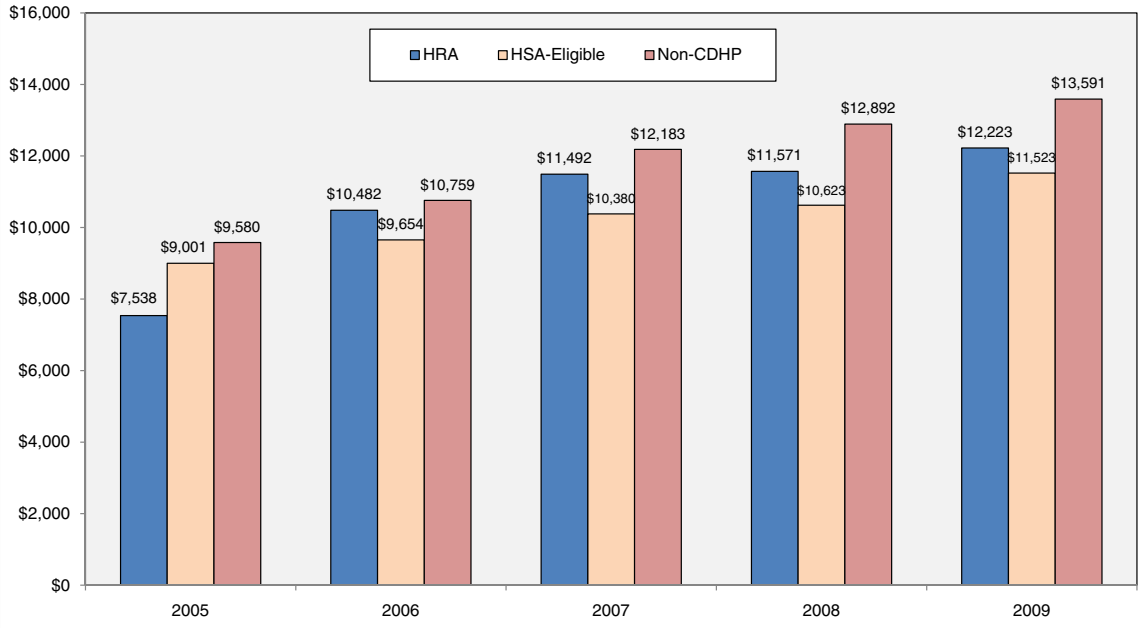
Figure 9

Premium Changes, Employee-Only Coverage, by Type of Health Plan, 2006–2009



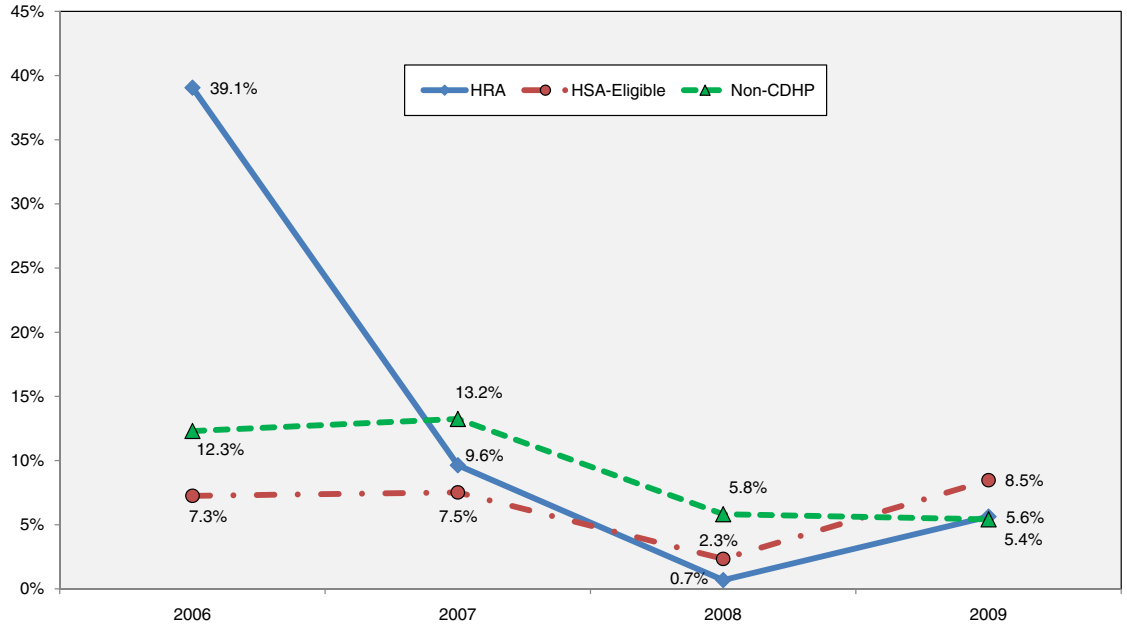
Source: Kaiser Family Foundation.

Figure 10
Premiums, Family Coverage, by Plan Type, 2005–2009



Source: Kaiser Family Foundation.
Note: 2005 and 2006 data for Non-CDHP represents weighted average of premiums published by Kaiser Family Foundation.

Figure 11
Premium Changes, Employee-Only Coverage, by Type of Health Plan, 2006–2009



Source: Kaiser Family Foundation.

Standardizing Results

Using premiums from the Kaiser study to track trends in premiums does not control for other factors that might also be affecting premiums. CDHP premiums may be lower than non-CDHP premiums simply because the CDHP population is healthier. There is some evidence of this, which will be discussed in the next section. Furthermore, if the population leaving non-CDHPs for CDHPs is healthier and uses less health care than the population remaining in non-CDHP plans, comparing premiums in the Kaiser study will not necessarily provide the experience that an employer may see if it moves from a non-CDHP to either an HRA-based plan or HSA-eligible plan. The experience that an employer may see will also depend on whether the employer offers the CDHP options alongside non-CDHP options, or if it moves to a full-replacement model, where the CDHP is the only option offered.

Various studies by insurers reportedly standardize results. Cigna, for example, has released a number of studies comparing the experience of its HRA-based and HSA-eligible plans (collectively known as the CIGNA Choice Fund) with the experience of traditional PPO and HMO groups.[15] It reports in its latest release that results were standardized for differences in health status mix in order to compare the experience of its Choice Fund groups with traditional plan groups. The 2009 study shows trends in medical costs for four years after the introduction of the CDHP. After standardizing costs to $100, Cigna shows that in year one after the introduction of the CDHP, costs fell to $96 for those in the CDHP, and they increased to $111 for those in PPOs and HMOs (Figure 12). In the second year, the CDHP experienced an increase in costs. Cost increases continued for both the CDHP and the non-CDHP groups through the fourth year. By the fourth year, the $100 cost for CDHP groups increased to $114 (a cumulative 14 percent increase), whereas the $100 cost for the non-CDHP groups increased to $153 (a cumulative 53 percent increase).

