Employer Sponsored Insurance Actuarial Values and Sensitivity Analysis

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Contents

Executive Summary

One way to measure the richness of a health plan is to examine the proportion of health spending covered by and paid for by the plan. A plan's actuarial value (AV) represents a measure of that richness, by using the plan's information on cost-sharing paid by participants, and limitations on payments by plans to calculate the ratio of charges paid over a standard population. As an example of the use of this measure, AVs are the basis for the metal tiers used in Exchange plans, where platinum plans have AVs of approximately 0.90 (or 90%), gold plans have AVs of approximately 0.80 (80%), silver plans have AVs of approximately 0.70 (70%) and bronze plans have AVs of approximately 0.60 (60%). Because in-network details are more widely available, actuarial value calculations use in-network plan parameters, which may overstate "richness" since they assume use is within provider networks, and do not account for the limitations of those networks, nor costs outside of those networks.

In recent years, the Department of Labor's (DOL) Employee Benefits Security Administration (EBSA) has increased its oversight regarding the accuracy of provider directories and concerns regarding "ghost networks" – provider networks that are so limited in terms of their ability to serve and treat patients, that participants must go outside their health plan's in-network providers to obtain care, resulting in additional costs. By conducting an analysis of plan AVs and examining what a health plan purports to cover for a given population versus what that population can expect the plan to cover, EBSA hopes to quantify this disparity and examine if specific characteristics of the plan sponsor influence the extent of these differences.

To do this, Actuarial Research Corporation (ARC) used plan characteristics from the 2021 KFF Employer Health Benefits Survey (EHBS) and claims, both submitted and paid, from the 2021 Merative™ MarketScan® Commercial Database to compare actual coverage to expected coverage for employer sponsored health insurance plans.[1,2,3] By using both in-network and out-of-network parameters on the claims data, ARC measured the change in actuarial value for in- and out-of-network coverage, by variables of interest including size of employer, sector, plan type, Census region, premiums, and funding type, as well as how the two differed.

The first part of this project involved defining the claims universe and plan parameters. The claims universe was limited to active employees with mental health services that were not carved out (coverage by carriers other than the primary health insurance provider) and weighted to represent those with non-retiree employer

[1] The KFF 2021 Annual Employer Health Benefits Survey can be found here: 2021 Employer Health Benefits Survey (kff.org).
[2] Merative and MarketScan are trademarks of Merative Corporation in the United States, other countries, or both.
[3] Employer sponsored insurance plans refer to health plans that are both fully insured (purchased from an insurance company) as well as self- or level-funded. The nomenclature used is based on the partition of health insurance spending found in the CMS National Health Expenditure Accounts.

sponsored insurance (ESI).[4] We then controlled the data file to be consistent with private health insurance spending in the CMS National Health Expenditure Accounts.[5]

The plan parameters for in-network coverage, such as the deductible, copays and coinsurance for various services, and out-of-pocket maximums, were derived primarily from the KFF Employer Health Benefits Survey, which contains data for both private and non-federal public sector employer plans and was supplemented by the Robert Wood Johnson Foundation (RWJF) HIX Compare Small Group dataset for missing services as well as to expand to include out-of-network parameters, given the EHBS did not capture those.[6] Additional plan parameter sources include the Bureau of Labor Statistics' National Compensation Survey (for out-of-network deductible values), and the Merative™ MarketScan® Benefit Plan Design (BPD) Database (for out-of-network emergency room cost-sharing).

Once the claims universe and plan parameters were defined, we calculated actuarial values by simulating how insurance plans pay claims for each plan and comparing the claims paid (benefits) to total covered expenses, using ARC's own internal methodology (the ARC Ratebook).[7] The average amount of plan paid benefits, over the population defined by the claims data, was then compared to the total covered expenses, with the ratio of these amounts being the estimated actuarial value for each ESI plan.

With respect to our findings, the overall average in-network actuarial value for 2021 was 0.842, meaning that on average, the in-network parameters of employer sponsored plans paid 84.2% of covered charges.[8] Plan type, firm size, and sector were key factors in differences in actuarial values, while funding and premiums had little effect. In general, coverage for mental health care and substance use disorders (defined in both the literature and the claims) had higher levels of out-of-network usage and lower benefit rates compared to overall services.

Actuarial values were higher for non-federal public sector plans compared to private sector plans and increased in richness with increasing employer size (firm size). In addition, Health Maintenance Organization (HMO) plans had the highest actuarial values followed by Preferred Provider Organizations (PPOs) with high deductible plans having the lowest actuarial values. Plan funding did not have a substantial impact on actuarial value. In terms of geography, the Northeast and Western regions had higher in-network AVs. Finally, the presence of union workers in the firm was also associated with higher actuarial values, consistent with the theory that collective bargaining leads to better worker benefits.

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[4] Examining the universe where mental health services were included in the claims allowed for a more robust file; Including plans with carve outs (coverage by carriers other than the primary health insurance provider) would have included plans that did not appear to have mental health coverage, but might have, because the claims would not be part of the data. The vast proportion of claims were in the universe used.

[5] National Health Expenditure Data. Centers for Medicare & Medicaid Services, Baltimore Maryland. September 6, 2023. National Health Expenditure Data | CMS.

[6] RWJF HIX Compare Small Group. Accessed: Health Insurance Plans Datasets - RWJF (hix-compare.org).

[7] "A description of the ARC Ratebook Model can be found in the Technical Appendix.

[8] Covered charges in the MarketScan data do include claims for services that were paid both in-network and out-of-network. While the parameters used were in-network, the MarketScan data captures all claims paid. Similarly, the NHE private spending represents the actual mix (in-network and out-of-network) of benefits paid.

Out-of-network benefits, as demonstrated by actuarial value, were found to be statistically different than in-network benefits and were consistently lower for all plan types, as well as for each individual plan type. The proportion of claims, however, paid out-of-network was low and thus did not have a substantial impact on the actuarial value. Individual users of out-of-network benefits may feel an effect, if the benefit is either not covered or hard to access, particularly in the mental health space. Although, across a standard population, it did not appear to be impactful. HMO plans may be so restrictive that claims are not filed, and thus these claims may not appear in the MarketScan data. However, all plans do provide the protection of emergency services with coverage consistent with in-network benefits.

I. Introduction

Actuarial Research Corporation (ARC) performed an analysis of employer sponsored actuarial values (AV) for the Department of Labor's (DOL) Employee Benefits Security Administration (EBSA). The goal of the project was to support EBSA in its research of the effect of out-of-network coverage on actuarial values for employer sponsored health insurance plans.

ARC acquired and analyzed a variety of data sources that describe employer plan cost-sharing, both in summary and at the plan level, as well as microdata that contained both claims and utilization for persons with employer sponsored health insurance.[9] Once the data was extracted and processed, the resulting analytic data files were incorporated into a claims repayment micro-simulation model to calculate AVs for employer sponsored insurance using both in-network and out-of-network plan specifications and claims. A sensitivity analysis was also conducted on the resulting in-network and out-of-network AVs to test for statistically significant differences.

While the goal of this study was to analyze in-network and out-of-network AVs for employer sponsored insurance (ESI) plans, the actuarial value analysis done for this task can be leveraged by EBSA to update AVs annually imputed to the March Current Population Survey (CPS) employer sponsored insurance policy holder records. In the past, ARC calculated AVs using National Compensation Survey (NCS) microdata and used this as the basis to impute actuarial values to the March CPS (Auxiliary Data).[10] Currently, the Auxiliary data AV imputation is performed using spending and utilization from survey data (multiple years of the MEPS-HC) and plan parameters from the KFF Employer Health Benefits Survey (EHBS) and then adjusted for observed levels of employer sponsored coverage from sources that include published tables from the Health Care Cost Institute. [11,12]

This method is subject to limitations and may only partially account for out-of-network usage, does not incorporate out-of-network coverage parameters, and relies on a more limited dataset as the basis of spending and utilization. This may impact the levels and distributions of the resulting distributions. Additionally, by not incorporating adjustments for out-of-network coverage, it may overstate ESI AVs. Therefore, we hope this analysis on ESI AVs can be incorporated into future Auxiliary Data updates to increase the robustness of those estimates.

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[9] Data sources include the following: 2021 Merative™ MarketScan® Commercial Database (MarketScan) and Benefit Plan Data, 2018-2021 Medical Expenditure Panel Survey- Household Component (MEPS-HC), 2020- 2021 Bureau of Labor Statistics (BLS) National Compensation Survey (NCS) (unpublished estimates from the Bureau of Labor Statistics, National Compensation Survey), the 2021 KFF Employer Health Benefits Survey (EHBS), and 2021 RWJF HIX Compare Small Group Market Data.

[10] EBSA annually produces auxiliary data focused on characteristics of employer-sponsored insurance which links for the March Annual Social and Economic Supplement to the Current Population Survey (March CPS). https://www.dol.gov/agencies/ebsa/researchers/data/auxiliary-data.

[11] The KFF 2021 Annual Employer Health Benefits Survey can be found here: 2021 Employer Health Benefits Survey (kff.org).

[12] While the MarketScan data were available for use under license for a 12-month period, the results of the sensitivity analysis along with AV calculations will allow ARC to better adjust public-use claims data (MEPS-HC) as well as adjust EHBS plan parameters for use in future Auxiliary data AV imputations. Alternatively, EBSA and ARC could explore a licensing agreement to use the MarketScan Databases for modeling AVs as part of the Auxiliary Data going forward.

