Actuarial Value under the Affordable Care Act: Plan Valuation with the Consumer in Mind

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The actuarial values estimated in this report were developed by the authors using a simulation model together with a sample population and medical claims data from the 2008 Thomson Reuters MarketScan database. Medical claims costs were trended to 2010 price levels.

Executive Summary

Beginning in 2014 new health care reforms will improve access to health plans in the individual and small group markets and provide new information to inform consumer choice. Among other things, the reform law requires classification of individual and small group health plans into actuarial value tiers that will categorize plans by level of cost sharing. Recognizing the role of actuarial value in supporting informed consumer choice, Consumers Union has requested that Towers Watson explore issues that arise in implementing actuarial value under the ACA.

Actuarial value is a summary measure of a health plan's generosity or how much it might pay for a group of people with varying levels of medical expense. The choices of data, methods and assumptions used to estimate actuarial value will have important consequences for consumers and other stakeholders affected by health care reform when it is fully implemented in 2014. Preliminary testing of actuarial value tiers shows that consumers will use these classifications to navigate their health plan choices – indicating that reliable, comparable estimates are needed. In addition, consumers who are entitled to a federally financed tax credit to help them purchase coverage will find the amount of that credit tied to the cost of a silver (.70 actuarial value) plan. Some people receiving tax credits will also qualify for federally financed cost-sharing reductions, which are to be provided by increasing the actuarial value of the silver plans to statutorily specified levels tied to income.

Models are used to estimate the actuarial value associated with a health benefit design. To achieve the goals of the law, the valuation model must produce accurate and reliable estimates of actuarial value. Microsimulation of medical claims payment has important advantages over ratebook or continuance table estimation approaches, because it can regroup and pay claims according to the unique cost-sharing provisions of each plan. Most health plans today have complex cost-sharing provisions, which are best accommodated with the flexibility of the microsimulation approach. Rate book approaches are less flexible, but a rate book calculator may be easier to develop and implement in the short term.

For both types of models, accurate and reliable claims data from a large and diverse national population is the essential first ingredient for robust estimates of actuarial value. A large population is needed to ensure the accuracy and reliability of the estimates, particularly with regard to high spenders who comprise a small percentage of the population but a high percentage of total expense. The health care expenditure data should come from a population with relatively generous benefits in order to properly value plans with comprehensive benefits and limited cost sharing. To accurately capture a wide variety of health

To achieve the goals of the law, the valuation model must produce accurate and reliable estimates of actuarial value.

plan provisions, the underlying expenditure data must include detail on use of particular services.

The valuation model should address plan provisions that will have a material impact on health plan spending, particularly provisions that are common in current designs. Such cost-sharing provisions include copays, deductibles, coinsurance, out-of-pocket limits, and any benefit limits. Service level detail in the model should distinguish those services where distinct cost-sharing provisions are common, including prescription drugs, inpatient stays, and visits by provider type (including primary care, specialty care, and emergency room care). Both service-specific charges and units of service (such as visits, hospital stays and prescription fills) must be captured from the claims data so that copay and visit limit provisions can be modeled. With this level of detail, a majority of plan designs could be valued in a standardized way.

There will be times when individual actuaries will need to provide professional judgment due to limitations in the data or the valuation model. Too much reliance on individual judgment can threaten the reliability and comparability of actuarial values. Ensuring that consistent data and a comprehensive valuation model are used limits the need for individual judgments and can give consumers greater confidence that the actuarial values are reliable and comparable measures of plan value.

While a reliable and standardized measure of actuarial value can help consumers navigate their health plan choices, it is important to consider the limits of actuarial value. Actuarial value does not help consumers identify which plans might be best at controlling costs or delivering high quality care. Neither does it predict the total expenses that a particular individual will pay. Nonetheless, actuarial value can provide a useful summary measure of plan value that can help inform consumer choice of health plans.

Most health plans today have complex cost-sharing provisions, which are best accommodated with the flexibility of the microsimulation approach.

Background

The Affordable Care Act (ACA) calls for reforms that will facilitate plan competition and consumer choice of health plans beginning in 2014. Among other changes, all plans offered in the individual and small group markets must cover a minimum set of essential health benefits (EHBs) and limit each member's overall cost sharing.

Beginning 2014, actuarial value will be used as a summary measure of plan generosity to serve a number of policy goals. The ACA uses actuarial value standards to: 1) classify individual and small group plans into "metal tiers" that will help consumers compare the relative generosity of plans, 2) implement Exchange-based cost sharing and premium subsidies that will vary by family income, and 3) determine whether an employer plan meets minimum standards for generosity.

Preliminary testing of actuarial value tiers shows that consumers will use these classifications to navigate their health plan choices.[1] As such, reliable estimates of actuarial value will be critical to consumer choice. Recognizing the importance of actuarial value in supporting informed consumer choice, Consumers Union has requested that Towers Watson explore how the choices of data, methods and assumptions used to estimate actuarial value will determine whether the actuarial value estimates will effectively serve the purposes envisioned in the ACA.

Actuarial Value under the ACA

In general terms, actuarial value (AV) is a measure of health plan generosity. It is the percentage of allowed charges paid by a health plan across a population of both healthy and sick people. For example, a large employer health plan typically pays 80 percent of all covered charges, resulting in an actuarial value of .80.[2] Specific definitions of actuarial value can differ depending on the purpose of the valuation.