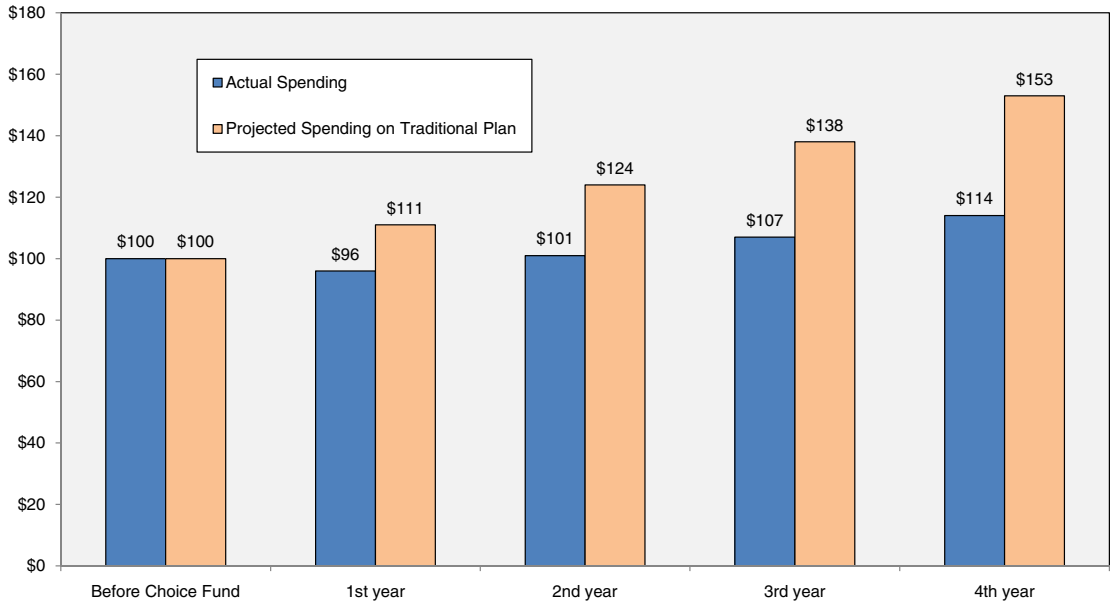
In each year since the introduction of the CDHP, costs increased faster for the non-CDHP groups than for the CDHP groups. In the first year, costs declined 4 percent for CDHP groups, and 11 percent for non-CDHP groups (Figure 13). In year two, costs increased 5.2 percent for the CDHP group and 11.7 percent for the non-CDHP group. In the third year, costs increased 5.9 percent for the CDHP group and 11.3 percent for the non-CDHP group. And in the fourth year, costs increased 6.5 percent for the CDHP group and 10.9 percent for the non-CDHP group.

While the cost growth has been higher for the non-CDHP group than the CDHP group each year, an important question that is not addressed in the report is why the cost trend is increasing for the CDHP group, when the cost trend is decreasing for the non-CDHP group. If these trends continue on the almost straight-line path they are taking, after another five or seven years, CDHP costs will be increasing faster than non-CDHP costs. CDHP costs will still be below non-CDHP costs, but with CDHP costs growing faster than non-CDHP costs, it is only a matter of time before those costs are comparable again.

The Cigna study raises a number of other questions. First, the study uses data from 425,000 HMO and PPO enrollees. Yet the chart that compares CDHP and non-CDHP costs is labeled "Projected Costs." It is unclear how projected costs differ from actual experience. Second, Cigna excludes all claims above $50,000 and capitated services from its study. It is unclear from the study if excluding these claims changes the differences in costs and cost trends between CDHPs and non-CDHPs. According to Employee Benefit Research Institute estimates from the 2006 Medical Expenditure Panel Survey, only 0.5 percent of adults ages 18–64 incurred $50,000 or more in health care claims that year, but those claims accounted for about 14 percent of total claim costs. HSA-eligible plans have statutory maximum out-of-pocket limits. In 2010, the maximum out-of-pocket limit was $5,950 for individual coverage and $11,900 for family coverage. In contrast, 41 percent of HMO enrollees, 14 percent of PPO enrollees, and 19 percent of point-of-service plan enrollees did not have an out-of-pocket limit in 2009.[16] Hence, cost sharing may differ substantially for very high users of health care services by plan type. Ultimately, understanding how high-cost claims affect overall cost differences is important, especially when cost sharing faced by individuals with high cost claims varies by plan type.

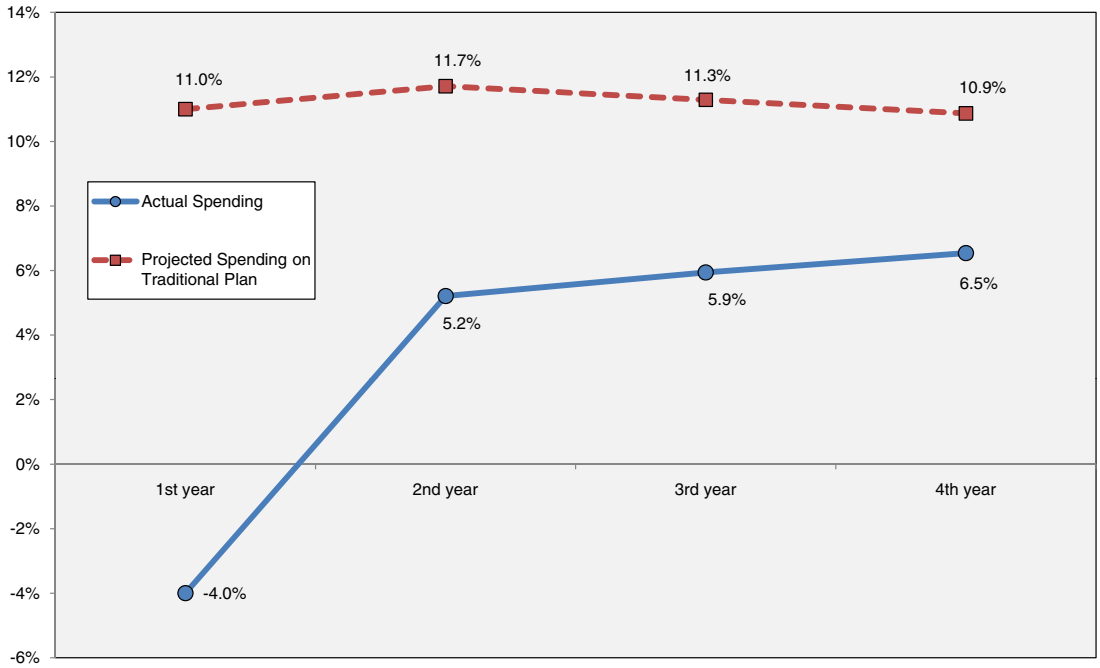
Aetna has also been conducting a series of studies to compare the experience of its members in the HRA- and HSA-eligible plans with what their expected costs would be had they remained in a PPO.[17] In Aetna's report, separate analyses are conducted for employers that offer the CDHP as an option and for those that offer the CDHP as the only option. Medical costs are benchmarked to $226 per month prior to the introduction of the CDHP. Under the full