II. Background

EBSA has increased its oversight in recent years regarding the accuracy of provider directories and concerns regarding "ghost networks" - provider networks that are so limited in terms of their ability to serve and treat patients, that participants must go outside their health plan's in-network providers for services, resulting in additional costs. By conducting an analysis of what a health plan purports to cover for a given population – which can be expressed as an actuarial value – versus what that population can expect the plan to cover if services were provided out-of-network, EBSA can quantify this disparity and examine if specific characteristics of the plan sponsor influence the extent of these differences.

An actuarial value is a measure of the richness of a plan's health insurance benefits, representing the proportion paid by health insurance. Typically, the actuarial value and its calculation only applies to benefits offered in-network. EBSA has noted that restrictive networks may force plan participants to seek care out-of-network at an additional cost and seeks to quantify this difference.

ARC used the 2021 MarketScan data along with other sources including plan data from the 2021 KFF EHBS and the 2021 HIX Compare, to compare actual coverage to expected coverage. By using both in-network and out-of-network parameters on the claims in the MarketScan data, ARC measured the change in actuarial value by variables of interest including size of employer, sector, plan type, geographic region, premiums, and funding type.

III. Data

The first step in this analysis was to acquire the array of data sources required to specify plan parameters and to incorporate claims and utilization into the microsimulation model. The following sections describe the data sources that we used for each of those components.

A. Plan Parameters

In-network plan parameters were obtained primarily from the KFF Employer Health Benefits Survey (EHBS). Data sources used to specify out-of-network parameters include the HIX Compare Small Group Market dataset (primary source), BLS National Compensation Survey tables (deductible values), and the Merative™ MarketScan® Benefit Plan Design (BPD) Database.

1. KFF Employer Health Benefits Survey

The 2021 KFF EHBS was the primary source for in-network plan parameters.[13] This nationally representative survey is published annually and has a variety of information on employer health insurance coverage, including cost, benefit offer rates, eligibility, premium contribution, plan type, and enrollment. The basis of the survey includes public and private employers with three or more employees although the public sector plans excluded federal health benefit plans and included only state and local plans. The EHBS looks at trends in employer

[13] The KFF 2021 Annual Employer Health Benefits Survey can be found here: 2021 Employer Health Benefits Survey (kff.org).

sponsored health coverage and collects data about plan attributes of the largest HMO, PPO, POS, and high deductible (HDED) plan offered.[14] By survey definition, an HMO does not cover non-emergency services out-of-network, and a high deductible plan must have a deductible greater than $1,000 (single) or $2,000 (family). HDED plans may be paired with a health reimbursement account (HRA) funded by the employer or a heath savings account (HSA) with a single annual deductible of at least $1,400. To reduce survey burden, plan parameters for some services are collected only for the largest plan offered.

The data was restructured to the plan level, and values for deductibles (single and family), coinsurance, and out of pocket maximums (single and family) were extracted, as well as service specific copays for inpatient hospital (per admission and per day), outpatient, specialist, primary care, preventive, and coverage for generic, brand, and specialty drugs. In addition to plan parameters, we also used data from the survey on premium, region, funding, plan type, size of employer, sector, and industry information.

Additionally, the EHBS contains several weights that represent employers, workers and covered workers in the plans (also called participants). In our analysis, we used the covered worker weights, resulting in a plan universe of 75.9 million ESI participants (using 1,982 plan records).

The EHBS data does include a few limitations. For example, the 2021 EHBS lacks a few in-network variables of interest (emergency room, and inpatient and outpatient mental health and substance use disorder) and does not contain out-of-network plan parameters. Therefore, additional sources, as described below, were used to supplement the EHBS data.

2. HIX Compare Small Group Market Data

The primary supplemental source we used was the 2021 HIX Compare Small Group Market data, which includes information on these missing in-network services (emergency room, and inpatient and outpatient mental health and substance use disorder) as well as the full set of out-of-network cost-sharing variables. HIX Compare is a set of plan-level public use files of the individual and small group fully insured market in all 50 states plus D.C., available for non-commercial use. Sponsored by the Robert Wood Johnson Foundation, HIX Compare is the only dataset with information on nearly every individual (2014-2024) and small group (2014-2024) marketplace plan (also known as an Affordable Care Act or Exchange plan), and most off marketplace plans in the individual and small group markets as well. HIX Compare contains information on plan characteristics, such as premiums and benefit design/cost-sharing parameters.

ARC identified unique plans, which required a simplified process of matching the plan data fields with a unique year, state, carrier, metal level, plan type, network ID, and plan ID.[15] Also, the database is large and contains four quarters of data with much overlap, so ARC chose to use the fourth quarter data for this analysis. While individual market data was available, only small group market data was used for this analysis.

3. BLS National Compensation Survey

Another supplemental plan parameter data source was the Bureau of Labor Statistics' National Compensation Survey (NCS). This was used for information on out-of-network deductibles. The BLS data used are custom

[14] High deductible plans, abbreviated here as HDED plans, include but are not limited to IRS qualified HDHP plans.
[15] The 4th quarter HIX data contains 21,535 "unique" unweighted records for plan types PPO, HMO, POS, and EPO.

tabulations of unpublished estimates from the 2020 private sector and 2021 public sector National Compensation Survey.

More specifically, we used summary level plan specifications from the NCS data to review the variation in deductible for in and out-of-network services by establishment size, funding, industry and sector.[16] Tabulations of coinsurance were also provided by quartile for in and out-of-network by similar descriptives.

4. Merative™ MarketScan® Benefit Plan Data

The Merative™ MarketScan® Benefit Plan Data (BPD) was the third supplemental data source used in our analysis. It represents the benefit plans for large employers whose claims data are included in the Merative MarketScan Commercial Databases.[17] The benefit plan design includes four categories of plan provisions: deductibles, coinsurance, copayments, and maximum out-of-pocket amount. This data was used in our validation process to verify that out-of-network emergency room cost-sharing was consistent with in-network cost-sharing.

B. Claims and Utilization

1. Merative™ MarketScan® Commercial Data

The primary source of claims and utilization microdata for updating the ARC Ratebook underlying the analytic framework for our analysis was the 2021 Merative™ MarketScan® Commercial Database.[18] This data includes in-network and out-of-network ESI claims for the non-elderly population. The MarketScan Database links paid claims and encounter data to detailed patient information across sites and types of providers. Ultimately, over 17 million person-level records, including both users and non-users, were assembled as a robust database of spending and utilization for persons under age 65 with ESI.

2. Medical Expenditure Panel Survey, Household Component

Another key source for spending and utilization data was the Agency for Health Care Quality's Medical Expenditure Panel Survey, Household Component (MEPS-HC). We used 2018-2021 data on spending and utilization for persons with active ESI from the MEPS-HC as a basis for comparison for the underlying spending and utilization in the model. The MEPS-HC data is publicly available and has been the basis for prior versions of the ARC Ratebook – which was used in generating the actuarial values in EBSA's Auxiliary Data and ARC's prior actuarial value report.[19,20] We provide information on it in this report to note how the MarketScan data improves

[16] ARC worked with BLS personnel to design custom tabulations of in-network versus out-of-network deductibles and coinsurance.
[17] Benefit Plan Design Database User Guide, Data Year 2021. Merative.
[18] Merative and MarketScan are trademarks of Merative Corporation in the United States, other countries, or both.
[19] EBSA annually produces auxiliary data focused on characteristics of employer-sponsored insurance which links for the March Annual Social and Economic Supplement to the Current Population Survey (March CPS). https://www.dol.gov/agencies/ebsa/researchers/data/auxiliary-data.
[20] Actuarial Research Corporation (ARC). Final Report: Analysis of Actuarial Values and Plan Funding Using Plans from the National Compensation Survey. May 12, 2017. Compiled for Office of Policy and Research (OPR), Employee Benefits Security Administration (EBSA), Department of Labor (DOL) by Actuarial Research Corporation (ARC). Accessed: https://www.dol.gov/sites/dolgov/files/EBSA/researchers/analysis/health-and-welfare/analysis-of-actuarial-values-and-plan-funding-using-plans-from-the-national-compensation-survey.pdf.

upon the more limited MEPS-HC data and how we can use the MarketScan data to improve our MEPS-HC based claims and utilization data going forward when the MarketScan data is no longer available to us.

IV. Methodology

The following sections describe the methodology followed to calculate and validate the in-network and out-of-network actuarial values. Once the data was acquired, ARC specified plan parameters for both in-network and out-of-network coverage. We then defined the sample population and summarized person-level claims to evaluate the richness of private health insurance plans against a nationally representative population using a microsimulation model (known as the "ARC Ratebook").[21] The model was then controlled to National Health Expenditure levels and validated using variables in the model and external sources.

A. Specifying Plan Parameters

The plan parameters for in-network and out-of-network plans included the following:

- inpatient hospital copay (either per day or per admission)
- emergency room copay
- outpatient hospital copay
- primary care copay
- specialist copay
- prescription drug copays for generic, brand and specialty drugs
- inpatient mental health/substance use disorder copay
- outpatient mental health/substance use disorder
- single and family deductibles
- plan coinsurance rate
- per person and per family out-of-pocket maximums
- plan benefit maximum.

These parameters were derived from a variety of sources, as explained below.

