

# ASPE RESEARCH BRIEF

OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION  
OFFICE OF HEALTH POLICY - U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

## ACTUARIAL VALUE AND EMPLOYER-SPONSORED INSURANCE

### SUMMARY

- According to preliminary estimates, the overwhelming majority of employer-sponsored insurance (ESI) plans meets and exceeds an actuarial value (AV) of 60 percent. An estimated 1.6 to 2.0 percent of individuals covered by employer-sponsored insurance (ESI)—approximately 2.6 to 3.2 million individuals—are estimated to be enrolled in plans that have an actuarial value below 60 percent when AV is assessed relative to a benchmark set of services such as the services covered in the Federal Employees Health Benefits Program Blue Cross/Blue Shield Preferred Provider Organization (FEHBP-PPO) plan.
- According to this preliminary analysis, the choice of a broader versus a narrower benchmark set of services is likely to have minimal impact on the estimated number of enrollees in plans with AVs below 60 percent. A hypothetical example of a narrower benchmark set of services (relative to the FEHBP-PPO plan) that excludes coverage for rehabilitative services, durable medical equipment, acupuncture and chiropractic services, and home health services is used to estimate this difference. This set of excluded services accounts for a small share of the total cost (5 percent of the total of covered services in the broader benchmark), so using a narrower benchmark increases the estimated AV of each plan by only a small amount. Further, because there are very few enrollees in plans with AVs below 60 percent when assessed against a broader benchmark, using a narrower benchmark has very little effect on the estimated number in plans with AVs below the 60 percent threshold. The estimated number of individuals in ESI plans with AVs below 60 percent

### ABOUT THIS RESEARCH BRIEF

This paper explores the distribution of plan AVs for individuals enrolled in employer-sponsored insurance. This brief was written by Pierre L. Yong, M.D., M.P.H., John Bertko, F.S.A., M.A.A.A., Richard Kronick, Ph.D.

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declines very slightly to approximately 2.2 to 2.9 million when AV is assessed relative to a narrower benchmark set of services.

- Plans with benchmark AVs falling below 60 percent under either a broader or narrower standard are likely PPO plans with high deductibles, in which most individuals do not reach the annual deductible, or so-called mini-med plans, which have low annual limits.

## INTRODUCTION

This paper explores the distribution of plan AVs for individuals enrolled in employer-sponsored insurance (ESI). Note that there are many important issues related to calculating AV that are beyond the scope of this paper. For example, issues around the choice of data for calculating AVs (e.g., plan specific data or a national standard dataset) have been discussed in a [brief released by the American Academy of Actuaries](#). Many factors that may have large impacts on premiums are not discussed, including the health status of the covered population, the prices paid by plans for medical services and items, the breadth of the provider network, the plan's coverage of out-of-network care, and use of utilization management tools. This paper is intended for discussion only and is not guidance related to health reform.

## METHODS FOR CALCULATING ACTUARIAL VALUES OF EMPLOYER-SPONSORED INSURANCE

In this draft white paper, we report on the distribution of AVs of ESI plans. This preliminary analysis was conducted by Actuarial Research Corporation (ARC), in collaboration with John Bertko, the senior health actuary at the Center for Consumer Information and Insurance Oversight/Centers for Medicare and Medicaid Services.

AV is calculated as the share of expenses for covered services paid by a plan for a given population, where the numerator is the expenses paid by the plan and the denominator is the total cost of covered services. The total cost of covered services (i.e., the denominator) depends on at least two parameters—first, the services covered, and second, the cost-sharing structure of the plan. The effect of the services covered on the denominator should be clear—if a plan covers a broad set of services the denominator will be larger than if a plan covers a narrow set of services. The effect of cost-sharing on the denominator is through the relationship between cost-sharing and utilization. A plan with larger amounts of patient cost-sharing will have lower levels of expected total spending than a plan with lower amounts of patient cost-sharing, because patient cost-sharing levels affect utilization.

Given these parameters, consider the following approaches to determining the total cost of covered services for AV calculations: 1) an internal benchmark for covered services and cost-sharing and 2) an external benchmark for covered services and an internal benchmark for cost-sharing—a hybrid approach (Figure 1).

**Figure 1.** Summary of approaches to estimating the total cost of covered services for AV calculations

Approach	Benchmark	
	Covered services	Cost-sharing structure
Internal	Internal	Internal
Hybrid	External	Internal

For the purposes of this analysis, we primarily estimated the total cost of covered services utilizing a hybrid approach because this method could be used to establish a reference point for the breadth and generosity of ESI plans. We also conducted the analyses using the internal approach. These results are reported below.