Figure 12
Projected Medical Costs per $100 Spent, CIGNA Choice Fund vs. Traditional Plans



Source: http://newsroom.cigna.com/images/56/1209_CIGNA%20ChoiceFund_Study.pdf
Excludes catastrophic claims >$50,000 and capitated services.

Figure 13
Projected Trend, CIGNA Choice Fund vs. Traditional Plans



Source; EBRI estimates based on data in http://newsroom.cigna.com/images/56/1209_CIGNA%20ChoiceFund_Study.pdf
Excludes catastrophic claims >$50,000 and capitated services.

replacement model, Aetna finds that CDHP costs decline in the first year and then increase, while PPO costs would have increased in the first year and continued increasing. Had members remained in the PPO, costs would have increased from $226 to $323 after five years (a 43 percent increase), whereas under the CDHP costs initially fell and then increased to $297 after five years (a 31 percent increase) (Figure 14).

In the full replacement model, Aetna finds that in the first year CDHP costs drop, but the growth rate in costs in years two, three, and four is higher than the projected growth rate had CDHP enrollees remained in the PPO. Specifically, in year two, CDHP costs increased 9.4 percent while PPO costs would have increased 6.7 percent (Figure 15). In year three, CDHP costs increased 7.8 percent while PPO costs would have increased 7.6 percent. And in year four, CDHP costs increased 16.2 percent while PPO costs would have increased 7.7 percent. It is not until year five that CDHP costs increase slower than expected PPO costs. CDHP costs increased 4.3 percent while PPO costs would have increased 6.8 percent. In fact, PPO cost increases are projected to be more stable than the actual CDHP cost increases that were experienced. Projected PPO cost increases ranged from 6.7 percent to 8.2 percent over the five-year period, whereas actual CDHP cost increases were negative the first year but then ranged from 4.3 percent to 16.2 percent.

As mentioned above, Aetna also presented cost trends for when employers offered the CDHP as one of a number of other health coverage options. Unlike the findings from the full replacement scenario, Aetna did not find a decline in costs in the first year of the program, but actual CDHP costs did increase more slowly than projected PPO costs for the same population (Figure 16). After five years, actual spending in the CDHP increased 34 percent, while projected spending for this population had they remained in the PPO increased 44 percent. Unlike the full replacement model, actual spending increases in the CDHP were at or below projected spending increases in the PPO. In year one, CDHP costs increased 4 percent while they were expected to increase 8 percent under the PPO. Years three and five also experienced projected PPO cost growth that was higher than actual growth in the CDHP. In year two, actual cost increases for the CDHP were slightly below the projected cost increase, while in year four, actual and projected cost growth were equal.

UnitedHealthcare, which acquired Definity Health in 2004, recently released findings from a five-year comparison of its HRA-based plan with its PPO. It found that in the first year, costs associated with the HRA were 10 percent higher than those in the PPO.[18] Thereafter, the HRA-based plan realized savings of 5 percent, 4 percent, 11 percent, and 16 percent relative to the PPO. The first-year cost difference finding was different from that found by Cigna and Aetna. No explanation was given for the difference.

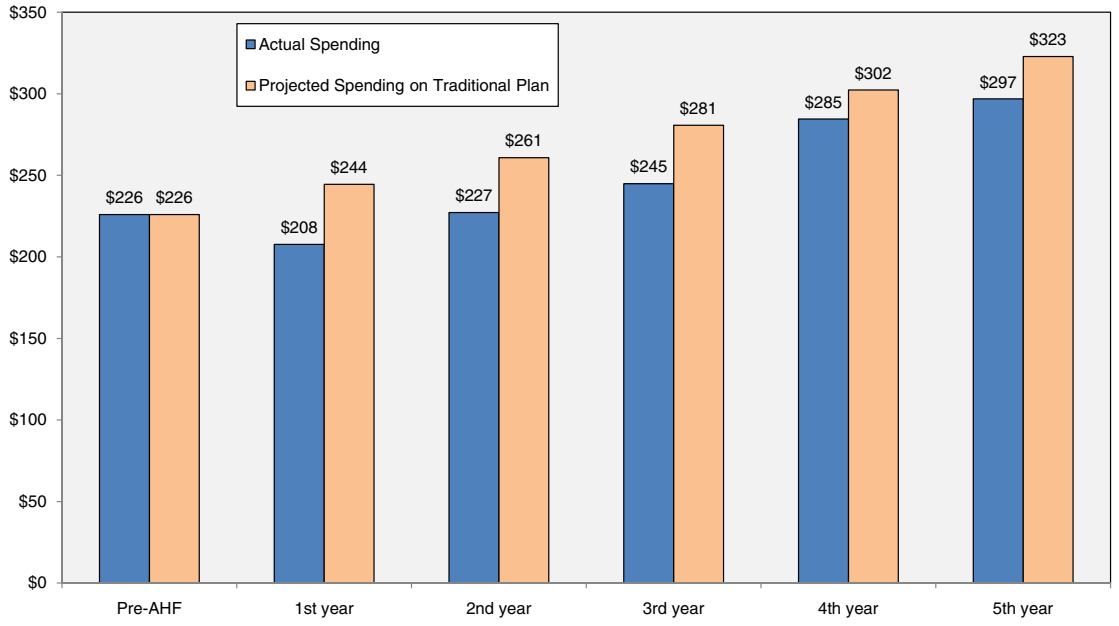
Parente, Feldman and Xu (2008) examined the impact that moving to total replacement had on health care costs for four employers. Examining full replacement plans controls for any effects of different types of individuals choosing the CDHP over traditional coverage that might exist when offering multiple plans. The study found mixed results on costs. Two of the four employers studied experienced a decrease in total costs, while two experienced an increase in total costs.