1. In-Network Plan Parameters

In-network actuarial value calculation was the standard method of analysis and the baseline for this study. The in-network parameters were derived primarily from the EHBS published annually by KFF. These parameters were supplemented where the EHBS lacked data using the 2021 HIX Compare (Small Group Market) data, as well as BLS NCS data and Merative BPD data.

Three in-network variables not captured in the KFF EHBS data were specified using a combination of regression analysis and probabilities: emergency room (ER) copay, inpatient mental health copay, and outpatient mental

[21] A description of the ARC Ratebook Model can be found in the Technical Appendix.

health copay.[22] Coverage for substance use disorders versus mental health care showed no difference in cost-sharing on the HIX data, therefore a combined cost-sharing parameter was used for the two.

2. Out-of-Network Plan Parameters

All PPO, POS, and HDED plans have out-of-network coverage, and these out-of-network parameters were specified using HIX Compare (as the primary source), BLS NCS tables (for the deductible values), and the MarketScan BPD. By definition, HMOs do not provide out-of-network care and only include out-of-network plan parameters for ER (emergency room) cost-sharing.[23]

All plans cover emergency room (ER) care out-of-network with either copay or coinsurance. In all cases, ER cost-sharing for out-of-network equals the in-network cost-sharing. This is supported by the HIX (100% of coinsurance and copays match) and the BPD (100% of copays match). Any ER coinsurance values were transformed into copays using a continuance table.

The deductible value was added using BLS custom tabulations of the NCS data. These tables compare the out-of-network deductible value to the in-network deductible value by funding, sector, and employer size. Since the out-of-pocket maximum must be larger than or equal to the deductible, it was created using multipliers of the in-network out-of-pocket maximum. Next, coinsurance was added using transition matrices based on the HIX database. Finally, service specific copays were added using multipliers of the in-network copay.

Out-of-network drug copays for retail drugs were not considered at this time, for two primary reasons. First, drug networks are typically established by the contracted Pharmacy Benefit Manager (PBM) and do not present the same access issues as either hospital or professional provider networks. For example, 98% of members in the Express Scripts network are within 5 miles of a preferred pharmacy.[24] Second, out-of-network coverage for non-retail (physician and hospital administered) drugs have implicitly been accounted for in the cost-sharing for inpatient and outpatient services.

B. Defining the MarketScan Sample Universe

To define the MarketScan sample universe for inclusion in the model, we began with the MarketScan annual enrollment file, where the universe of persons with ESI is defined based on the employee status variable. Specifically, records with employee status set to values of active (full time, part time or seasonal), COBRA, surviving spouse/dependent, or other were kept, and those records coded as being for retirees (both under and over 65) or on long term disability were removed. The resulting data extract had just over 19-million-person records.

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[22] This process is described in more detail in the Technical Appendix.

[23] Section B: Eligibility, Enrollment, and Plan Offerings Health Maintenance Organization – HMO of the KFF EHBS 2021 Survey Instrument notes that "*With an HMO, a person must receive their care from a physician in the HMO network; otherwise, the expense is not covered. When they use HMO physicians, however, cost-sharing is often very low*." Instrument is available upon request: https://statics.teams.cdn.office.net/evergreen-assets/safelinks/1/atp-safelinks.html.

[24] Awsumb, J. "Three Ways to Optimize a Pharmacy Network", May 25, 2022. Evernorth Health Services. Accessed at https://www.evernorth.com/articles/learn-about-pharmacy-networks.

We then further reduced the sample and kept records only for those individuals that had mental health or substance use disorder coverage not carved out in the current MarketScan data year. This reduction brought our sample universe from just over 19 million down to 17.2-million-person records. In subsequent sections, we refer to this as the MarketScan sample universe.

The resulting enrollment file was tabulated by age group, sex, MSA status, region and policy holder versus spouse/dependent and compared to counts of persons with ESI from the March 2022 (CY 2021) Current Population Survey. This allowed for the creation of person level weights to reproduce the national population with non-retiree ESI (approximately 165 million lives). The stratification used was based on how Merative constructed their national weights, which were not included in their Commercial Claims Database.[25]

C. Summarizing Person-level Claims

Once the MarketScan sample universe was defined, we summarized claims and utilization at the person level from the inpatient event, outpatient and prescription drug files. We then recoded the categories used in the ARC Ratebook to match to evaluate plan richness. Non-spender records were created for those persons with records on the enrollment file but no claims in the service files, so that each service specific extract matched the enrollment extract universe.

D. Model Validation

As a final step, ARC conducted model validation assessments before calculating the actuarial values of interest. The first validation step was to determine how the levels of spending found in the MarketScan data compared to what is observed in the CMS National Health Expenditure Accounts. Next, we compared the ratio of insurance payments ("net payments") to total insurance claims to our calculated actuarial values, as we would expect the ratios to be similar. We then examined, in detail, the out-of-network spending and utilization found in the MarketScan data and compared it to what has been observed in the literature. Finally, we looked at how the claims data compared to what is publicly obtainable – the MEPS-HC data on spending and utilization. The section below describes these validation processes and areas of further review.

1. Controlling to National Health Expenditure Levels

After the analytic data file was created, we compared tabulations of spending at the service level to estimates of private health spending for persons with active (non-retiree) ESI, consistent with what is found in the National Health Expenditure Accounts. This controlling, or benchmarking, step is performed to ensure that the results are representative of health insurance coverage and spending in the U.S. and also allows for the ability to be used with other datasets (such as EBSA's Auxiliary Data) that provide national estimates.

Only slight adjustments were necessary. The resulting (weighted) per capita covered expense in the data was $5,637, which is consistent with spending from the latest National Health Expenditure Accounts (NHEA). The service split relied mainly on that found in the MarketScan data, with 45% of spending attributable to hospital services, 33% to physician and other professionals, and 22% to prescription drugs.

[25] An overview of the Merative MarketScan Research Databases can be accessed here: Merative MarketScan Research Databases.

2. Net Pay

As another measure of validation, we examined the net payments in the data to calculate the overall rate of net to total payments. This was done to verify whether the MarketScan data aligned with the results of prior actuarial value analyses for employer plans. That is, we wanted to verify that average plan payments in the MarketScan data would approximate the overall actuarial value of the employer plans under analysis and might only underestimate to the extent there was out-of-network usage.

Summing MarketScan claims for all services, excluding prescription drugs, showed an overall net paid percentage on the MarketScan data of 84.8%, which is not dissimilar to the 84% calculated actuarial value resulting from the ARC Ratebook modeling (83.9% when excluding drug coverage), as discussed in the results section below. A higher percentage of hospital facility claims were paid as compared to physician and other professional claims, which is, again, consistent with our actuarial value analysis.[26]

3. Out-of-Network

To validate out-of-network spending, we reviewed the literature and compared findings to MarketScan tabulations. In our review, we found that the share of out-of-network spending (of total spending) has been about 6-7% in recent years. However, within that spending there is substantial variation in out-of-network use by provider and type of service, with mental health and substance use disorder having significantly higher out-of-network percentages (both use and spending) compared to other categories (three to five times higher).[27]

Reviewing the 2021 MarketScan claims in both the inpatient and outpatient datasets by network status showed a similar disparity. As shown in Table 1, the proportion of total inpatient covered payments that were out-of-network was about 2%, while out-of-network payments made up approximately 17% of inpatient mental health/substance use disorder payments.[28] This pattern holds for PPO, POS, and High Deductible (HDED) plans. EPOs and HMOs combined, however, have very few out-of-network claims (5% total covered payments) as most of these plans do not offer out-of-network coverage and claims may not be filed with insurance since there is no

[26] Note that this report does not discuss net payment for prescription drugs due to the heterogeneity and complication of certain payment mechanisms, including the application of discounts, rebates or other price concessions, and coordination of benefits.

[27] Milliman. Addiction and mental health vs physical health: Widening disparities in network use and provider reimbursement. November 19, 2019. Accessed: Addiction and mental health vs. physical health: Widening disparities in network use and provider reimbursement (milliman.com).

[28] Total covered payments include the total gross payment to a provider for a specific service; that is, the amount eligible for payment after applying pricing guidelines such as fee schedules and discounts and before applying deductibles, copayments, and coordination of benefits. Merative MarketScan Research Databases Commercial Database & Medicare Database User Guide. Data Year 2021.

coverage or care may be foregone.[29] It should be noted that total covered payments for out-of-network services exclude any balance billing, so these amounts may be understated.[30]

Table 1: Comparison of 2021 MarketScan Inpatient Claims, MarketScan Sample Universe

Plan Type	Network Status	Total Covered Payments (millions $)		Percent of Dollars by Network Status	
		Overall	MH/SUD	Overall	MH/SUD
EPO/HMO	In-Network	$34,030	$1,293	99%	95%
	Out-of-Network	$463	$65	1%	5%
POS	In-Network	$34,224	$1,592	98%	79%
	Out-of-Network	$678	$418	2%	21%
PPO	In-Network	$105,887	$4,107	98%	82%
	Out-of-Network	$1,916	$884	2%	18%
HDED/ CDHP	In-Network	$47,452	$2,004	98%	82%
	Out-of-Network	$953	$442	2%	18%
Total	In-Network	$229,318	$9,315	98%	83%
	Out-of-Network	$4,188	$1,852	2%	17%

Table 2 demonstrates the difference in payment rates (that is, what proportion of total claims were paid by insurance) between in-network and out-of-network inpatient claims. Despite the out-of-network claims being paid at lower rates (80% vs 93% for all inpatient claims), the small proportion of out-of-network claims does not affect the overall rate of payment by insurance (93% for both in-network and in total). The exclusion of balance billing in the total covered payment implies that net payments may be overstated since all balance billing would be paid out-of-pocket by participants. In the AV results section (Section V.A) we found a similar disparity between in- and out-of-network AVs.[31]

[29] The total is larger than the sum of the plan types listed below, as some smaller types (basic/major medical, comprehensive, and unknown plan types) have been omitted for simplicity. We also note that given how small the MH/SUD is, we'd expect the non-MH/SUD will look similar to the overall total.