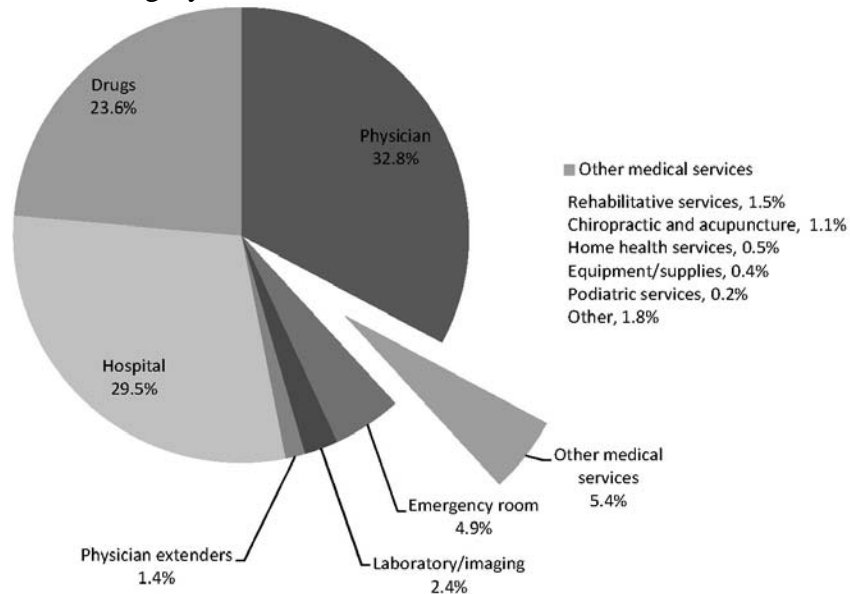
Two external benchmarks for services were selected as illustrative examples. The first uses the services covered by the Federal Employees Health Benefits Program Blue Cross/Blue Shield Preferred Provider Organization plan (FEHBP-PPO).<sup>1</sup> The FEHBP-PPO plan, the “broader benchmark,” was chosen for this exercise because ARC had previously conducted analyses using that plan, and had detailed information on the services covered by the plan. For the purposes of this analysis, we also consider a second benchmark, the “narrower benchmark,” which covers a more limited set of health services—physician and mid-level practitioner care, hospital and emergency room services, pharmacy benefits, and laboratory and imaging services. Very few plans in the market today do not cover all of these services.<sup>2</sup>

Rehabilitative services, durable medical equipment, acupuncture and chiropractic services, and home health services are among the excluded services of the narrower benchmark. While many employer plans currently cover most or all of the services excluded from the narrower benchmark, we excluded these services from the narrower benchmark in this hypothetical example to assess the impact the choice of services included in the benchmark had on the estimated fraction of enrollees in ESI plans with AVs below 60 percent. The services excluded in the narrower benchmark account for 5 percent of the total cost of the services in the broader benchmark (Figure 2).

<sup>1</sup> Services in the FEHBP-PPO plan include physician and mid-level practitioner services, hospital and emergency room services, pharmacy benefits, equipment/supplies, laboratory and imaging services, midwife services, complementary and alternative medicine (chiropractic and acupuncture services), physical and occupational therapy, mental health, and podiatric services. Benefits in this example do not include dental or vision services.

<sup>2</sup> Based on data from the Bureau of Labor Statistics’ National Compensation Survey, 2009.

**Figure 2.** Percentage of total cost for covered medical services by service category



Source: ARC analysis of Medical Expenditure Panel Survey (2005).

The AVs for plans representative of those covering persons under age 65 with ESI through active employment were calculated by evaluating the cost-sharing parameters of the plans, for services covered under the external benchmark, against the expenditures and utilization of a standard population. This was done by means of a claims repayment program, which evaluated the plan’s cost sharing parameters (copayments, deductible, coinsurance, out-of-pocket maximum and benefit maximums) against the covered services as defined by the benchmark (see Appendix A for a technical description of methodology).

## RESULTS

### *Hybrid Approach*

Using the set of services covered by the FEHBP-PPO plan, our preliminary results suggest that an estimated 1.6 to 2.0 percent of individuals—approximately 2.6 to 3.2 million people—are enrolled in ESI with a benchmark AV below 60 percent in today’s marketplace (Figures 3 and 4).