A number of independent studies have also tried to explain the differences in premiums between CDHPs and non-CDHPs. Actuaries at Milliman studied six employers with roughly 225,000 workers, 30,000 of whom were enrolled in a CDHP.[19] The study found that actual savings ranged from a high of 15.5 percent to a low of -4.7 percent. Average savings was 4.8 percent. However, the study found that most of the savings was due to fact that younger, healthier workers choose CDHPs and concluded that once typical risk- and benefit-adjustment factors were taken into account, CDHPs saved only 1.5 percent.

Roll of Risk Selection

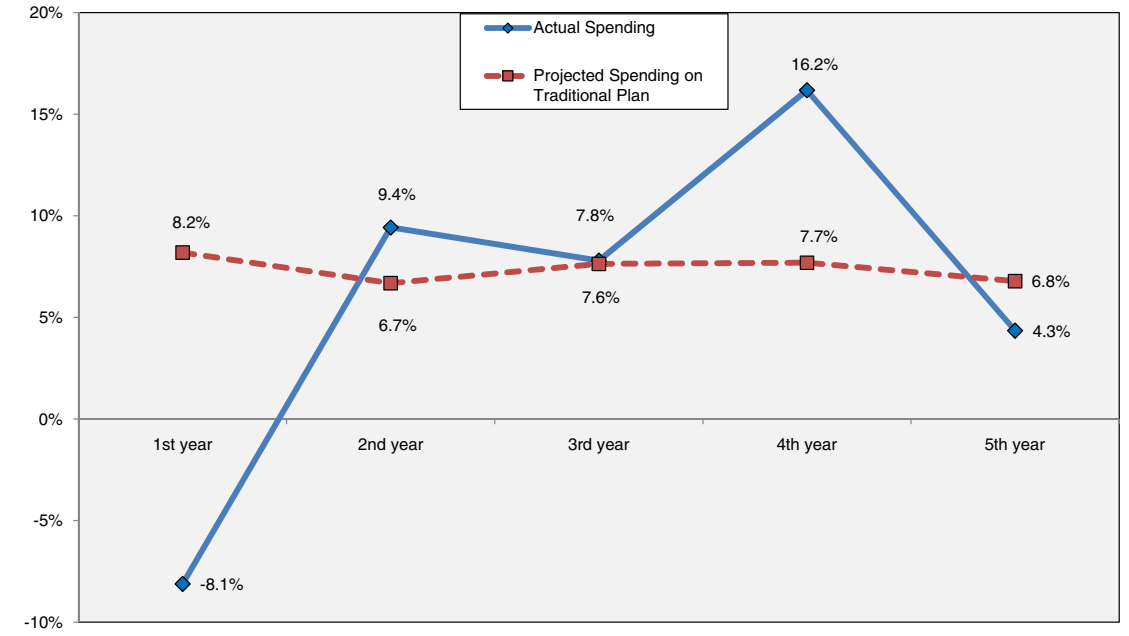
There is strong evidence that the population enrolled in CDHPs is different from the population enrolled in more traditional coverage, at least initially. Researchers have examined differences related to age, health status, use of health care services, engagement in personal health, and income. Tollen, Ross and Poor (2004) found that there did not appear to be a difference in risk profiles between employees choosing an HRA and those with more traditional coverage based on demographic data alone, but it appeared that those on the HRA were healthier than those electing

Figure 14
Projected Medical Costs, Aetna Health Fund vs. Traditional Plans–Full Replacement Plans



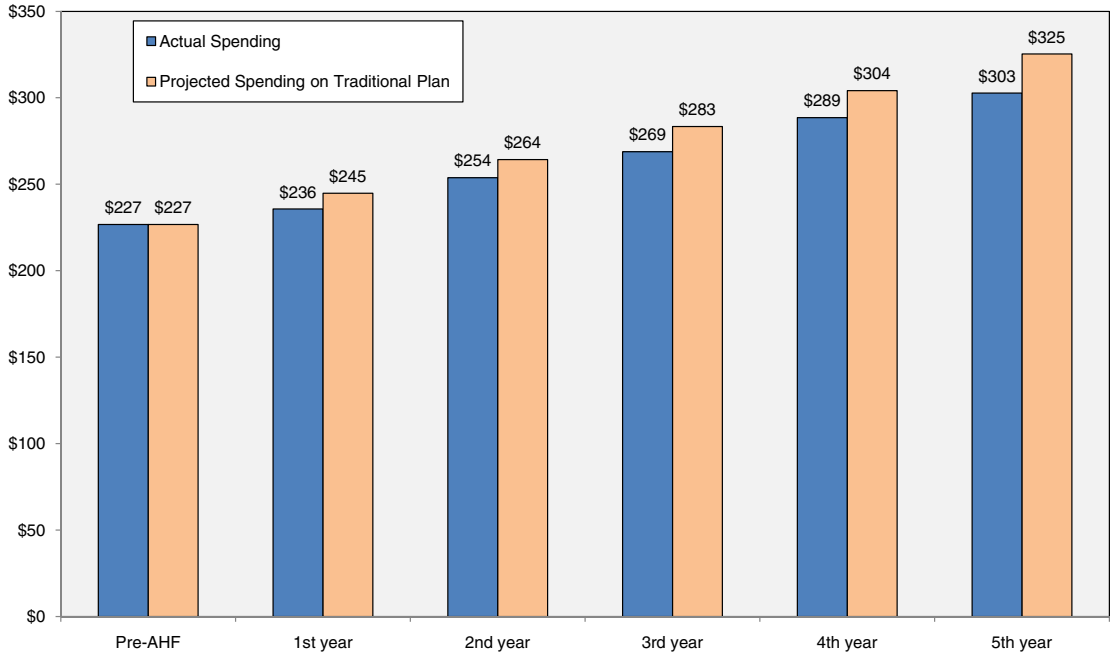
Source: www.aetna.com/news/AHF_study.pdf