[30] Balance billing, also called surprise billing, is when the provider bills the patient for the difference between the provider's charge and the allowed amount the health insurance plan will pay for out-of-network services. While protections against surprise billing have come into existence starting in 2022, this analysis was completed using 2021 data.

[31] Additional details on total vs. net payments can be found in the Supplemental Tables in the Technical Appendix.

Table 2: Comparison of 2021 MarketScan Inpatient Claims (Total vs Net), MarketScan Sample Universe, All Plan Types

	Total Covered Payments (millions $)		Net Payments[32] (millions $)		Percent Paid (Net / Total)	
Network Status	**Overall**	**MH/SUD**	**Overall**	**MH/SUD**	**Overall**	**MH/SUD**
In-Network	$229,318	$9,315	$214,313	$8,364	93%	90%
Out-of-Network	$4,188	$1,852	$3,362	$1,523	80%	82%
Total	$233,506	$11,167	$217,674	$9,997	93%	89%

Outpatient claims showed a similar pattern in the 2021 MarketScan data. As shown in Table 3, below, 4% of total covered payments were out-of-network. Limiting to just outpatient psychotherapy services, 19% of total covered payments were out-of-network and for the broader category of claims for outpatient mental health/substance use disorder, based on diagnosis, the figure is 16%.[33] This disparity between all outpatient services and mental health services is important to note. In this case, HMO beneficiaries again deviate from the behavior of PPO, POS, and high deductible plan participants, having only 1% of psychotherapy and 2% of mental health total covered payments out-of-network, on par with overall outpatient spending that is out-of-network for them. Again, HMOs mandate the use of in-network services, and there is no difference in out-network for EPO/HMO because there is no coverage out-network for these plan types, outside of what is required by law.[34] While all claims that are paid appear in the data, use may be undercounted due to unfiled claims (fully patient paid out-of-pocket), denied claims, or balance billing, and may be understated vs. actual need due to foregone care.

Table 3: Comparison of 2021 MarketScan Outpatient Claims, MarketScan Sample Universe

Plan Type	Network Status	Total Covered Payments (millions $)			Percentages		
		Overall	**Psych**	**MH/SUD**	**Overall**	**Psych**	**MH/SUD**
EPO/HMO	In-Network	$73,315	$1,418	$4,250	98%	99%	98%
	Out-of-Network	$1,224	$20	$93	2%	1%	2%
POS	In-Network	$72,142	$1,874	$4,707	95%	72%	76%
	Out-of-Network	$3,733	$736	$1,447	5%	28%	24%

[32] Net payment includes payment received by the provider excluding patient out-of-pocket and coordination of benefits (that is, employer or plan liability). Merative MarketScan Research Databases Commercial Database & Medicare Database User Guide. Data Year 2021.

[33] Psychotherapy services as defined in Benson, N., and Song, Z. (2020). Prices And Cost Sharing For Psychotherapy In Network Versus Out Of Network In The United States. HealthAffairs. Vol. 39, No.7. Accessed: Prices And Cost Sharing For Psychotherapy In Network Versus Out Of Network In The United States | Health Affairs.

[34] The No Surprises Act was signed into law as part of the Consolidated Appropriations Act of 2021 and went into effect starting January 1, 2022. See Internal Revenue Code Sec. 9816(a), 9816(b), and 9817; ERISA Sec. 716(a), 716(b), and 717; and PHS Act Sec. 2799A-1(a), 2799A-1 (b), 2799A-2, which provide protections for out-of-network services for emergency services, out-of-network providers at in-network facilities where sufficient notice and consent was not provided, and air ambulance services. https://www.naag.org/wp-content/uploads/2021/02/No-Surprises-Act.pdf.

Plan Type	Network Status	Total Covered Payments (millions $)			Percentages		
		Overall	Psych	MH/SUD	Overall	Psych	MH/SUD
PPO	In-Network	$234,702	$4,686	$12,663	96%	81%	84%
	Out-of-Network	$9,553	$1,077	$2,451	4%	19%	16%
HDED/CDHP	In-Network	$111,143	$1,928	$6,054	96%	79%	82%
	Out-of-Network	$4,874	$526	$1,309	4%	21%	18%
Total	In-Network	$508,703	$10,264	$28,689	96%	81%	84%
	Out-of-Network	$20,261	$2,451	$5,514	4%	19%	16%

As noted above, net out-of-network payments were lower than those for in-network services for outpatient services, at a differential higher than that found for inpatient services. Again, the low proportion of claims that are out-of-network do not affect overall net payment rates in the aggregate. However, individuals with outpatient, out-of-network mental health care may be impacted.

Table 4 demonstrates the difference in payment rates between in and out-of-network claims in the MarketScan outpatient data, while also demonstrating that payment rates are distinctly lower for both psychotherapy and less so for mental health/substance use disorder services as compared to overall, as the latter includes some outpatient services that became covered as of 2022 by the No Surprises Act. The "Percent Paid" column can be thought of as a proxy for the actuarial value of outpatient claims, in particular for psychotherapy services.

Table 4: Comparison of 2021 MarketScan Outpatient Claims (Total vs Net), MarketScan Sample Universe, All Plan Types

	Total Covered Payments (millions $)			Net Payments (millions $)			Percent Paid (Net / Total)		
Network Status	Overall	Psych	MH/SUD	Overall	Psych	MH/SUD	Overall	Psych	MH/SUD
In-Network	$508,703	$10,264	$28,689	$415,423	$7,913	$22,911	82%	77%	80%
Out-of-Network	$20,261	$2,451	$5,514	$13,732	$1,301	$3,584	68%	53%	65%
Total	$528,964	$12,715	$34,203	$429,156	$9,214	$26,494	81%	72%	77%

To further understand the impact on affected participants, we examined only users of out-of-network services (see Table 5). As shown in the highlighted box in Table 5 below, for persons who used went out of network for outpatient services (including office visits), 14% of their total payments was out-of-network, leaving 86% (100%-14%) still using in-network providers. For psychotherapy users, who went out-of-network, 51% of costs were for those out-of-network providers, and for the broader category of mental health/substance use disorder this amount was 42%. A substantial percentage of their mental health or substance use claims were still in network (49% for psychotherapy and 58% for the broader category of mental health / substance use disorder services), showing that people receiving out-of-network mental health care are still receiving some mental health care in-network.

Table 5: Comparison of 2021 MarketScan Outpatient Claims – Out-of-Network Users Only - MarketScan Sample Universe

Plan Type	Network Status	Total Covered Payments (millions $)			Out-of-Network Percentages		
		Overall	Psych	MH/SUD	Overall	Psych	MH/SUD
EPO/HMO	Out-of-Network	$1,224	$20	$93	7%	7%	11%
POS	Out-of-Network	$3,733	$736	$1,447	20%	61%	51%
PPO	Out-of-Network	$9,553	$1,077	$2,451	14%	51%	42%
HDED/CDHP	Out-of-Network	$4,874	$526	$1,309	14%	53%	42%
Total	Out-of-Network	$20,261	$2,451	$5,514	**14%**	**51%**	**42%**

Additional literature was reviewed to understand and verify what was observed with respect to out-of-network usage.[35] Some studies also noted issues with access for these behavioral health services, and that people are more likely to use out-of-network services for behavioral health compared to other medical services and face higher out-of-pocket costs for this care compared to other types of specialty medical care. Additionally, network adequacy is not captured by claims data. Claims known to be out-of-network may be omitted from insurance altogether (particularly in the case of HMOs). The other piece that cannot be quantified by claims data is how often beneficiaries forgo care due to non-coverage or higher out-of-pocket spending.

The literature also suggested that psychiatrists are declining to participate in commercial insurance networks at an increasing rate. A recent OIG report notes the same problem in Medicare and Medicaid- a lack of participation by behavioral health providers.[36] One reason for lack of participation by psychiatrists may be reimbursement disparity. An analysis of MarketScan data by Mark and Olesiuk demonstrated that "*[p]sychiatrists receive lower in-network reimbursement than non-psychiatric medical doctors for many of the same services*."[37]

[35] Additional literature reviewed included the following: Claxton, G., Rae, M., Cox, C., and Levitt, L. (2018) An analysis of out-of-network claims in large employer health plans. Peterson-KFF Health System Tracker. Accessed: An analysis of out-of-network claims in large employer health plans - Peterson-KFF Health System Tracker; Jean Fuglesten Biniek, J., Hargraves, J., Johnson, B. and Kennedy, K. (2020) How often do providers bill out of network? Health Care Cost Institute. Accessed: How often do providers bill out of network? - HCCI (healthcostinstitute.org); National Alliance on Mental Illness (NAMI). (2016). Out–of–Network, Out–of–Pocket, Out–of–Options The Unfulfilled Promise of Parity. Accessed: Out-of-Network, Out-of-Pocket, Out-of-Options: The Unfulfilled Promise of Parity | NAMI: National Alliance on Mental Illness; Song Z, Johnson W, Kennedy K, Biniek JF, Wallace J. Out-Of-Network Spending Mostly Declined In Privately Insured Populations With A Few Notable Exceptions From 2008 To 2016. Health Aff (Millwood). 2020 Jun;39(6):1032-1041. Accessed: Out-Of-Network Spending Mostly Declined In Privately Insured Populations With A Few Notable Exceptions From 2008 To 2016 - PMC (nih.gov) and Milliman. Addiction and mental health vs physical health: Widening disparities in network use and provider reimbursement. November 19, 2019. Accessed: Addiction and mental health vs. physical health: Widening disparities in network use and provider reimbursement (milliman.com).