Under the ACA, actuarial value has a distinct definition that serves the goals of the Act. The Department of Health and Human Services (HHS) has defined actuarial value as "the percentage of the total allowed cost of benefits" that would be paid by a plan if it were offered to a "standard population."

In general terms, actuarial value (AV) is a measure of health plan generosity.

[1] Kleimann Communications Group, *Early Consumer Testing of Actuarial Value Concepts*, Consumers Union, September 2011.

[2] McDevitt, Roland; Gabel, Jon; Lore, Ryan; Pickreign, Jeremy; Whitmore, Heidi and Brust, Tina. "Group Insurance: A Better Deal for Most People than Individual Plans." *Health Affairs*, 29(1):156-164 (2010).

Individual and Small Group Plans

In the individual and small group markets, actuarial value is intended to serve as a summary measure of plan generosity, and it is expected that consumers will use this information to compare and understand the relative generosity of plans offered.[3,4] The "total allowed cost of benefits" includes both plan expense and enrollee expense for services included in essential health benefits (EHBs), which encompass ten broad categories of services.[5] Based on these valuations, plans will be classified into tiers according to their actuarial value, including bronze (.60), silver (.70), gold (.80) and platinum (.90).

The ACA also requires that actuarial values be based on a standard population. The intended result is that differences in actuarial value should reflect plan differences in member cost sharing (deductibles, copayments, coinsurance, visit limits, etc.) rather than differences in who is enrolled in the plan or differences in which charges are included in the calculation. By standardizing both the population and allowed charges, two plans with identical cost-sharing provisions should always have identical actuarial values.

Large Group Plans

The ACA applies a different actuarial standard to plans offered by employers with fifty or more employees, and for these large group plans the Act seeks to accomplish goals that differ from those in the Exchanges. Large employers wishing to avoid financial penalties must offer their full-time employees a health plan with an actuarial value of at least .60, referred to as the minimum value standard.6 Large employer plans will not be classified according to the four metal tiers, and these large employer plans are not required to provide the full array of EHB services required of plans in the individual and small group

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[3] Department of Health and Human Services, *Actuarial Value and Cost-Sharing Reductions Bulletin*, February 24, 2012. http://cciio.cms.gov/resources/files/Files2/02242012/Av-csr-bulletin.pdf

[4] By comparison, insurers and actuaries commonly use actuarial value for other purposes. In addition to comparing the value of plans, they also estimate the effects on plan spending that might occur with changes in benefit design. When valuing plans in this context, the actuary would want to use the allowed charges associated with the actual enrolled group to calculate the actuarial values for both the current and modified plan.

[5] Center for Consumer Information and Insurance Oversight, Department of Health and Human Services. *Essential Health Benefits Bulletin*, December 16, 2011; accessed 5/04/2012 at http://cciio.cms.gov/resources/files/Files2/12162011/essential_health_benefits_bulletin.pdf
The ten EHB categories are "(1) ambulatory patient services, (2) emergency services (3) hospitalization, (4) maternity and newborn care, (5) mental health and substance use disorder services, including behavioral health treatment, (6) prescription drugs, (7) rehabilitative and habilitative services and devices, (8) laboratory services, (9) preventive and wellness services and chronic disease management, and (10) pediatric services, including oral and vision care."

[6] Small employers are not subject to penalties if their employees use a tax credit to purchase in the exchange.

markets. Even if the actuarial values for large employers were reported, they would not be strictly comparable to those calculated for Exchange-based plans, because they will be based on a different set of covered charges. However, the underlying charges may be similar as the EHB package is to be equal to the scope of benefits provided under a typical employer plan.

A recent Treasury bulletin[7] suggests that these large group plans will be able to satisfy the minimum value requirement through one of three methods, including the following:

- Valuation with an AV calculator or a minimum value (MV) calculator
- Use of a safe harbor checklist
- Certification by an actuary for plans with nonstandard provisions

The AV calculator that is planned for use by individual and small group plans is based on EHBs, but it appears that Treasury might also allow large group plans the option to use this calculator in calculating actuarial value.[8] In addition, Treasury proposes to develop the minimum value calculator using "claims data reflecting typical self-insured employer plans." The notice proposes that just four core benefit areas, comprising 95 percent of all allowed charges, serve as the basis for the calculation.

Actuarial Value Calculators

This section considers two approaches to valuation: first, the ratebook approach that appears to be what is proposed by Treasury; and second, the microsimulation approach that might accommodate greater flexibility in plan design and require less actuarial judgment than a ratebook.

Ratebooks and Continuance Tables

Historically, a ratebook was literally a book of tables and factors that actuaries used in estimating the costs associated with alternative benefit packages and levels of cost-sharing. For example, a continuance table provides a distribution of overall medical charges at the person level for various percentiles of spending. Using such a table, it is possible to estimate plan expense and aggregate member out-of-pocket costs that would result from a comprehensive medical plan with a deductible, out-of-pocket maximum, and coinsurance. Exhibit 1 shows how a

[7] Internal Revenue Service. "Minimum Value of an Employer-Sponsored Health Plan" (2012). Accessed 5/11/12 at http://www.irs.gov/pub/irs-drop/n-12-31.pdf.