Figure 15
Projected Trend, Aetna Health Fund vs. Traditional Plans–Full Replacement Plans



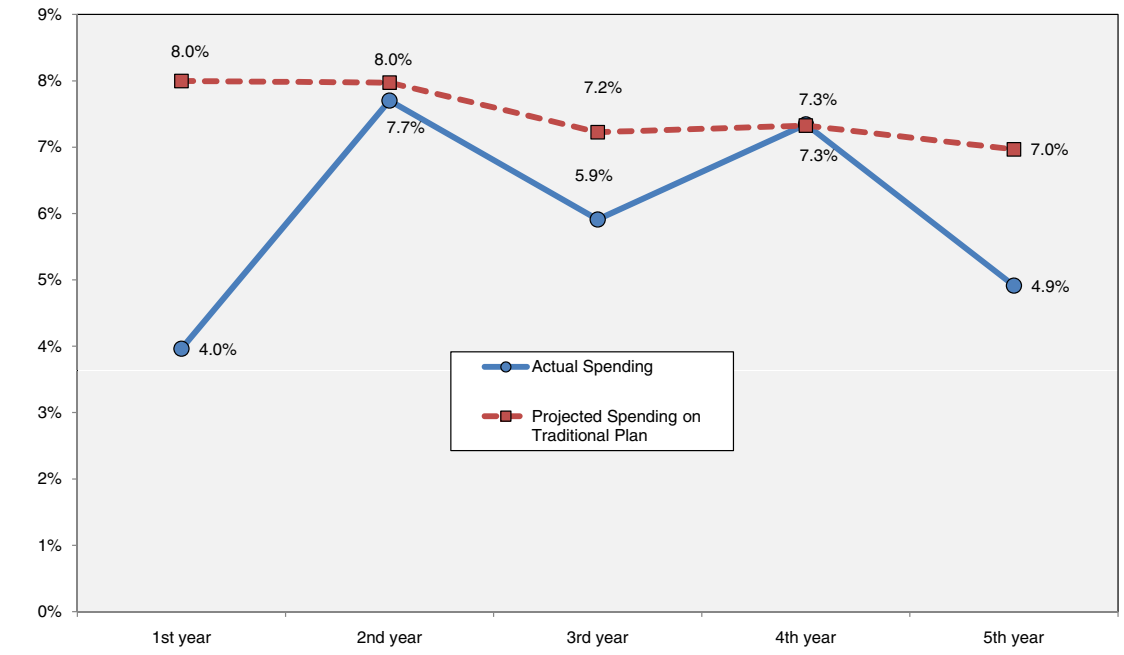
Source: EBRI estimates based on data in www.aetna.com/news/AHF_study.pdf

Figure 16
Projected Medical Costs, Aetna Health Fund vs. Traditional Plans



Source: www.aetna.com/news/AHF_study.pdf

Figure 17
Projected Trend, Aetna Health Fund vs. Traditional Plans



Source: EBRI estimates based on data in www.aetna.com/news/AHF_study.pdf

to remain in traditional coverage when based on prior claims and prior use of health care services. Similarly, Greene et al. (2006) found that while self-reported health status did not predict plan choice, enrollees in HRA-based plans were healthier than PPO enrollees when examining prior claims data.

Fowles et al. (2004) found that self-reported health could predict plan choice. The study found that employees with self-reported excellent or very good health were significantly more likely than those with worse self-reported health to choose a CDHP, and those reporting greater utilization were significantly less likely to choose a CDHP (Fowles et al. 2004). Similarly, Barry et al. (2008) found that, at one employer, CDHP enrollees were more likely than PPO enrollees to be younger, higher-wage, and white. They also found that prior health care spending and the presence of a chronic condition affected choice of health plan.

Parente, Feldman, and Christianson (2008) examined a large employer offering eight different options, including an HSA and two HRA-based plans. The study found that when both an HRA and an HSA were offered in addition to other choices such as an HMO, PPO, and POS plan, the HSA attracted a population of relatively healthy workers, while a more generous HRA attracted relatively unhealthy workers.

Fronstin (2009) found that while adults in CDHPs exhibited more cost-conscious behavior than individuals in traditional plans, were more engaged in wellness programs, and were more affected by financial incentives, they were also significantly less likely to have a health problem, less likely to smoke, more likely to exercise, less likely to be obese, more likely to have high household income, and more likely to be highly educated. The company ehealthinsurance.com found that the average age of individuals who purchased HSA-eligible plans was 40, whereas the average age for non-HSA-eligible purchasers was 35.[20] When it comes to prior use of information, new CDHP enrollees were found to be more likely than traditional plan enrollees to use information prior to joining the CDHP, but over time, the difference by plan type was less pronounced (Hibbard, Greene and Tusler 2008).

As long as the CDHP population continues to grow, research that examines point-in-time estimates, or does not control for how long an individual has been in a CDHP, will likely continue to find that the CDHP population is healthier along a number of dimensions than the population not enrolled in a CDHP. According to the American Academy of Actuaries, over time, enrollment in CDHPs has generally increased from year to year when offered in a choice environment.[21] For example, while early research on HRAs found that the CDHP had initial favorable selection, over time the CDHP population had a significantly higher illness burden (Parente, Feldman and Christianson 2004). Follow-up research found that some but not all of the higher illness burden was due to pent-up demand, but also concluded that the specific CDHP studied had too little cost sharing to control use of health care services and therefore total spending (Feldman, Parente and Christianson 2007). As the characteristics of the CDHP population become more like the population with traditional coverage, the average cost of CDHPs will increase, bringing it more in line with the average cost of traditional coverage. Furthermore, distinctions in use of information on cost and quality by plan type may not be a good indicator of differences in behavior, as health plans have started to make information available to all covered lives, regardless of the type of health plan a person has.

Impact on Use of Health Care Services

There have been a number of studies conducted in the past few years that have examined the impact that CDHPs have on use of health care services. These studies are summarized below and are grouped by type of service studied.[22]

Preventive Services

Parente, Feldman and Xu (2008) examined four employers that adopted a full replacement CDHP. The study examined the impact of moving to a CDHP on office visits for preventive care, use of colonoscopy, screenings for cervical cancer, and mammography. Regression analysis was used, but the study did not appear to have controlled for the size of the deductible or employer contributions to the account. While these variables should not have an impact on preventive services that are covered in full (not subject to the deductible), if workers do not completely understand their benefits, they may think that preventive services are subject to the deductible, which could impact the use of those services.