[36] HHS Office of Inspector General. A Lack of Behavioral Health Providers in Medicare and Medicaid Impedes Enrollees' Access to Care. March 2024. OEI-02-22-00050. Accessed: A Lack of Behavioral Health Providers in Medicare and Medicaid Impedes Enrollees Access To Care (hhs.gov).

[37] Mark, Tami L., Olesiuk, W., et al. Differential Reimbursement of Psychiatric Services by Psychiatrists and Other Medical Providers. Psychiatry Online, 1 December 2017. Accessed: Differential Reimbursement of Psychiatric Services by Psychiatrists and Other Medical Providers | Psychiatric Services (psychiatryonline.org).

Out-of-network psychiatrist reimbursement is much higher while non-psychiatrist doctors' reimbursement is similar in-network and out-of-network.

4. Comparison to MEPS-HC

As a final model validation assessment, we examined the data differences between the original and updated version of the ARC Ratebook and how the multi-year (2018-2021) MEPS-HC database was adjusted to provide a basis for comparison of the results to the results including the MarketScan data.[38] Only minor adjustments to the NHE-controlled MEPS-HC database were required.[39]

V. Results

The results of our analysis can be divided into the following sections: in-network AV calculations, out-of-network AV calculations, and the sensitivity analysis comparing in-network to out-of-network coverage, as well as looking at blended network AVs that result from varying network utilization scenarios. While in-network AV calculations are the traditional measure of richness, they do not account for restrictive networks, or users going out of network and potentially facing higher cost-sharing. Thus, in-network AV calculations are the highest AV for a standard population assuming all services are sourced in-network. Out-of-network AVs consider the lower bound of actuarial value by assuming all services were sourced out-of-network.

Actual MarketScan utilization of out-of-network services was too small to simulate person level blended actuarial values that considered actual in- and out-of-network use of services. However, estimates of blended AVs for three plausible scenarios are explored that represent the likely bounds of actuarial value accounting for various levels of network utilization. These scenarios allow for out-of-network services paid out-of-pocket (claims not filed) as well as balance billing. These results are presented below.

A. Actuarial Values

Actuarial values are presented under two scenarios: all claims paid under in-network plan parameters and all claims paid under out-of-network plan parameters. The former is considered the standard measure of plan richness and is the baseline measure. The latter is a lower bound of plan richness if all services were sourced out-of-network. Both measures of actuarial value use the same database of spending and use (both in and out-of-network) from our MarketScan Sample Universe.

1. In-Network Actuarial Values

The following tables (Tables 6-14) show the average actuarial values by various plan characteristics for in-network coverage. The overall average in-network actuarial value for 2021 was 0.842, meaning that on average, employer sponsored plans paid 84.2% of covered charges. Actuarial values were examined by funding

[38] The original version of the ARC Ratebook was based on a multi-year database with spending and utilization taken from the MEPS-HC.
[39] Additional details can be found in the Technical Appendix.

mechanism, sector, size, and plan type. Averages are shown in the tables below, which are weighted using the covered enrollee (employee) weights from the 2021 KFF EHBS.

The KFF EHBS asks employers if their plans are either self-insured or fully insured, and in addition asks employers under size 200 if their plans are considered "level-funded." Table 6 shows relatively little difference between plans reported as non level-funded fully insured and self-insured plans (including those self-insured plans that were reported as level-funded). Plans reported as fully insured but level-funded plans do have a slightly lower AV, which may be due to being restricted in the EHBS to smaller (under size 200) employers. The EHBS is currently the only source of data for level-funding estimates. While Table 6 breaks out fully insured level-funded plans into their own category, later tables (with the exception of Tables 15 and 24) include all level-funded plans with self-insured, consistent with the regulatory status of level-funded plans that considers them self-insured.

Table 6: Average In-Network Actuarial Values by Funding, All Plans

Funding	AV	% Distribution
All	0.842	100%
Fully Insured/Not Level	0.845	29%
Fully Insured/Level	0.833	7%
Self-Insured	0.841	64%

Non-federal public sector plans, though covering a smaller percentage of employees, had slightly richer plans (see Table 7).

Table 7: Average In-Network Actuarial Values by Sector, All Plans

Sector	AV	% Distribution
All	0.842	100%
Non-Federal Public Sector	0.866	7%
Private Sector	0.840	93%

As demonstrated in Table 8, HMO plans, which have restrictive provider networks, had the highest actuarial values, as the AV calculations do not consider network richness or availability of providers. PPO and POS plans were similar and made up the bulk of plans, when weighted by enrollees. High deductible plans have lower actuarial values, owing to their higher levels of cost-sharing.

Table 8: Average In-Network Actuarial Values by Plan Type, All Plans

Plan Type	AV	% Distribution
All	0.842	100%
HMO	0.883	16%
PPO	0.849	47%
POS	0.839	9%
High Deductible	0.809	28%

Table 9 below shows that the Northeast and the West regions had higher actuarial values compared to the Midwest and Southern regions.

Table 9: Average In-Network Actuarial Values by Region

Region	AV	% Distribution
All	0.842	100%
Northeast	0.859	21%
Midwest	0.829	26%
South	0.832	32%
West	0.857	21%

The presence of union workers in the firm, as displayed in Table 10, is also associated with higher actuarial values, consistent with the theory that collective bargaining leads to better worker benefits.

Table 10: Average In-Network Actuarial Values by Presence of Union

Union	AV	% Distribution
All	0.842	100%
Firm has Union Workers	0.859	35%
Firm has No Union Workers	0.829	65%

As often noted, larger employers in general have richer plans than smaller employers, as shown below in Table 11. Historically, larger employers have been able to offer better benefits and more stability compared with smaller employers who have fewer workers and more volatility in health costs.

Table 11: Average In-Network Actuarial Value by Employer Size, All Plans and Private Sector Plans

Employer Size	All	Private Sector Only
All	0.842	0.840
3-9 Workers	0.825	0.824
10-24 Workers	0.822	0.822
25-49 Workers	0.831	0.831
50-199 Workers	0.835	0.835
200-999 Workers	0.845	0.841
1000+ Workers	0.847	0.846

As shown in Table 12, differences by plan type and sector dominated over differences by funding. This is consistent with ARC's 2017 findings that funding did not have a statistically significant impact on actuarial value.[40]

Table 12: Average In-Network Actuarial Value by Funding, Sector and Plan Type

Funding	Sector	Total	HMO	PPO	POS	High Ded
All	All	0.842	0.883	0.849	0.839	0.809
	Non-Federal Public Sector	0.866	0.936	0.871	0.880	0.789
	Private Sector	0.840	0.880	0.846	0.835	0.810
Fully Insured / Not Level-Funded	All	0.845	0.884	0.845	0.840	0.810
	Non-Federal Public Sector	0.868	0.941	0.850	0.824	0.795
	Private Sector	0.844	0.880	0.844	0.840	0.811
Self- or Level-Funded	All	0.841	0.882	0.850	0.838	0.808
	Non-Federal Public Sector	0.866	0.930	0.877	0.886	0.788
	Private Sector	0.839	0.880	0.847	0.830	0.809

Table 13 shows the average in-network AVs by employer size and plan type and generally shows the expected pattern. However, HMOs are typically richer and high deductible plans are less rich, but sample sizes for specific cells may be affecting the richness of specific plans (the low values observed for HMOs for very small employers). In general, we found that AV rose with employer size.

Table 13: Average In-Network Actuarial Values by Employer Size and Plan Type

Employer Size	Total	HMO	PPO	POS	High Ded
All	0.842	0.883	0.849	0.839	0.809
3-9 Workers	0.825	0.799	0.848	0.812	0.792
10-24 Workers	0.822	0.823	0.820	0.853	0.801
25-49 Workers	0.831	0.853	0.835	0.824	0.819
50-199 Workers	0.835	0.844	0.841	0.847	0.816
200-999 Workers	0.845	0.887	0.858	0.848	0.811
1000+	0.847	0.901	0.852	0.845	0.806

Generally, both self- or level-funded and fully insured plans increased in richness with increasing employer size (note that small numbers of plans (cell sizes) in the EHBS for some size / funding combinations may affect individual cell AVs). At the largest employer size, fully insured plans showed a higher actuarial value compared with self-insured (level-funding was only considered for smaller employer sizes).

[40] Actuarial Research Corporation (ARC). Final Report: Analysis of Actuarial Values and Plan Funding Using Plans from the National Compensation Survey. May 12, 2017. Compiled for Office of Policy and Research (OPR), Employee Benefits Security Administration (EBSA), Department of Labor (DOL) by Actuarial Research Corporation (ARC). Accessed: https://www.dol.gov/sites/dolgov/files/EBSA/researchers/analysis/health-and-welfare/analysis-of-actuarial-values-and-plan-funding-using-plans-from-the-national-compensation-survey.pdf.