**Figure 3.** Cumulative percentage and estimated number of individuals enrolled in employer-sponsored insurance under age 65 by actuarial value of the plans, estimated values for 2010\*

Actuarial value (%)	Cumulative percentage of individuals enrolled in ESI plans (%)	Number of enrolled individuals (millions)
60	2	3
70	4	6
80	20	32
90	60	96
100	100	160

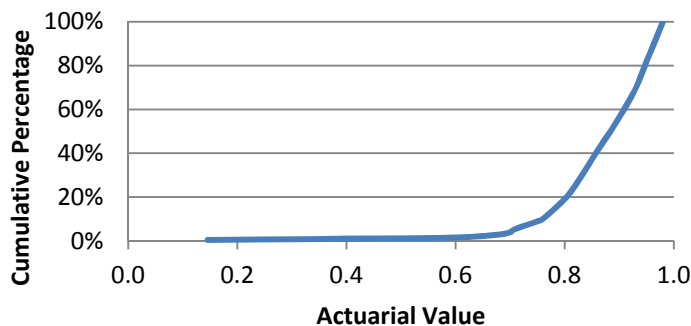
} 98%

Key: ESI = employer-sponsored insurance

\* Note: Cost of covered services was calculated using the set of covered services of the Federal Employees Health Benefits Program Blue Cross/Blue Shield Preferred Provider Organization plan as an external benchmark and the cost-sharing structure of the plan whose AV is being estimated.

Source: Composite of ARC analysis of Bureau of Labor Statistics National Compensation Survey plan provision data (2005), HRET/KFF Employer Survey data (2006-2010), adjusted for estimated buy-down in the small group market, induction, and mini-med plan enrollment.

**Figure 4.** Cumulative percentage of individuals enrolled in employer-sponsored insurance under age 65 by actuarial value of the plans, estimated values for 2010\*



\* Note: Cost of covered services was calculated using the set of covered services of the Federal Employees Health Benefits Program Blue Cross/Blue Shield PPO plan as an external benchmark and the cost-sharing structure of the plan whose AV is being estimated.

Source: Composite of ARC analysis of Bureau of Labor Statistics National Compensation Survey plan provision data (2005), HRET/KFF Employer Survey data (2006-2010), adjusted for estimated buy-down in the small group market, induction, and mini-med plan enrollment.

We re-analyzed the data using the “narrower benchmark” plan described above. Using the “narrower benchmark” to define the external benchmark set of services, the AVs of ESI plans increased minimally—in most plans by less than 2 percentage points. Because few people are enrolled in ESI plans with AVs between 58 and 60 percent when assessed relative to the services in the broader benchmark, the shift in external benchmark to a plan which covers fewer services has little impact on the percentage of individuals enrolled in plans with AVs below 60 percent. Approximately 1.4 to 1.8 percent of individuals with ESI—about 2.2 to 2.9 million people—are estimated to be enrolled in plans with AVs less than 60 percent when the “narrower benchmark” is used to estimate AVs (Figure 5).

**Figure 5.** Percentage of individuals enrolled in employer-sponsored insurance plans with actuarial values less than 60 percent, by external benchmark for services covered<sup>^</sup>

<b>Benchmark for services covered</b>	<b>Estimated percentage enrolled in ESI plans with AVs &lt;60 percent (%)</b>
FEHBP-PPO plan	1.6 – 2.0
Narrower benchmark*	1.4 – 1.8

Key: ESI = employer-sponsored insurance; FEHBP-PPO = Federal Employees Health Benefits Program Blue Cross/Blue Shield Preferred Provider Organization

<sup>^</sup> Note: Cost of covered services was calculated using the set of covered services of the Federal Employees Health Benefits Program Blue Cross/Blue Shield Preferred Provider Organization plan as an external benchmark and the cost-sharing structure of the plan whose AV is being estimated.

\* The narrower package of services includes only coverage for physician and mid-level practitioner (e.g., nurse practitioners and physician assistants) services, hospital and emergency room services, pharmacy benefits, and laboratory and imaging services.

Source: Composite of ARC analysis of Bureau of Labor Statistics National Compensation Survey plan provision data (2005), HRET/KFF Employer Survey data (2006-2010), and estimated mini-med total enrollments.

This analysis demonstrates that the choice of a broader or narrower benchmark has little impact on the number of enrollees in plans with AV below 60 percent.

### *Internal Approach*

The analyses above use the hybrid strategy of computing AV, using an external benchmark for covered services and an internal benchmark for cost-sharing. In an alternative approach, the internal benchmark approach, the AV of a plan is calculated as the share of expenses for the services covered by a plan (i.e., the set of services is determined by the plan) paid for a standard population given the plan’s own cost-sharing structure. In this approach, both the covered services and the cost-sharing structure utilized for determining the cost of covered services (i.e., the denominator) are derived from the plan whose AV is being estimated. Therefore the consideration of a broader or narrower benchmark is not relevant.