The study concluded that total replacement CDHPs led to a decrease or had a neutral impact on prevention, despite the fact that these services were covered 100 percent by all four employers in the study.

Rowe et al. (2008) examined use of preventive services, screening for cancer, and diabetic monitoring services among more than 17,000 individuals who had been enrolled in an HRA-based plan for three years. Most of the enrollees (89 percent) had a choice of health plan. They were compared with more than 128,000 individuals enrolled in a traditional PPO. Those in the HRA-based plan were not subject to cost sharing for preventive or screening services. When examining the mean and standard deviations in use of services, the authors found similar levels of use of preventive and screening services between the HRA-based enrollees and the PPO enrollees over the three-year period. The authors did not use regression analysis. The authors (all connected to Aetna) concluded that the findings support the case for cost sharing that varies with the effect of the use of the service on future costs and health. This would imply support for value-based benefits design and a preference for HRA-based plans over HSA-based plans.

Wharam et al. (2008) examined data from Harvard Pilgrim Health Care in Massachusetts. This study examined the impact of a high-deductible health plan on preventive services with first- dollar coverage and preventive services subject to the deductible. Harvard Pilgrim offered a high-deductible health plan as part of a much larger complex cost-sharing structure. Deductibles counted toward institutional services, whereas copayments were required for office visits and outpatient visits, and there was first-dollar coverage for preventive services. Preventive services with first-dollar coverage included pap smears, mammography, and fecal occult blood testing. In contrast, colonoscopy, flexible sigmoidoscopy, and double-contrast barium enema were subject to the high deductible.

Employers could offer an HRA, but only 1.4 percent of the sample in this study offered one. The study focused mostly on small businesses, with enrollees continuously enrolled from March 2001 to June 2005. The authors used regression analysis and found that switching to a high-deductible health plan had no impact on breast, cervical, or colorectal cancer screening. The study also found that enrollees may have substituted fully covered screening tests, such as fecal occult blood test, for tests subject to the deductible. Note that the study does not appear to have controlled for variation in the deductible level among enrollees with a high deductible and did not account for employer contributions to the HRA in the cases in which an HRA was available.

Impact of Enrollee Knowledge of Cost Sharing

Many of the studies reviewed in this report note that it is unclear whether enrollees understand when preventive services are not subject to either the deductible or any other form of cost sharing. Despite the fact that 84 percent of HSA-eligible plans provided first-dollar coverage for preventive services in 2007,[23] 57 percent of CDHP enrollees reported that their deductible applied to all medical care in 2007 (Fronstin and Collins 2008) and this has remained at 57 percent through 2009 (Fronstin 2009a). It has also been found that patient knowledge of cost sharing declined with the complexity of cost sharing (Marquis, 1983; Reed et al. 2008). The three studies examined in the previous section on the impact of CDHPs on use of preventive services did not find an *increase* in use when those services were not subject to the deductible. Just as important, the studies did not find a *decline* in use of preventive services. Given the complexities of CDHP cost sharing, studies may need to control for the effect of time in the plan as a proxy for knowledge of benefits, with the expectation that time in the plan should increase knowledge of cost sharing. The studies were also limited to plans that were HRA-based. HSA-based plans may have a different effect on use of preventive services.

Medication Adherence

This section reviews five studies have examined the impact of moving to a CDHP on adherence to medication regimens. Fairman, Sundar and Cox (2007) studied two employers that began offering an HSA-based plan in 2006. The study looked at the use of prescription drugs before and after the adoption of the HSA plan. It found that the overall use of brand-name prescription drugs fell and there was some offset from increased use of generic drugs. Furthermore, some enrollees stopped their use of prescription drugs. Some CDHP enrollees increased their use of the mail-order pharmacy option. The study also examined a control group of traditional plan enrollees and found that the switch rate to generic

cholesterol medicines was higher for traditional enrollees than for CDHP enrollees in one (but not both) of the employer plans. The authors conclude that switching to a CDHP does not automatically produce more cost-effective behavior.

Another study examined one employer that offered two HRA-based plans and a traditional plan in 2004 (Greene et al. 2008). This study focued on people using prescription drugs for asthma, cholesterol, depression, hypertension, and ulcers before the availability of the HRA and then examined prescription drug use after enrollment in the CDHP. The study tried to control for selection effects as it found that healthier, better-educated people enrolled in the higher-deductible CDHP. It also found that the higher-deductible CDHP enrollees were more likely than those with traditional coverage and the lower-deductible CDHP to discontinue two of five drug classes. Specifically, use of prescription drugs to treat hypertension and cholesterol fell, whereas there was no change for asthma, depression, or ulcer medications. The study found that 17 percent of the higher-deductible CDHP enrollees taking medicine to treat hypertension in late 2003 were no longer taking the medication in 2004. Among individuals who continued to take medications after moving to a CDHP, there was no observed reduction in adherence.

Parente, Feldman and Chen (2008) examined a large self-insured employer that added an HRA in 2001 in order to see if there were differences in spending and use of prescription drugs between the HRA enrollees and individuals with a three-tier cost-sharing structure. The study was able to control for continuous enrollment in the various plans. It found that CDHP enrollees continued to use brand names and fewer generic drugs in the second year of the program, but the generic drug use reductions did not persist. CDHP enrollees with chronic conditions did not use more drugs than those in other plan designs, despite being above the deductible. CDHP enrollees used more mail-order drugs than PPO plan enrollees in all three years. There was no difference between the CDHP and POS enrollees in mail-order use. CDHP enrollees also spent less than POS enrollees on prescription drugs.

Sedjo and Cox (2009) took a different approach from the other studies. They evaluated an educational program targeted at increasing generic drug use among CDHP enrollees one year after enrolling in the CDHP. The CDHP enrollees who received the educational outreach were more likely to have converted to lower-cost generic alternative antihypertensive medication, compared with enrollees in the CDHP who did not receive the educational outreach. Increases in use of lower-cost generic alternative medications were observed for the treatment of depression, cholesterol, and ulcers, but none were statistically significant. The outreach intervention did not increase medication persistence, but was evaluated at a point in time instead of continuously. The authors note that reviews of the literature have shown that educational material alone is ineffective on various health outcome measures. Instead, the authors suggest that an intervention is necessary to encourage CDHP enrollees to utilize lower-cost alternatives.