Table 14: Average In-Network Actuarial Values by Employer Size and Funding

Employer Size	Total	Fully Insured	Self-Insured / Level-Funded
All	0.842	0.845	0.841
3-9 Workers	0.825	0.816	0.834
10-24 Workers	0.822	0.831	0.810
25-49 Workers	0.831	0.829	0.833
50-199 Workers	0.835	0.835	0.834
200-999 Workers	0.845	0.840	0.847
1000+	0.847	0.881	0.842

a) Comparison to MEPS-HC based Ratebook Output (In-Network)

In this section, we compared the in-network actuarial value output usings MEPS-HC data to MarketScan data. The ARC Ratebook was also run on the same plans using spending and utilization from four years of the MEPS-HC. Due to the difference in the spending distribution, even after adjusting for both non-users and mean spending by service, actuarial values differed between the two data sets. In addition, the MEPS-HC based claims are more limited by service category, not differentiating for spending for either inpatient or outpatient mental health or substance use disorder. On average, the MEPS actuarial values were slightly higher (0.857 vs. 0.842), as the spending distribution was slightly different. The comparison between the two data sets can be seen in the following tables, and these provide a useful tool to benchmark future analysis that may rely solely on spending and utilization data from the MEPS-HC.

As shown in Table 15 below, both MEPS and MarketScan revealed that, as noted previously and with the exception of level-funding, plan funding did not have a significant impact on actuarial value. This is likely because level-funding applies only to smaller employer plans.

Table 15: Average In-Network Actuarial Values by Funding, All Plans

Funding	MarketScan AV	MEPS AV
All	0.842	0.857
Fully Insured / Not Level	0.845	0.861
Fully Insured / Level	0.833	0.848
Self-Insured	0.841	0.857

In Table 16, both data sets showed a similar disparity by sector. The AV for public plans was higher than private. The non-federal public sector has more union members, which may result in better benefits and/or more longevity. There could also be tradeoffs between benefits and salary.

Table 16: Average In-Network Actuarial Values by Sector, All Plans

Sector	MarketScan AV	MEPS AV
All	0.842	0.857
Non-Federal Public Sector	0.866	0.880
Private Sector	0.840	0.856

Similarly, while MEPS AVs were consistently higher than those based on MarketScan, the pattern by plan type holds. We found that HMOs had the highest AVs followed by similarity between PPO and POS plans, while high deductible plans had the lowest AVs.

Table 17: Average In-Network Actuarial Values by Plan Type, All Plans

Plan Type	MarketScan AV	MEPS AV
All	0.842	0.857
HMO	0.883	0.894
PPO	0.849	0.863
POS	0.839	0.854
High Deductible	0.809	0.829

As shown in Table 18, rising AVs with employer size were found using both data sets.

Table 18: Average In-Network Actuarial Value by Employer Size, All Plans and Private Sector Plans

	MarketScan AV		MEPS AV	
Employer Size	All	Private Sector Only	All	Private Sector Only
All	0.842	0.840	0.857	0.856
3-9 Workers	0.825	0.824	0.840	0.839
10-24 Workers	0.822	0.822	0.838	0.838

	MarketScan AV		MEPS AV	
Employer Size	All	Private Sector Only	All	Private Sector Only
25-49 Workers	0.831	0.831	0.846	0.846
50-199 Workers	0.835	0.835	0.850	0.850
200-999 Workers	0.845	0.841	0.860	0.857
1000+ Workers	0.847	0.846	0.863	0.861

In addition to comparing averages between the two claims datasets, we also looked at the distributions of the resulting actuarial values. This comparison is presented in the Technical Appendix to this report.

b) In-Network Actuarial Values With and Without Mental Health Variables

While overall usage of, and spending on, out-of-network services is low, there is higher out-of-network use and spending for mental health and substance abuse disorder services. This section explores the effect of varying levels of coverage for mental health and substance use disorder to provide "bookend" estimates of how out-of-network use affects AV. The table below compares the in-network actuarial values (Base), to three additional options for mental health coverage: coverage as all other benefits ("AAO"), no coverage ("NC"), and coverage based on the plan's out-of-network cost-sharing parameters ("OON").

Coverage as all other (AAO) applies the plan deductible and plan coinsurance rather than the plan specific mental health cost-sharing, and showed a slight reduction in AV, most likely due to moving the office visits to higher levels of cost-sharing than the per visit copays. The OON AV results from covering mental health and substance use disorder claims based on out-of-network cost-sharing. Even with higher cost-sharing levels, given the small proportion of claims involved there is very little movement in the AV. Finally, as expected, the "no coverage" category showed the largest decrease, as MH/SUD claims are modeled as paid completely out-of-pocket (excluding those claims embedded in the emergency room and outpatient hospital categories).

In all cases in Table 22, however, the impact was small which is due to the relatively low amount of mental health and substance use disorder spending compared to total spending in the database. While record counts of plans are shown (N) below, the results were weighted using counts of ESI policy holders, consistent with the EHBS universe.

Table 22: Average In-Network Actuarial Value by Plan Type

	N	Mean AV	Minimum AV	Maximum AV	Ratio to Base AV
All Plans					
Base AV	1982	0.8420	0.5390	0.9920	1.0000
AAO AV	1982	0.8415	0.5390	0.9920	0.9994
NC AV	1982	0.8233	0.5322	0.9697	0.9778
OON AV	1982	0.8414	0.5390	0.9920	0.9994

	N	Mean AV	Minimum AV	Maximum AV	Ratio to Base AV
Plan Type=HMO					
Base AV	244	0.8828	0.6190	0.9920	1.0000
AAO AV	244	0.8819	0.6190	0.9920	0.9990
NC AV	244	0.8625	0.6116	0.9689	0.9770
OON AV	244	0.8819	0.6190	0.9920	0.9990
Plan Type=PPO					
Base AV	903	0.8485	0.5390	0.9920	1.0000
AAO AV	903	0.8480	0.5390	0.9920	0.9994
NC AV	903	0.8297	0.5326	0.9695	0.9779
OON AV	903	0.8480	0.5390	0.9920	0.9994
Plan Type=POS					
Base AV	184	0.8389	0.5477	0.9748	1.0000
AAO AV	184	0.8380	0.5462	0.9748	0.9989
NC AV	184	0.8200	0.5394	0.9521	0.9775
OON AV	184	0.8377	0.5462	0.9748	0.9986
Plan Type=HDED					
Base AV	651	0.8087	0.5398	0.9326	1.0000
AAO AV	651	0.8086	0.5396	0.9326	0.9998
NC AV	651	0.7914	0.5322	0.9118	0.9786
OON AV	651	0.8085	0.5396	0.9326	0.9998

As noted above, when compared to the tabulations of out-of-network use for mental health and substance use disorder, the effects of moving from the Base AV to the OON AV showed only a slight change overall. Comparable to the out-of-network tabulations, while effects of network coverage may be large on a specific service, the overall effect was muted by the proportion of charges for the service. Mental health and substance use disorder are only a small subset of total charges and thus the effect of network coverage is muted.

2. Out-of-Network Actuarial Values

The following tables present the average actuarial values by select plan characteristics for out-of-network coverage, based on the imputed coverage parameters as listed in Section IV A. The out-of-network AVs represent the lowest bound of the range of actuarial values for the plans evaluated, with all services paid using out-of-network cost-sharing parameters. The average out-of-network actuarial value for 2021 for all plan types was 0.561, which meant that if only out-of-network coverage was used, it would pay just over 56% of charges.[41] This includes the extremely low AV for HMO plans, which cover almost no services out-of-network. Even if HMOs were excluded, the average out-of-network actuarial value is still just 0.666.

[41] Balance billing amounts are not included in the MarketScan data.

While we acknowledge that this scenario of using only out-of-network services is highly unlikely, the information below is informative to show the effects of not having access to network providers. As with the in-network values, actuarial values differed by funding mechanism, sector, size, and plan type. Averages are shown in the tables below, which were weighted using the covered enrollee (employee) weights from the 2021 KFF EHBS.

As shown in Table 23, the overall out-of-network AV was dramatically affected by the HMO value as those plans have no out-of-network coverage beyond emergency care). When recalculated to exclude HMOs, the average was slightly higher (0.666), but still much lower than the average in-network AV (0.842).

Table 23: Average Out-of-Network Actuarial Values by Plan Type, All Plans

Plan Type	AV	% Distribution
All	0.561	100%
HMO	0.028	16%
All Excluding HMO	0.666	84%
PPO	0.687	47%
POS	0.688	9%
High Deductible	0.623	28%

When looking at average out-of-network actuarial values by funding, plan type was once again a key factor in the differences in AVs. What appears to be a large range of AVs by plan type is driven by the proportion of HMOs in each category. HMOs only cover out-of-network services required by law. Fully insured plans that are not level-funded show out-of-network AVs increased by just over 30%, which appears to be driven by the large proportion of HMOs in this category. Once the HMOs were excluded, the AVs tended to be less dispersed, although self-insured plans showed a higher out-of-network AV. Removing HMOs from the analysis allowed variation by descriptives such as funding, sector, and size to be meaningful.