[8] *Ibid.*, p. 8.

continuance table can be used to calculate an actuarial value of .76 for a plan with a $1,000 deductible, 20 percent member coinsurance, and a $5,800 out-of-pocket limit.

EXHIBIT 1
CONTINUANCE TABLE SHOWING DISTRIBUTION OF ALLOWED CHARGES FOR ADULTS IN 2010

Average Charges per Adult = $5,542

Charges up to and including	**Proportion of charges below charge threshold**	**Calculation of Actuarial Value:** (1.00 = 100% of allowed charges for all enrollees)
$0	.000	.122 = deductible of $1,000
$500	.068	
$1,000	.122	
$2,000	.207	.118 = coinsurance 20% of amounts above deductible until total out-of-pocket reaches $5,800 at $25,000 ([.712-.122]*20%=.118)
$3,000	.272	
$4,000	.326	
$5,000	.370	
$10,000	.521	
$25,000	.712	
$100,000	.896	**Actuarial Value of plan= .76** (1.00 - .122 - .118=.76)
$500,000	.984	
$1,000,000	.996	
$7,500,000	1.000	

Source: MarketScan 2008 charges trended to 2010.

The ratebook approach can work very well if the plan design is simple, but it is less precise and requires more judgment when the design is complicated.

This valuation approach can work very well if the plan design is simple, but it is less precise and requires more judgment when the design is complicated. For example, the comprehensive plan described above might be modified to "carve out" prescription drug benefits into a separate package with three tiers of copayments. This would require creation of a new continuance table that excludes prescription drug charges. A new table or formula would be required to estimate the prescription drug benefits and out-of-pocket expense. Additional benefit design variations would require similar adjustments.

Plan provisions can get even more complicated. For example, medical and prescription drug benefits may both be subject to a common deductible and out-of-pocket maximum despite having distinct cost-sharing provisions. Cost-sharing provisions that are tied to service use (such as prescription drug copays, per visit copays, visit limits or hospital day limits) can be difficult to model using

the rate book approach when they interact with comprehensive out-of-pocket maximums as required under the ACA.

Today many ratebooks have been improved by moving them into spreadsheets that facilitate the calculations. Nevertheless, the fixed nature of the tables means that these models still require considerable judgment to account for the aggregate effects of diverse cost-sharing provisions.

Most health plans today have complex cost-sharing provisions similar to those described above, with consequences for the estimation of actuarial value. Prescription drugs typically account for over 20 percent of allowed charges in employer plans, and the most common cost-sharing arrangements are graduated copays. According to the Kaiser Family Foundation's Employer Benefits Survey, about three fourths of employees in employer plans are enrolled in plans that include copays for office visits, often with different copays for different types of providers.[9] This suggests that a ratebook approach may not be the best way to inform consumer choice while minimizing actuarial judgment.

Microsimulation of Claims Payment

One way to address this complexity of diverse plan provisions is through use of a claims payment model. Rather than creating a fixed set of tables and factors in advance, a simulation model retains the flexibility to "pay claims" at the person or family level according to the plan provisions. This approach offers greater versatility and precision in estimating actuarial value, and it allows realistic application of the complex cost-sharing provisions.

Microsimilation offers greater versatility and precision in estimating actuarial value, and it allows realistic application of the complex cost-sharing provisions.

For example, the above comprehensive medical plan with a carve-out prescription drug benefit is easily accommodated. As long as both charge and service use detail is included in the underlying data, a wide variety of plan provisions can be accommodated. If emergency room visits and specialty care visits have unique copayments rather than coinsurance, the impact of these provisions on overall plan payments can be estimated directly, rather than relying on actuarial judgment. Similarly, if there is a limit on mental health visits, then that limit is applied in the simulation of claims payment and reflected in the actuarial value estimate.

In summary, the use of ratebooks is widespread in the insurance industry and these models are well suited for many applications.[10] The simulation approach,

[9] Kaiser Family Foundation and Health Research and Educational Trust. *Employer Health Benefits 2011 Annual Survey* (2011).

[10] For example, rate book approaches can work well for estimating the effect of changing a single plan provision in an existing plan, or when the plan has a simple design such as a comprehensive deductible, coinsurance and out-of-pocket limit.

however, offers greater flexibility with less need for judgment when it comes to valuing complex plans. A ratebook approach may be more feasible in the short term, but a microsimulation model could offer greater precision and flexibility over the long term.

Data Considerations

Whether using a ratebook or microsimulation, the underlying expenditure data are critical to the accuracy of the model. It is essential that the data include spending and utilization that are consistent with what would occur in relatively generous plans.

Key Concepts: Standard Population and Allowed Charges

The underlying expenditure data are critical to the accuracy of the model.

The ACA requires that actuarial value estimates be made using a standard population that reflects the demographics of those purchasing in the market (individual/small group or large group). For comparability, all estimates must reflect a uniform definition of the charges being paid. In the case of the individual and small group markets, this is the EHB package. The allowed charges for the standard population should include all allowed charges associated with EHBs and should not include charges for services not included in EHBs. If plans are allowed to impose internal limits on a particular type of visit, for example, these internal limits should produce a reduction in actuarial value.[11] Charges for visits above the limits should remain in the database and model so long as these charges are associated with EHBs.