Chen, Levin, and Gartner (2010) examined adherence to maintenance drugs using 33 employers who adopted a full replacement CDHP in 2006. Data from 2005 and 2006 were used and were compared with enrollee experience from 47 employers with traditional coverage. There may be selection issues not controlled for in the study as the traditional coverage enrollees had the option to enroll in the CDHP but chose not to enroll. The employers may or may not all have been part of UnitedHealthcare, as all of the authors were affiliated with the insurer. The study tried to limit the analysis to people with asthma, cardiac conditions, diabetes, epilepsy, hypertension, cholesterol, rheumatoid arthritis, and thyroid conditions. These are all chronic conditions, which could mean everyone examined in the CDHP reaches the deductible each year, which changes the impact of the deductible on behavior. The study found that utilization of prescription drugs decreased in *both* types of plans, but declined more for the CDHP population. This raises a side question as to why utilization would drop in the traditional plan, which was not addressed in the paper. It terms of the main findings, after enrolling in the CDHP individuals became less likely to refill drugs for cardiac conditions and cholesterol. They had poorer drug compliance for asthma, cardiac, and cholesterol, and terminated the drug supply earlier than traditional plan patients. The authors' greatest concern is poor compliance with cholesterol medications. Adherence was consistently and significantly lower for CDHP patients by all measures. It should be noted that the study did not control for plan design differences. Variation in deductibles was not accounted for and neither were differences in cost sharing above the deductible. And cost sharing for traditional coverage was not controlled for. The authors conclude that controlling for such information would not change the conclusions of the study.

Impact on Emergency Room Use

Only one study was found that examined the impact of moving to higher deductibles on emergency room use. Wharam, Landon et al. (2007) examined the high-deductible health plan offered by Harvard Pilgrim Health Care. As mentioned above, Harvard Pilgrim offered a high-deductible health plan as part of a much larger complex cost-sharing structure. Deductibles counted toward institutional services, whereas copayments were required for office visits and outpatient visits, and there was first-dollar coverage for preventive services. Employers could offer an HRA, but only 1.4 percent of the sample in this study offered one and the study focused mostly on small businesses.

Emergency room visits were subject to the high deductible, and there was a $100 co-payment required after the deductible was met. The co-payment is waived when individuals were admitted to the hospital. The study found that emergency room visits among high-deductible health plan enrollees fell after a move to the higher deductible, whereas they were unchanged among traditional plan enrollees. Overall, there was no change in the number of first visits to the emergency room, but there was a big drop in repeat visits. In contrast, the number of repeat visits among traditional plan enrollees increased. The authors determined that low-severity visits accounted for most of the drop in emergency room visits among high-deductible health plan enrolless, but there was also a slight (though not statistically significant) decline in high-severity visits. Admissions from emergency room visits dropped slightly among high-deductible health plan enrollees, while they increased among traditional plan enrollees. It is important to note that these findings should not be generalized to the experience that might be found among CDHP enrollees.

Impact on Quality

Only one study was found that attempted to determine the impact that CDHP enrollment has on quality of health care received. Wilson et al. (2009) examined 11 HEDIS measures (the Healthcare Effectiveness Data and Information Set) from an NCQA-accredited health plan in 2006 for CDHP enrollees and all other enrollees. The study looked at persons with diabetes, asthma, depression, cardiovascular disease, low-back pain, and persons taking persistent medications for specific conditions. The study found that CDHP enrollees received higher quality of care in areas related to low-back pain, eye exams, and nephropathy screening for diabetes. No difference was found for medication management for persons with depression and asthma, annual monitoring for persons taking persistent medications, cholesterol management for persons with cardiovascular disease, or HbA1c testing and low-density lipoprotein screening for persons with diabetes.

Impact of Employer Contributions on Health Care Use and Spending

Only one study was found that examined the impact that employer contributions to the account had on total health spending. Lo Sasso, Helmchen, and Kaestner (2010) used data from an insurer that offered mostly HRA plans in the small group market. The study found that for each additional dollar contributed by the employer into the account, total spending increased $1.20, with the entire amount spent on outpatient services and prescription drugs. In contrast, out-of-pocket spending was not affected by the amount that the employer contributed to the account.

The authors report that the insurer was unique in that individual contributions to the HRA were allowed, even though a key feature (also noted in the paper) of HRAs is that individuals are not able to contribute to the account. It is unclear how this was possible. The authors also note that they were not able to separate employee contributions from employer contributions in the data set. Thus, it is unclear if the results from this study can be generalized to CDHPs, especially given the complicated plan design. For instance, inpatient stays and outpatient surgery were not reimbursable from the account, nor were they subject to the deductible: There was a separate hospital/surgery deductible. Furthermore, prescription drugs used to treat chronic conditions were not reimbursable from the account, nor were they subject to the deductible. Enrollees were subject to prescription drug co-payments, which could not be paid from the account.

Conclusion

Employers began offering consumer-driven health plans in 2001, when a handful started offering HRAs. They then started offering HSA-eligible plans after the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 included a provision to allow individuals with certain high-deductible health plans to contribute to an HSA.

Since the introduction of CDHPs in 2001, the percentage of employers offering them has grown. Surveys show that the percentage of employers offering an HRA- or HSA-eligible plan increased from below 5 percent in 2005 to between 12–15 percent by 2009. Growth in offer rates can be seen across all firm sizes. However, recently, the percentage of small firms that offered a CDHP declined while larger firms continued to add a CDHP as an option. Overall, 19.1 million, or 11 percent of people with either employment-based coverage or individually purchased insurance, were enrolled in a CDHP in 2009. More recent data suggest that by 2010, 10 million people were in an HSA-eligible plan. There are no comparable data yet for HRA enrollment.

Generally, premiums for CDHPs were lower than premiums for non-CDHPs. Growth in premiums varies both by type of plan and over time. In 2009, HSA-eligible premiums increased slightly faster than non-CDHP premiums, increasing 3.5 percent and 2.8 percent, respectively. Premiums in HRA-based plans decreased 4.3 percent. However, CDHP premiums may be lower than non-CDHP premium simply because the CDHP population is healthier, and there is some evidence of this. One study found that while actual savings ranged from a high of 15.5 percent to a low of –4.7 percent, and average savings were 4.8 percent, most of the savings were due to fact that younger, healthier workers choose CDHPs; the study concluded that once typical risk- and benefit-adjustment factors were taken into account, CDHPs saved only 1.5 percent on premium costs.