Table 24: Average Out-of-Network Actuarial Values by Funding, All Plans

Funding	AV	AV (no HMOs)
All	0.561	0.666
Fully insured / Not Level	0.501	0.653
Fully insured / Level	0.604	0.654
Self-Insured	0.584	0.672

Consistent with in-network findings, we found that non-federal public sector plans were richer than their private sector counterparts (Table 25).

Table 25: Average Out-of-Network Actuarial Values by Sector, All Plans

Sector	AV	AV (No HMOs)
All	0.561	0.666
Non-Federal Public Sector	0.621	0.694
Private Sector	0.557	0.663

As shown in Table 26, contrary to in-network findings, employer size did not have a significant impact on AV.

Table 26: Average Out-of-Network Actuarial Value by Employer Size, All Plans and Private Sector Plans, Excluding HMOs

Employer Size	All	Private Sector Only
All	0.666	0.663
3-9 Workers	0.679	0.677
10-24 Workers	0.641	0.642
25-49 Workers	0.663	0.664
50-199 Workers	0.656	0.657
200-999 Workers	0.671	0.667
1000+ Workers	0.668	0.665

Table 27 shows that out-of-network AVs differ by plan type. As previously mentioned, HMOs have very low out-of-network AVs. PPO, POS and high deductible plans have higher out-of-network AVs, ranging from 0.623 (high deductible) to 0.688 (POS) for all funding/sectors.

Table 27: Average Out-of-Network Actuarial Value by Funding, Sector and Plan Type

Funding	Sector	Total	HMO	Total, Excluding HMO	PPO	POS	High Ded
All	All	0.561	0.028	0.666	0.687	0.688	0.623
	Non-Federal Public Sector	0.621	0.027	0.694	0.712	0.715	0.606
	Private Sector	0.557	0.028	0.663	0.685	0.685	0.624
Fully Insured / Not Level-Funded	All	0.501	0.028	0.653	0.666	0.690	0.613
	Non-Federal Public Sector	0.487	0.027	0.669	0.698	0.620	0.562
	Private Sector	0.501	0.028	0.652	0.663	0.692	0.615
Self- or Level-Funded	All	0.586	0.028	0.670	0.694	0.686	0.627
	Non-Federal Public Sector	0.664	0.027	0.700	0.716	0.726	0.616
	Private Sector	0.580	0.029	0.667	0.692	0.680	0.627

Removing the impact of plan type by excluding HMOs, there was still little correlation between AV and employer size, unlike findings for in-network.

Table 28: Average Out-of-Network Actuarial Values by Employer Size and Plan Type

Employer Size	Total	HMO	Total Excluding HMO	PPO	POS	High Ded
All	0.561	0.028	0.666	0.687	0.688	0.623
3-9 Workers	0.548	0.029	0.679	0.682	0.698	0.597
10-24 Workers	0.551	0.027	0.641	0.657	0.693	0.570

Employer Size	Total	HMO	Total Excluding HMO	PPO	POS	High Ded
25-49 Workers	0.599	0.027	0.663	0.679	0.650	0.647
50-199 Workers	0.579	0.027	0.656	0.680	0.705	0.599
200-999 Workers	0.609	0.028	0.671	0.698	0.688	0.628
1000+	0.542	0.029	0.668	0.690	0.694	0.630

Fully insured plans showed no meaningful correlation with AV. Level-funded plans were only for smaller employers, but the combined category of self/level-funding did generally show increasing AV with increasing employer size.

Table 29: Average Out-of-Network Actuarial Values by Employer Size and Funding, Excluding HMOs

Employer Size	Total Excluding HMO	Fully Insured	Self-Insured/ Level-Funded
All	0.666	0.653	0.670
3-9 Workers	0.679	0.657	0.700
10-24 Workers	0.641	0.661	0.616
25-49 Workers	0.663	0.678	0.640
50-199 Workers	0.656	0.643	0.669
200-999 Workers	0.671	0.653	0.681
1000+	0.668	0.640	0.671

3. Distributions of Actuarial Values

Distributions of the in-network and out-of-network actuarial values are shown below.[42] For in-network AVs, the mean and medians were essentially equal, while for out-of-network AVs, the mean fell under the median, likely driven by the very low HMO out-of-network AVs.

Table 30, below, looks at the weighted distributions of actuarial values for all 1,982 plans in the EHBS database, and compares the in-network and out-of-network values. In-network values are rather clustered, with the middle 50% of plans having AVs between (approximately) 0.8 and 0.9. Very few in-network AVs are under 75% or over 95%. For the out-of-network AVs, the inclusion of HMOs has a substantial number of plans with extremely low AVs and skews the distribution. The last column in Table 30 looks at out-of-network AVs without HMOs and shows a pattern more similar to the in-network AVs, though at a lower mean.

[42] Figures for the weighted distribution for each AV variable (and by plan type) can be found in the Technical Appendix.

Table 30: Weighted Distributions: In-Network and Out-of-Network AVs

Percentile	In-Network AV	Out-of-Network AV	Out-of-Network (excluding HMO)
0%	0.539	0.022	0.156
1%	0.703	0.024	0.400
5%	0.742	0.027	0.482
10%	0.765	0.030	0.533
25%	0.799	0.536	0.603
50%	0.842	0.645	0.666
75%	0.888	0.715	0.735
90%	0.922	0.796	0.806
95%	0.947	0.833	0.838
99%	0.974	0.863	0.872
100%	0.992	0.926	0.926
Mean	0.842	0.561	0.666
N (unwtd)	1,982	1,982	1,738
N (wtd)	75,931,639	75,931,639	63,528,325

Distributions of the in-network and out-of-network actuarial values (total AV) by plan type are shown in the tables below. The final column of Table 31 excludes HMOs from the comparison given their lack of out-of-network coverage for most services. In-network AVs ranged from approximately 0.54/0.62 to 0.93/0.99 across all plan types. The median AV for each plan type was generally close to the average. Out-of-network AVs were lower across all plan types with a sharp decline in AV for HMO plans.

Table 31: Weighted Distributions: In-Network AVs by Plan Type

Percentile	HMO	PPO	POS	High Ded	Total Excluding HMO
0%	0.619	0.539	0.548	0.540	0.539
1%	0.696	0.726	0.727	0.699	0.709
5%	0.732	0.757	0.745	0.737	0.742
10%	0.773	0.780	0.759	0.748	0.764
25%	0.846	0.810	0.799	0.777	0.794
50%	0.900	0.848	0.837	0.803	0.833
75%	0.931	0.884	0.888	0.844	0.875
90%	0.974	0.918	0.909	0.878	0.903
95%	0.974	0.937	0.925	0.898	0.93

Percentile	HMO	PPO	POS	High Ded	Total Excluding HMO
99%	0.980	0.969	0.966	0.922	0.967
100%	0.992	0.992	0.975	0.933	0.992
Mean	0.883	0.849	0.839	0.809	0.834
N (unwtd)	244	903	184	651	1,738
N (wtd)	12,403,315	35,335,093	6,636,276	21,556,955	63,528,325
% of Total	16%	47%	9%	28%	84%

When HMOs were excluded from the out-of-network distribution, as shown in Table 32 below, we observed approximately equal mean and median AVs.

Table 32: Weighted Distributions: Out-of-Network AVs by Plan Type

Percentile	HMO	PPO	POS	High Ded	Total Excluding HMO
0%	0.022	0.156	0.375	0.338	0.156
1%	0.024	0.427	0.400	0.378	0.400
5%	0.024	0.507	0.521	0.450	0.482
10%	0.025	0.557	0.557	0.496	0.533
25%	0.026	0.629	0.619	0.568	0.603
50%	0.029	0.691	0.692	0.629	0.666
75%	0.030	0.761	0.762	0.679	0.735
90%	0.031	0.815	0.816	0.743	0.806
95%	0.032	0.839	0.833	0.794	0.838
99%	0.032	0.886	0.903	0.844	0.872
100%	0.032	0.926	0.903	0.844	0.926
Mean	0.028	0.687	0.688	0.623	0.666
N (unwtd)	244	903	184	651	1,738
N (wtd)	12,403,315	35,335,093	6,636,276	21,556,955	63,528,325
% of Total	16%	47%	9%	28%	84%

4. Correlation Between AV and Plan Premium

We also ran a correlation coefficient for (1) in-network AV and annual premium for single coverage and (2) out-of-network AV and annual premium for single coverage. The tables and figures below show the results for the correlation coefficients between AV and annual premium for single coverage. While higher premiums may be expected to be associated with a higher AV since they are a measure of plan richness, there are many other factors that affect premium, including the characteristics of health plan participants.

Table 33: Statistics on AV & Annual Premiums for Single Coverage

Simple Statistics			
	Mean	**Minimum**	**Maximum**
Single Premium	$7,736	$768	$18,552
In-network AV	0.842	0.539	0.992
Out-of-network AV	0.561	0.022	0.926

The average in-network AV is 0.842 and ranges from 0.539 to 0.992 (Table 33). The out-of-network AV had a larger variation, ranging from 0.022 to 0.926, with a mean of 0.561. Annual premiums for single coverage ranged from $768 to $18,552.