Medical Claims Data

Although large employer plans will not be required to offer EHBs, current large employer plans may be the best source of claims data for not only the minimum value calculation required for large group plans, but also for individual and small group market estimates.

First and foremost, we need accurate information concerning the health care use and expenditures for a large and diverse population with relatively generous benefits similar to those included in the EHB package. Claims data that understate spending due to a restricted scope of benefits or high cost-sharing

[11] For purposes of calculating actuarial value for individual and small group market plans, HHS proposes to make any visit limits part of the EHB package – hence, more restrictive limits would not be allowed. For purposes of calculating minimum value for large employers, visit limits would reduce a plan's actuarial value.

would not provide valid estimates. It is simply not possible to simulate claims payment for claims that are not in the database.

Many large employers currently provide comprehensive benefits to their employees and their families, and these claims data are used for many actuarial models.[12] Medical claims data for large employer plans are available from data warehouses, such as the Medstat Group at Thomson Reuters. These organizations compile claims and enrollment data from their clients (carriers and third party administrators) in order to help these clients monitor the performance of their plans and compare that performance against national benchmarks created from the pooled data. The large standardized databases that are created include the health care claims experience of millions of enrollees.

These claims databases are ideal for actuarial modeling for several reasons. First, they include populations with benefits similar to those included in EHBs. Second, they include large numbers of enrollees which are needed to ensure the accuracy and reliability of the claims distribution. Actuarial value models require ample data on high spenders. Less than 5 percent of pre-65 enrollees account for over half of health care spending, and the top 1 percent of enrollees account for about one fourth of all health care spending.[13] The highly concentrated nature of this spending means that a very small percentage of high spenders can have a profound effect on calculation of actuarial value. Finding these high spenders requires starting with a large population. The 2009 MarketScan Commercial Claims and Encounters database includes over 23 million covered lives, with integrated drug claims at the member level. With data from 125 large employers and 13 carriers, the population is broadly representative of the national pre-65 population in the Current Population Survey once weights are applied.[14]

Databases built from the medical claims data for large employer plans are ideal for actuarial modeling.

Finally, the medical claims and associated enrollment data provide all of the detail that is needed to simulate claims payment. These databases provide information on the diagnoses, procedures, allowed charges, and personal characteristics of the members who received these services. This detail can be used in simulation models to accurately estimate plan expense and member out-of-pocket expense that would result from many diverse cost-sharing designs.

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[12] Certain services included in the EHB package, such as habilitative services, treatment for autism, and dental and vision care for children often fall outside the scope of coverage for even large employer plans. These services represent a small portion of overall charges and should not have a material impact on plan spending or actuarial value. To the extent that good charge data are not available for these service categories, either from large employer plans or elsewhere, the data could be improved over time as plans improve their coverage.

[13] Towers Watson analysis of medical and drug claims in Thomson Reuters 2008 MarketScan Commercial Claims and Encounters database.

[14] Pickens, Gary; Moldwin, Elisse and Marder, William D. "Healthcare Spending Index for Private Insurance: Methodology and Baseline Results." Thomson Reuters (2010).

Survey Data

An alternative source of data on health care use and spending is the Medical Expenditure Panel Survey's Household Component (MEPS-HC) which is available from the Agency for Health Care Research and Quality (AHRQ). This survey is quite large by survey standards, including 35,000 people in 14,000 families in 2009. Approximately 19,000 of these people were covered by private health insurance, and most were enrolled in employer sponsored health insurance. No information is available about the actuarial value of the private plans in which these people were enrolled, but many were enrolled in individual and small group plans that likely had relatively low values. The strengths of the MEPS survey include a representative sample of the non-institutional civilian population of the U.S. and a great deal of self-reported information about the health care use, spending, and sources of health insurance coverage and income for household members.

Compared with claims databases, the MEPS data show significantly lower spending per member, particularly for those members who are high users of health care services. These differences are partially explained by self-reporting of health care use and spending. The self-reported unit pricing is validated against external data, but the utilization levels are not. This is especially problematic for high users who may have difficulty in identifying all of the services they used.[15]

Symptomatic of this problem in the MEPS data is that spending levels among the highest spenders can vary widely from year to year.[16] With a privately insured MEPS sample of just 19,000 people, estimates for the top 1 percent of the population are based on only a few hundred people.[17] Considering that the top 1 percent accounts for 25 percent of all spending, this could present significant problems in a valuation model. Furthermore, very high spenders are sufficiently rare that the MEPS sample might not include any very high spenders in some years. The highest spender in the MEPS 2005 sample incurred only $345,000 in

[15] Aizcorbe, Ana et al. "Measuring Health Care Costs of Individuals with Employer-Sponsored Health Insurance in the U.S.: A Comparison of Survey and Claims Data." Bureau of Economic Analysis (2010).

[16] Between 2006 and 2009, the highest spender in MEPS-HC had annual medical charges ranging from $510,000 to $1,275,000 (authors' analysis of MEPS-HC data). Although these estimates exclude prescription drugs, they show that there is considerable year-to-year variation.