Using the internal benchmark approach, we estimate approximately 1.2 to 1.6 percent of individuals—approximately 2.0 to 2.6 million people—are enrolled in employer-sponsored insurance (ESI) with an AV below 60 percent in today’s marketplace.<sup>3</sup>

### **Summary**

According to this preliminary analysis, the vast majority—at least approximately 98 percent—of enrollees in ESI are enrolled in plans that meet and exceed an AV of 60 percent whether a hybrid or internal approach is utilized to assess AV. Because there are so few individuals in plans with AVs below 60 percent when assessed against a relatively broad package of services, and because

<sup>3</sup> Composite of Actuarial Research Corporation (ARC) analysis of Bureau of Labor Statistics National Compensation Survey plan provision data (2005), HRET/KFF Employer Survey data (2006-2010), and estimated mini-med total enrollments.

services such as hospital, physician, and pharmacy benefits account for such a large fraction of the spending in the relatively broad package, the choice of a broader or narrower package of services as a benchmark in the AV calculation using the hybrid approach has little effect on the estimated fraction of people in plans with an AV below 60 percent. Plans with benchmark AVs falling below 60 percent are likely PPO plans with high deductibles, in which most individuals do not reach the annual deductible, or so-called mini-med plans, which have low annual limits.

*Questions for comment*

- What are the tradeoffs of using a broader or narrower set of benchmark services for determination of AV? What are the implications of using each?
- What are the implications of using an internal or hybrid approach to calculating AVs? Are there other approaches that should be considered? How might these other approaches alter the estimated distribution of AVs for individuals enrolled in ESI?
- How do these results, using this methodology, compare to others based on different data and assumptions?

Please send comments to [actuarialvalue@cms.hhs.gov](mailto:actuarialvalue@cms.hhs.gov)

**APPENDIX A**  
Technical Description of Combined Employer-Sponsored Insurance  
Actuarial Value Distribution

## **INTRODUCTION**

The composite 2010 ESI actuarial value distributions were based on a 2009 analysis done for DOL from the BLS National Compensation Survey (NCS) using 2005 data. The data were representative of plans covering persons under age 65 with ESI through active employment. The expenditure profiles used in analyzing the plans were based on persons with employer sponsored insurance from the Medical Expenditure Panel Survey-Household Component (MEPS-HC). These NCS-based estimates were then adjusted to reflect the small effect that induced demand has on actuarial values. The results were then projected to 2010 based on our work with Kaiser Family Foundation/Health Research & Education Trust (KFF/HRET) data for 2006 through 2010. The final step was then to augment the low-end of the distribution based on estimated numbers of so-called mini-med plans (whose limited benefit designs are poorly reflected in both the NCS data and the KFF/HRET survey).

## **NATIONAL COMPENSATION SURVEY DISTRIBUTION FOR 2005**

This description of how the NCS distribution was calculated is excerpted from “Initial Analysis of the Dispersion of Employer-Sponsored Health Insurance Actuarial Value in the National Compensation Survey”.<sup>4</sup> While it does not reflect the current calculation of actuarial values by ARC, which has seen slight revisions in methodology over time, the overall logic of repaying claims against a standard dataset remains the same in our current model.

### *Data and Methods*

The actuarial values were derived by running a claims payment program against a standard population. NCS data on provisions such as covered services (e.g., inpatient hospital, outpatient hospital, physician visits, mental health, and prescription drugs) and cost-sharing parameters (copayments, deductibles, coinsurance, out-of-pocket maximums, and presence of benefit maximums) were recoded for use in the claims payment program.

The provisional data were consistent with the publication “National Compensation Survey: Employee Benefits in Private Industry in the United States, 2005.” According to this document:

“The National Compensation Survey (NCS) healthcare and retirement series provides information on detailed provisions of medical care, prescription drug, dental, vision, defined benefit, and defined contribution plans. The portion of the NCS sample from

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<sup>4</sup> Initial Analysis of the Dispersion of Employer-Sponsored Health Insurance Actuarial Value in the National Compensation Survey, Actuarial Research Corporation research note prepared for US Department of Labor’s Employee Benefits Security Administration (EBSA) under contract DOL J089327412, May 20, 2009.



which estimates on employee benefits are made covers all private sector establishments in the United States, with the exception of farms and private households.” In addition, “(t)he 2005 NCS data on provisions of healthcare... plans were obtained from 3,227 private industry establishments representing approximately 102 million workers.”

...