A number of studies have been conducted in the past few years that have examined the impact of CDHPs on the use of health care services. The studies agree that use of preventive services did not change (upward or downward) as a result of the CDHP. Concerning how CDHPs affect prescription drug use, studies found that overall use of brand-name prescription drugs fell and there was some offset from increased use of generic drugs, although some enrollees stopped their use of prescription drugs. CDHP enrollees increased their use of the mail-order pharmacy option. And overall use of prescription drugs among CDHP enrollees with certain chronic conditions fell, or did not increase when enrollees met their deductible. One study found that the financial incentives of the plan are not sufficient in driving behavior and that educational outreach also matters.

There is evidence that emergency room use declined when plan enrollees were subject to higher deductibles, though the research should not be generalized to a CDHP setting. There is also evidence that CDHP enrollees received higher quality care than members of other types of plans in areas related to low-back pain, eye exams, and nephropathy screening for diabetes. No difference was found for medication management for persons with depression and asthma, annual monitoring for persons taking persistent medications, cholesterol management for persons with cardiovascular disease, or HbA1c testing and low-density lipoprotein screening for persons with diabetes.

Most of the research to date has focused on individuals in HRA-based plans. Little systematic research has been conducted on HSA-eligible enrollees. While HRAs and HSA-eligible plans look a lot alike, the differences are significant enough to warrant separate analyses of the impact of the plans. Also, most of the research to date has focused on plan design and has ignored the impact of the consumer-driven account on use of health care services and overall spending. Individual contributions to HSAs and employer contributions to both HSAs and HRAs may affect the use of health care services. Furthermore, account balances may have an effect as well: Individuals may use health care services differently, depending on how much money is being contributed to the account, especially relative to the deductible; amounts rolled over; and portability of the account. Despite the growing body of evidence on the effect of CDHPs on cost and quality, there are many unanswered questions.

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Endnotes

[1] Definity Health and Lumenos were the most well-known third-party administrators of HRAs. Early adopters of Definity Health included Aon, Budget, Charter Communications, CompFirst, Countrywide, CVS Pharmacy, Dade Behring, Hannaford Brothers, Louisiana State University, Medtronic, PWPipe, Raytheon, Ridgeview Medical Center, Scientific Atlanta, Supervalu, Textron, University of Minnesota, WelchAllyn, Wise Business Forms, and Woodward. Early adopters of Lumenos included Abbott Laboratories, CIBA Vision, Federated Department Stores, Gerber, Macy's, Novartis, Pharmacia, Pitney Bowes, Radnor Holdings, StyroChem, and WinCup. Definity Health was acquired by UnitedHealthcare in 2004, and Lumenos was acquired by Wellpoint in 2005.

[2] The Ruling and Notice were published in *Internal Revenue Bulletin* (2002–28), dated July 15, 2002, and can be found at http://benefitslink.com/IRS/revrul2002-41.pdf and www.irs.gov/pub/irs-drop/n-02-45.pdf (last accessed July 2010).

[3] See www.forrester.com/ER/Research/Brief/Excerpt/0,1317,15958,00.html (last accessed July 2010).

[4] See www.accessmylibrary.com/coms2/summary_0286-20873836_ITM (last reviewed July 2010).

[5] See www.treas.gov/offices/public-affairs/hsa/pdf/fact-sheet-dramatic-growth.pdf (last accessed July 2010).

[6] See *Inside Consumer-Directed Care* (Nov. 4, 2005).

[7] See http://ehbs.kff.org/ (last accessed July 2010).

[8] See www.mercer.com/ushealthplansurvey (last accessed July 2010).

[9] See www.towerswatson.com/press/1895 (last accessed July 2010).

[10] See www.ahipresearch.org/pdfs/2009hsacensus.pdf for the most recent AHIP HSA census (last accessed July 2010).

[11] See www.aappo.org/userfiles/File/2009%20CDHP%20Study/CDHP_Final_Sm.pdf for the 2008 report and www.aappo.org/fncDownload.cfm?newsID=140 for the 2009 report (last accessed July 2010).

[12] See http://healthtrakglobal.com/Docs/CHS2010.pdf (last accessed July 2010).

[13] Personal communication.

[14] Detailed methodological information can be found in (Fronstin, Findings from the 2009 EBRI/MGA Consumer Engagement in Health Care Survey 2009).

[15] See http://newsroom.cigna.com/images/56/1209_CIGNA%20ChoiceFund_Study.pdf for the 2009 study, http://newsroom.cigna.com/images/56/825638_ChoiceFund_Study.pdf for the 2008 study, and http://cigna.tekgroup.com/images/56/CIGNA_CDHP_Study.pdf for the 2007 study (last accessed July 2010).

[16] See Exhibit 7.26 in http://ehbs.kff.org/pdf/2009/7936.pdf (last accessed July 2010).

[17] The most recent release can be found at www.aetna.com/news/AHF_study.pdf (last accessed April 2010).

[18] See www.uniprise.com/about/media/dox/CDHvsPPOStudyResultsBrochure.pdf (last accessed July 2010).

[19] See www.milliman.com/expertise/healthcare/publications/rr/pdfs/consumer-driven-impact-studyRR-04-01-08.pdf (last reviewed July 2010).

[20] See www.ehealthinsurance.com/content/ReportNew/0215052004HSA1stYrRev.pdf (last reviewed July 2010).

[21] See www.actuary.org/pdf/health/cdhp_may09.pdf (last accessed July 2010).

[22] Nair, et al. (2009) is mentioned only in this endnote because of unanswered questions regarding the study. It examined the impact of moving to a full replacement HRA on use and spending for members with chronic conditions for one large employer in 2005. It found a 35.7 percent decrease in outpatient visits, 34.3 percent decrease in diagnostic visits, 31 percent decrease in number of prescriptions, 90 percent lower chance of having an emergency room visit, 65 percent lower chance of

having an inpatient visit, and 27.5 percent overall decline in medical spending. The unanswered questions relate to the comparison group of 4,397 PPO enrollees generated from 35 health plans. These enrollees experienced a 21.9 percent decrease in outpatient visits, 19.9 percent decrease in diagnostic visits, 3.9 percent increase in number of prescriptions, 41 percent lower chance of having an emergency room visit, 32 percent lower chance of having an inpatient visit, and 14.7 percent overall decline in medical spending. Given that the decline in use and spending in the PPO is not explained in the paper at a time when costs were increasing, it is unclear how meaningful both the PPO and CDHP results are from this paper.

[23] See www.ahipresearch.org/pdfs/HSA_Preventive_Survey_Final.pdf (last accessed July 2010).

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