[17] Moeller, John F.; Cohen, Steven B.; Mathiowetz, Nancy A. and Wun, Lap-Ming. "Regression-Based Sampling for Persons with High Health Expenditures: Evaluating Accuracy and Yield with the 1997 MEPS." *Medical Care*, 41(7):III-44 –III-52 (2003).

health spending,[18] but 2008 claims data from large employers show nine people spending more than $2 million during that year.[19]

Comparison of AV Estimates from Claims and Survey Data

A recent issue brief by the Kaiser Family Foundation illustrates the importance of the data source.[20] The Foundation asked three actuarial firms to design prototype plans with actuarial values of .60 to .94 that met ACA standards. All three firms agreed in advance on certain key assumptions such as the average health care charges per person in 2014, but each firm used a different model and a different population data base to estimate actuarial values.

The most revealing comparison occurred when all three firms were asked to design a simple plan with a common coinsurance of 20 percent and a single out-of-pocket maximum of $6,350. The three firms adjusted the deductible to reach an actuarial value of .70. The model based on MEPS data required a single-adult deductible of $4,200 to produce an actuarial value of .70, but the two models based on claims data bases required much lower deductibles of $2,050 and $1,850. This is consistent with the findings that MEPS tends to under represent the spending of high users. With fewer dollars in the high end of the spending distribution, the MEPS model required a much higher deductible to produce an actuarial value of .70.

This exercise demonstrated the importance of the claims distribution in estimating actuarial values and designing plans that fit within the various metal tiers. The survey data yielded significantly different results than the claims data. Even the two models based on medical claims data yielded somewhat different results, likely reflecting differences in the source data and valuation models.

[18] Aizcorbe, Ana et al. "Measuring Health Care Costs of Individuals with Employer-Sponsored Health Insurance in the U.S.: A Comparison of Survey and Claims Data." Bureau of Economic Analysis (2010).

[19] Authors' analysis of 2008 Thomson Reuters MarketScan Commercial Claims and Encounters Database.

[20] Levitt, Larry and Claxton, Gary. "What the Actuarial Values in the Affordable Care Act Mean." Kaiser Family Foundation (2011).

Calibration of Data

Even when the underlying data meet the criteria described above, calibration of the data is typically required to better reflect charges in a current time period, or differences in the population being modeled.

First, there is a lag of two or three years to gather the enrollment and claims files from a cross-section of employer plans, review the data quality, sample and weight the persons for the standard population, and create the person and family level summary data that is needed by the simulation model. For example, plans offered in 2014 will need to be valued in 2013, probably using data from 2011. Consequently, it would be necessary to project per-capita allowed charges to 2014 and calibrate the total allowed charges in the database to this projection target. Failure to project the charges could substantially understate actuarial values for plans that have deductibles and out-of-pocket limits.

Second, the February actuarial value bulletin from HHS proposes at least three cost tiers into which all states would fall.[21] Using a fixed national claims database, these charges would need to be calibrated accordingly for states that fall into high, medium and low cost areas.

Third, HHS contemplates allowing states to modify the data using appropriate demographic or other adjusters, or states may choose to develop their own claims data for the under-65 population likely to be covered in the individual and small group markets. To combine the strengths of medical claims data and survey data, it might be reasonable to weight the enrollment records associated with claims data to represent the demographic characteristics of the population likely to enroll in the individual and small group plans. The Current Population Survey (CPS)[22] or the American Community Survey (ACS)[23] could be used to develop the national or state distributions of personal characteristics for the pre-Medicare population, including characteristics such as age, sex, and state of residence. These survey data could be used to reweight the enrollment and claims experience derived from employer plans.

Calibration and weighting can serve to refine the estimates, but they cannot address fundamental flaws in the underlying data. Accurate and reliable claims data for a large and diverse national population is the essential first ingredient for robust estimates of actuarial value. The central concern should be to capture an

Failure to project the charges could substantially understate actuarial values for plans that have deductibles and out-of-pocket limits.

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[21] Department of Health and Human Services, *Actuarial Value and Cost-Sharing Reductions Bulletin*, February 24, 2012. http://cciio.cms.gov/resources/files/Files2/02242012/Av-csr-bulletin.pdf

[22] United States Census Bureau and Bureau of Labor Statistics. Current Population Survey, Annual Social and Economic Supplement.

[23] Robert Wood Johnson Foundation. *An Introduction to the American Community Survey Health Insurance Coverage Estimates*. Sept. 2009.

accurate representation of allowed charges for a large national population with comprehensive health benefits similar to the EHB package.

Cost-Sharing Provisions to Include in the Model

Neither ratebooks nor simulation models can capture every detail that is considered when insurers adjudicate claims. Instead, the estimation exercise should focus on those plan provisions that are likely to have a material impact on the actuarial valuation, particularly to the extent that the data are readily available and the cost-sharing provision is a common one. Traditional comprehensive plan provisions, including a comprehensive annual deductible, coinsurance and out-of-pocket limit, clearly fall into this category. These provisions affect all categories of service and have large and direct effects on actuarial value.