NCS data is collected from establishments with each observation called an occupational quote. After imputations performed by BLS staff, the data set was provided to ARC containing 32,253 occupational quotes. After zero-weight quotes, quotes without both medical and prescription drug coverage, quotes with premiums that did not cover medical coverage, and quotes with unknown plan types were dropped, ARC’s analysis was based on the remaining 24,702 quotes.

The individual plan specification records were then run through an automated ratebook to generate the expected benefit payments associated with each plan’s provisions. [See ratebook logic description below]. The actuarial value for a given plan is the total dollars of benefits that would have been paid, divided by the total dollars of recognized charges. Once an actuarial value was attached to each plan, the data was sorted by actuarial value. The sorted data was split into weighted deciles by actuarial value. Weights reflect the total number of covered workers represented by a given record, so the deciles are based on equal numbers of enrollees, not establishments. Records were tagged according to their actuarial value deciles. The data was then resorted according to total premium for single coverage and tagged with weighted decile tags according to single total premium amounts.

#### *Ratebook logic*

In this exercise, actuarial values are computed by taking health insurance plan parameters and applying them to the expenses and utilization of a standard population. The weighted average covered expenses and benefits paid by a specific plan for the entire population are then used to determine the richness of the plan. That is, actuarial value is equivalent to the “benefit rate”, which is defined as the ratio of benefits paid to underlying average covered expenses. In our model, multiple plans can be valued at the same time on the same underlying population. In addition, a behavioral response (also known as induction) can be computed for each plan relative to a starting plan that is designated as “average” coverage. Plans with coverage richer than average may cause increases in spending (an increase in demand, and in the underlying covered expenses) while plans with poorer than average coverage may result in a decrease in spending.

In our model, the starting population is taken from the AHRQ MEPS-HC and controlled to a starting per capita covered expense that is consistent with the National Health Accounts. As the plans we are looking at are employer sponsored health insurance plans, the population used here is those persons under age 65 with employer sponsored insurance (for other applications, other subpopulations can be used). In general, spending and utilization for four main services (hospital, physician, prescription drugs, and other

health professionals) provides the basis for the covered expenses. For persons with private insurance, total spending here is the sum of private insurance plus out of pocket spending. Spending by other (government) channels is ignored. As noted above, the spending for this population has been controlled to be consistent with the CMS Office of the Actuary's National Health Accounts, although the underlying spending can be controlled to any value as needed.<sup>5</sup>

## **ADJUSTMENTS TO THE NATIONAL COMPENSATION SURVEY DISTRIBUTIONS**

The NCS distributions of actuarial values were adjusted in order to take into account induced demand, trends to 2010 and the inclusion of mini-med coverage.

*Induction:* The original NCS estimates had used a static expenditure distribution, without adjusting for induction impacts. If the standard medical expense distribution associated with the standard population is defined to be consistent with a particular underlying average plan richness, then an adjustment can be made to increase the spending if the plan being modeled has richer-than-average benefits, or decrease the spending if the plan being modeled is poorer-than-average. This effect was imposed on the NCS distribution by looking at the previously modeled KFF/HRET estimates from 2006 to 2010, where we had tabulations both with induction and without. The adjustment had the greatest effect on very low actuarial values, but even there an un-inducted actuarial value of 0.71 declined only to 0.70.

*Projecting to 2010:* The induction-adjusted NCS 2005 data was then projected to 2010 based on the observed change in the KFF/HRET distributions of actuarial values between 2006 and 2010. The small observed decline in richness (greater at the lower percentiles) was smoothed, and then applied to the NCS distribution. Here too the effect of the adjustment was at its greatest at the lowest actuarial values, but was still modest – at the 10<sup>th</sup> percentile of actuarial value, the annual decline in value was only about one percentage point per year.

*Mini-med coverage:* The final adjustment was for so-called mini-med coverage: to deal with the lack of detailed information on benefit maximums. The lowest percentiles of the distribution were replaced, assuming a prevalence of such plans within employer sponsored coverage of 1.5 million out of 150 million covered lives, and a uniform distribution of actuarial values for these plans below 70 percent.<sup>6</sup>

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<sup>5</sup> The MEPS distribution of claims might produce somewhat different results than the claims distribution from insurers, in part because respondents with very high levels of expenditure are underrepresented in the MEPS data, although the differences are not likely to be large.

<sup>6</sup> The Department granted waivers to plans covering approximately 3 million lives, which included the estimated 1.5 million individuals enrolled in mini-med plans and an additional 1.5 million individuals enrolled in plans with annual dollar limits below regulatory requirements (e.g., individuals enrolled in plans with an annual dollar limit of \$500,000 instead of \$750,000).