With the rise of managed care in the 1980s and 1990s, and more recently value-based health insurance design, service-specific cost sharing has been used to promote or discourage use of particular categories of service. This practice has shifted much of the out-of-pocket costs from deductibles and coinsurance to copays that apply to particular service categories. Service specific copays are very common for the following service categories:

Physician visits (often with separate copays for primary and specialty care)

- Prescription drugs (with separate copays by drug tier, and for retail and mail)
- Outpatient surgery
- Emergency room and urgent care visits
- Hospital stays (per stay or per day)
- Mental health visits
- Mental health hospital stays (per stay or per day)
- Preventive (copay of $0 under ACA)

These categories where copays are common encompass a large portion of total allowed charges. Utilization measures are also readily available for these service categories, and a simulation model could apply any benefit limits such as annual limits on visits or hospital days. Valuation models should include the ability to apply copays or service limits to these service categories.

Recent practice has shifted much of the out-of-pocket costs from deductibles and coinsurance to copays that apply to particular service categories.

The model need not track copays and service limits for the following service categories where such provisions are much less common:

- Diagnostic tests and imaging
- Durable medical equipment
- Hospice

Finally, the following services may have copays or service limits, but they comprise a relatively small percentage of spending for a non-elderly population:

- Home health
- Skilled nursing
- Rehabilitation and habilitation (including physical therapy, occupational therapy, and speech therapy)
- Dental and eye care for children

Ideally, the service categories in the valuation model would include category-specific charges and use measures, allowing the model to estimate such provisions as limits on home health visits, or copayments for physical therapy visits. If it is too challenging to include such provisions in the model initially, adjustments for these provisions might be made by actuaries as part of the certification process.

An important consideration is that the valuations should consider only the in-network provisions as proposed by HHS.[24] There are several reasons for this. First, although out-of-network services may require greater member cost sharing, it does not seem reasonable to reduce the actuarial value of those plans that offer out-of-network benefits in addition to in-network benefits. Second, the frequency of out-of-network use will vary from plan to plan. Third, the decision to obtain care out-of-network is generally under the control of the consumer. From a data perspective, this means that all allowed charges should be paid according to in-network provisions.

Ideally, the service categories in the valuation model would include category-specific charges and use measures, allowing the model to estimate such provisions as limits on home health visits, or copayments for physical therapy visits.

[24] Department of Health and Human Services, *Actuarial Value and Cost-Sharing Reductions Bulletin*, February 24, 2012. http://cciio.cms.gov/resources/files/Files2/02242012/Av-csr-bulletin.pdf

Demand Response to Changes in Cost Sharing

Overall spending for a group tends to fall as members' out-of-pocket costs rise.[25] In turn, the fall in the overall spending can change the actuarial value as this changes the percentage of charges that exceed fixed deductibles and out-of-pocket maximums. Outside the context of the ACA, valuation models often attempt to estimate these behavioral effects and how they affect overall spending.

The requirements of the ACA are different, however. The goal of being able to compare the relative generosity of health plans implies that charges should *not* be adjusted for behavioral response when calculating actuarial value under the ACA. When consumers compare the value of a gold and silver plan, they may be more interested in what the two plans would reimburse for a fixed set of charges, rather than what they might reimburse for charges that are in flux.

Even if estimates of actuarial value were to adjust for behavioral response, it is not clear what adjustments should be used. The RAND Health Insurance Experiments estimated the behavior of consumers based on observations from the early 1970s. Moreover, it is arguable that it is not just the overall percentage of charges paid by the plan that influences consumer response, but also the nature of that cost sharing. Is additional cost-sharing in the form of a high deductible with no coinsurance after the deductible? Is there a relatively low deductible followed by substantial coinsurance that continues up to a high-out-of-pocket limit? These differences in plan design might have different effects on spending, but we do not have sufficient research to estimate the effects that occur with each type of plan design.

If the model is to reflect utilization differences associated with changes in cost-sharing, plan-specific charge calibrations would need to be estimated for each plan offered within each state. Each plan has a different actuarial value and a correspondingly different behavioral response. This could be confusing to consumers attempting to select a plan. If the intent of the ACA is to use actuarial value as a standard metric to compare plans with respect to cost-sharing, it is preferable to base the calculation on a fixed set of charges for a standard population.

[25] Manning, Willard G. et al. "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," The RAND Corporation (1988).

Actuarial Judgment

Actuarial judgment comes into play when there are limitations in the data or the valuation model, or where information needed to set assumptions is limited. Too much reliance on judgment can threaten the reliability and comparability of actuarial values. Limiting judgment through use of a standardized database and actuarial model can give consumers greater confidence that the actuarial values are reliable and comparable measures of plan value. However, a valuation model that attempts to address every detail of plan design would be overly complex, and would likely fail to accommodate innovative plan designs as they arise. Some actuarial judgment will still be needed.

To illustrate the complexities that might require actuarial judgment, we use the example of tiered prescription drug benefits. Seventy-seven percent of workers in employer-sponsored plans have prescription drug coverage with three or four tiers of cost sharing.[26] Most common is a three-tiered design that requires graduated copays for generic drugs, preferred brand drugs, and non-preferred brand drugs. "Lifestyle" drugs might be placed in a fourth tier with a very high copayment. A model that provides only three tiers of prescription drug benefits might accommodate a fourth tier if the actuary were allowed to make an estimate of how drugs from this additional tier map into the three tiers in the standard model, and how these mapped drugs might affect the average charges for each of these tiers of the model.

Tiered networks present a similar challenge. Rather than offering just in-network and out-of-network options, a plan might offer several tiers of providers with graduated cost-sharing. The tier with the lowest cost-sharing might be selected primarily on the basis of negotiated fees, or on some combination of cost and quality criteria. Some plans might find that the vast majority of health care use is in the preferred low-cost tier, while others might find a different mix. HHS might want to develop guidelines for how actuaries should handle these circumstances.

Still another area of judgment involves cost-sharing provisions that are contingent on member participation in wellness or disease management programs.[27] Many employers are now offering reduced cost sharing to members that participate in such programs. Deductibles may be lowered or copayments for certain services may be waived when members participate. One approach would allow valuation of these plans based on the assumption that members fully participate in wellness programs. This logic would be similar to valuing plans

Actuarial judgment comes into play when there are limitations in the data or the valuation model, or where information needed to set assumptions is limited.

[26] Kaiser Family Foundation and Health Research and Educational Trust. *Employer Health Benefits 2011 Annual Survey* (2011).

[27] Ibid, pp. 175, 180.

based on in-network provisions only. On the other hand, participation in these programs may not be as widespread as use of in-network services, and some wellness and disease management programs might be too demanding of members. This is an area where the actuary might exercise judgment to estimate the proportion of members who would participate in the programs, and then adjust cost-sharing provisions to reflect this level of participation.

To the extent that actuaries exercise these kinds of judgment in performing plan valuations, they should document their assumptions and judgments in a signed report. The report might include a copy of the exact plan provisions as they were entered into the standard on-line calculator, a listing of assumptions, and a description of how non-standard benefits were valued when they did not fit into the standard AV calculator. This would allow others to replicate the valuations and review assumptions and judgments that might have a material effect on the estimates that were made.

Treatment of Account-Based Plans

Account-based plans combine a high deductible health plan with either a Health Savings Account (HSA) or a Health Reimbursement Arrangement (HRA). The high deductible is intended to encourage cost conscious health care purchasing, and the personal account provides a savings vehicle that plan members can use to accumulate tax-free contributions to pay for current and future medical expenses. All employees in an HRA and 69 percent of those in an employer-sponsored HSA-qualified plan received account contributions from their employers in 2011.[28] Employers make these account contributions to help offset the higher out-of-pocket costs of high-deductible plans, believing that employees will be more prudent in their health care spending decisions if unspent money can accumulate in their accounts.

How should these employer contributions be treated in the actuarial valuation? Health Savings Accounts (HSAs) are owned by the employee and once the employer contributes to the account the employee has full control over the money. Money in the account can be used to pay for current or future medical expense. It can also be used to pay Medicare premiums once the enrollee becomes Medicare eligible. If the employer contributes $500 to the account in the current year and the plan has a $1,500 deductible, one could view this as a plan with first dollar coverage up to $500, followed by a "donut hole" with no plan payments until the deductible kicks in at $1,500. If the money is not spent in the current year but carried over for use in a future year, the effect is to reduce member cost-sharing in the future.

[28] Kaiser Family Foundation and Health Research and Educational Trust. *Employer Health Benefits 2011 Annual Survey* (2011).

Health Reimbursement Arrangements (HRAs) are fundamentally different from HSAs because they are notional accounts that are owned by the employer. HRA payments for health care in the current year offset out-of-pocket costs associated with the high-deductible plan, and credits can accumulate over time to pay for expenses in future years.[29] But unlike HSAs, the HRA account balance is typically forfeited when the employee leaves to accept employment elsewhere.

Given these complexities, HHS has proposed an approach that would count the bulk of employer account contributions without undue administrative burden.[30] Their proposal is to count employer account contributions as if they provide first dollar coverage in the year of the contribution. For example, a plan with a $1,500 deductible and a $500 employer contribution to either an HSA or HRA would be valued as if the plan paid all allowed charges up to $500, and then required the member to pay for any charges in the $500-$1,500 "donut hole" range. For 2012 we estimate that approximately 73 percent of a $500 employer account contribution would be credited toward the actuarial value. For a $1,000 employer account contribution, we estimate approximately 64 percent would be credited toward the actuarial value.

It seems reasonable to credit employers' HSA and HRA contributions toward the actuarial value *to the extent that these contributions are spent on health care,* whether for current or future periods. Unlike the HHS proposal, this would provide full credit for these employer contributions toward the health care of their employees even when they are carried over for use into a future year. HRA credits that are *not spent on health care and are forfeited when an employee leaves the company sponsoring the plan* should not be counted toward the actuarial value of a plan.

Limits of Actuarial Value

The ACA uses actuarial value as a high level summary measure to align the generosity of plans offered in the individual and small group markets, and to ensure that large group plans meet a minimum value standard. This is valuable information for consumers, but it is important to remember that this valuation is based on a standard population. Actuarial value does not necessarily indicate which plan is best for a particular individual or group.

Actuarial value does not necessarily indicate which plan is best for a particular individual or group.

[29] HRA funds can also be used to pay premiums, a use that should not affect actuarial value which is designed to account for cost-sharing at the point of service.

[30] Department of Health and Human Services, *Actuarial Value and Cost-Sharing Reductions Bulletin*, February 24, 2012. http://cciio.cms.gov/resources/files/Files2/02242012/Av-csr-bulletin.pdf

For example, the ACA allows "*de minimis*" variation around the metal tier targets for bronze, silver, gold and platinum plans. HHS has proposed to use a standard of +/- 2 percentage points in actuarial value. Assuming average charges per adult of $5,542 in 2010, this 4 percentage point spread would mean the average difference in out-of-pocket costs between a .68 and a .72 plan would be about $220 (.04 * $5,542). This difference is small enough that one might conclude these plans are roughly comparable with respect to actuarial value.

Exhibit 2 demonstrates that two plans within this *de minimis* range can have very different results at the person level. The .68 plan is more attractive to low spenders and the .72 plan is more attractive to high spenders. A person at the 50th percentile of spending (charges of $1,571) would spend $786 less out-of-pocket in the .68 plan. That is because this plan pays for office visits and prescription drugs before the annual deductible is satisfied. A person at the 95th percentile of health care spending (nearly $19,000 in charges) would spend over $2,300 less in the .72 plan due to the lower out-of-pocket maximum. The relatively high out-of-pocket maximum in the .68 plan affords less financial protection to high spenders.

Other plan provisions that have little impact on actuarial value might have considerable impact on certain individuals. For example, if plans are allowed to limit inpatient mental health care to 30 days, a member requiring a stay of 60 days could be responsible for paying as much as $45,000 (30 days x $1,500 per day).[31]

Actuarial value does not help to identify which plans might be best at controlling costs or delivering quality of care. It does not help to identify which plans have the broadest networks of providers or the best physicians. Some groups enrolled in particular plans might use plan services and experience costs differently from the standard population due to age, chronic conditions, or low income associated with the group. Actuarial value as defined in the ACA does not consider these characteristics apart from the standard population that is used as a basis to value all plans.

Finally, it is important to note that out-of-pocket expenses can result from charges that are not "allowed." Charges not associated with EHB are not allowed charges for purposes of calculating actuarial value under the ACA. Unless a particular plan covers additional services beyond EHBs, the member would be responsible for these charges (for example, adult dental services, or services that the plan determines are not medically necessary). Additional out-of-pocket spending can also result when a member obtains services from out-of-network providers. In addition to the higher cost-sharing associated with higher out-of-

[31] The $1,500 in allowed charges per day was estimated from 2009 MarketScan data and trended to 2012 by the authors.

network copays and coinsurance, members who seek care from out-of-network providers are responsible for charges that exceed the plan's fee limits. Consequently, the actuarial value is likely to overstate the percentage of all provider payments that are paid by the plan when care is received out-of-network.

EXHIBIT 2
MEMBER COST SHARING AND OUT-OF-POCKET SPENDING FOR MEDICAL SERVICES FOR FOUR ADULTS IN TWO SILVER PLANS WITH ACTUARIAL VALUES OF .68 AND .72, 2010

	.68 AV Plan	.72 AV Plan
Member cost-sharing for		
Deductible (single)	$1,000	$2,500
Out-of-pocket maximum (single)	$5,000 *	$2,500
Primary care office visit	$30 copay	n/a
Outpatient surgery	20% coinsurance	n/a
Inpatient hospital stay	20% coinsurance	n/a
Prescription drugs (retail)	$15/30/50 **	n/a
Out-of-pocket spending for member		
Non-user	$0	$0
25th percentile (charges of $283)	$75	$283
50th percentile (charges of $1,571)	$785	$1,571
95th percentile (charges of $18,997)	$4,840	$2,500

Population average charges = $5,542 per adult.

** We selected a plan in which copayments apply to the out-of-pocket maximum. Most current employer-sponsored plans do not count copayments towards out-of-pocket limits, but Exchange plans will be required to do so.*

*** Prescription drug copays are for three tiers (generic, brand formulary, and brand non-formulary).*

Source: Authors estimates of actuarial value for two hypothetical plans based on 2008 Thomson Reuters MarketScan data, trended to 2010.

Conclusion

Beginning in 2014 consumers will face a different health plan landscape. In the individual and small group markets, their choices will be more structured, with health plans classified into actuarial value tiers. The classification of these plans according to AV tiers will be most useful to consumers if the calculations are performed in a consistent manner, using a standard set of EHBs, a standard population, and a robust AV calculator. Standardization is critical in creating a meaningful measure that consumers can understand and trust.

There are significant technical challenges in producing a standardized AV calculator that can accommodate the diverse combinations of plan provisions that exist today and will evolve in the future. The AV calculator will need to strike a balance between a simple calculator that requires considerable actuarial judgment, and a more complex model that accommodates diverse plan designs and reduces the scope of actuarial judgment. Too much reliance on judgment can threaten the reliability and comparability of actuarial values. Limiting judgment through the use of consistent data and a comprehensive valuation model can give consumers greater confidence that the actuarial values are reliable measures of plan value. Given the current prevalence of rate book/continuance table valuation tools, a practical approach may be to start with a ratebook based model and work toward a more sophisticated simulation approach that allows flexibility to accommodate diverse plan cost-sharing designs.

Standardization is critical in creating a meaningful measure that consumers can understand and trust.

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