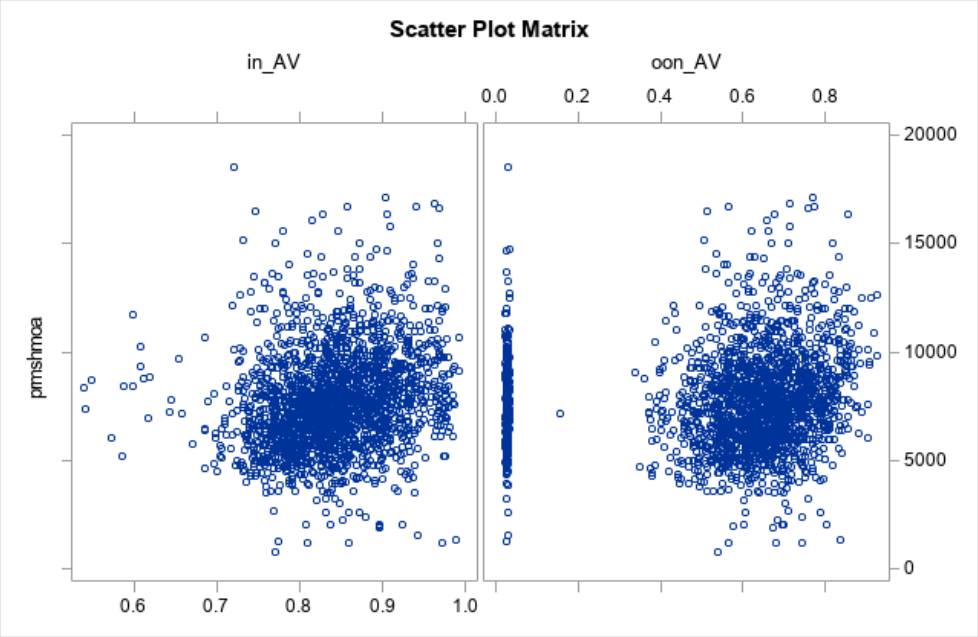
The correlation coefficients and scatter plots as shown in Table 34 and Figure 1 indicate a low correlation between in-network and out-of-network actuarial values and annual premiums. The cluster of plans near 0.0 out-of-network AV are a result of HMOs only including coverage for emergency room (actuarial values are close to zero for this plan type). This shows that as annual premiums for single coverage increased, the actuarial value did not necessarily increase as well. ESI plan premiums are affected by other factors such as age and stability of the work force, employer size (bargaining power), and region. Actuarial values are developed by paying over a standard population which removes some of this plan specific variability.

Table 34: Pearson Correlation Coefficients: AV & Annual Premiums for Single Coverage

Pearson Correlation Coefficients, N = 1982		
Prob > |r| under H0: Rho=0		
	In-network AV	**Out-of-network AV**
Single Premium	0.24678	0.02606
	<.0001	<.0001

Figure 1 shows that for both in-network and out-of-network, there are plans that have high AVs with relatively high and low annual premiums for single coverage. Conversely, there are plans with low AVs that have a wide range of annual premiums for single coverage.

Figure 1: Scatter Plot Matrix: AV & Annual Premiums for Single Coverage



B. Sensitivity Analysis

The primary objective of this research project was to assess the effect of plan networks on plan richness. We conducted a sensitivity analysis which considered three scenarios of blended in and out-of-network actuarial values under plausible network utilization scenarios. While MarketScan data on out-of-network usage was too low to model this at the person level, the scenarios presented below demonstrate a range of possible composite AVs.

In addition, we conducted a sensitivity analysis in order to compare the in- and out-of-network actuarial values and tested for statistical significance in the differences by plan type.

1. Composite Network AVs

Blended actuarial values are presented in this section to demonstrate the range of actuarial values an ESI standard population may face when using both in-network and out-of-network services. As discussed in the Background section of this report, the in-network AV, while the standard measure of richness of a benefit plan, does not account for network restrictions, nor additional costs associated with out-of-network services. Out-of-network usage as reported in the MarketScan Commercial Database was too low (approximately 2% on the inpatient file and 4% on the outpatient file) for meaningful person level simulation to develop composite network AVs, and does not include either unfiled or denied claims, nor does it include balance billing. Our review of the literature also suggests low out-of-network spending for 2021, but with spending levels of approximately 4

to 6%. To account for additional unfiled claims, denied claims, balance billing, and other missed out-of-network utilization, varying levels of network usage were considered for comparison.

As reflected in the each of the presented scenarios in Table 35, we have assumed lower out-of-network usage for hospital services, including emergency services (which are required to be covered as if in-network), while physician and other professional services (including mental health and substance abuse disorder visits) reflect higher out-of-network usage assumptions. Due to the complicated nature of drugs, we have assumed out-of-network usage for prescription drugs to be zero to low in each scenario. Note that the in-network and out-of-network AVs shown below are the same in each scenario in Table 35, with only the composite AV differing based on the blend of in- and out-of-network use and spending considered.[43]

Table 35: Composite Actuarial Values by Presumed Network Usage and Plan Type

Scenario	Network Usage	Plan Type	In Network AV	Out of Network AV	Composite AV
1	Hospital: 96.25% in-network, 3.75% out-of-network Physician: 90% in-network, 10% out-of-network Rx: 100% in-network, 0% out-of-network	All	0.842	0.561	0.827
		PPO	0.849	0.687	0.839
		POS	0.839	0.688	0.830
		High Ded	0.809	0.623	0.799
		Non HMOs	0.834	0.666	0.825
2	Hospital: 92.5% in-network, 7.5% out-of-network Physician: 80% in-network, 20% out-of-network Rx: 98% in-network, 2% out-of-network	All	0.842	0.561	0.811
		PPO	0.849	0.687	0.829
		POS	0.839	0.688	0.821
		High Ded	0.809	0.623	0.788
		Non HMOs	0.834	0.666	0.814
3	Hospital: 90% in-network, 10% out-of-network Physician: 50% in-network, 50% out-of-network Rx: 95% in-network, 5% out-of-network	All	0.842	0.561	0.773
		PPO	0.849	0.687	0.804
		POS	0.839	0.688	0.796
		High Ded	0.809	0.623	0.762
		Non HMOs	0.834	0.666	0.789

While HMOs have the highest in-network actuarial values, they only cover out-of-network services required by law. Participants thus rarely utilize out-of-network services and are HMOs are thus not displayed. In all scenarios, high deductible plans have the lowest blended AV while PPO and POS plans are similar.

Scenario 1 considers out-of-network use only slightly higher than suggested by the literature. Non-HMO plans have an in-network actuarial value of 0.834, but under this scenario, the overall AV is reduced about 1%, to 0.825.

Scenario 3 considers high levels of out-of-network physician (including MH/SUD) use (50%), which is roughly consistent with the levels of MH/SUD out-of-network use for those participants that used any services out-of-

[43] These scenarios, along with three additional scenarios, are presented in Section IV. C. in the Technical Appendix.

network (see Table 4). This represents an upper bound of the effect of out-of-network usage on the in-network AV. The non-HMO composite AV (0.789) is approximately the ACA Marketplace "gold" tier (defined as 0.80 AV). ESI plans have rich coverage even when considering out-of-network utilization.

This exercise also demonstrates how actuarial values are driven more by catastrophic claims rather than physician services. Actuarial values showed very little movement when varying levels of network utilization were considered. It is important to note that out-of-network services rarely have an out-of-pocket maximum, so users are vulnerable to unlimited out-of-pocket costs when they go that route. If more inpatient services were to be used out-of-network, the AVs would show much greater disparity. This is not an expected scenario though.

While the results of our blended AV sensitivity analysis present overall effects of plan cost-sharing and assumptions of out-of-network usage, individual users of out-of-network benefits may feel an effect, particularly in the mental health space, even though across a standard population it was not impactful.

2. In-Network vs. Out-of-Network AVs

A key objective of this analysis was to conduct tests of statistical significance for the differences in actuarial values based on in-network or out-of-network parameters. The microsimulation model produced the actuarial values based on these various parameters, allowing for a sensitivity analysis based on network. A total of 1,982 plans were analyzed (weighted to almost 75 million covered employees) and both in-network and out-of-network actuarial values were included in the analysis.

Table 36 presents the results, weighted by policy holders, of the paired t-test (difference between in- and out-of-network AVs (in_av – oon_av)).[44]

Table 36: Paired T-Test Results (in_av – oon_av)

PAIRED T-TEST: The T-TEST Procedure Difference: in_AV - oon_AV		
Mean	**t Value**	**Pr > |t|**
0.2805	9074.07	<.0001

The mean in-network AV was 0.842, and the mean out-of-network AV was 0.561 (resulting in a difference of 0.281). A paired-samples t-test was conducted to compare the difference in means of the two groups. The t-value was 9074.07, with $p < .0001$. The results of this statistical testing indicate that there is a statistically significant difference between the in-network and out-of-network AVs. The 2021 MarketScan data shows low out-of-network utilization, thus in-network AVs are a good proxy for the true AV. However, if out-of-network usage were to increase, the statistical difference in in versus out-of-network AVs implies the true AV would be affected and in-network AV would no longer be a good proxy for the true AV.

[44] We chose a paired t-test because observations are not independent of one another, and we'd expect there to be a relationship between the AVs (in-network vs. out-of-network). This is because we impute out-of-network parameters based on in-network parameters. Additional there is some relationship by plan type (i.e., HMOs do not have out-of-network coverage other than required by law).

We also ran the paired t-test separately for each plan type (and for PPO, POS and HDED, excluding HMOs), weighted by policy holders.

Table 37: Paired T-Test Results by Plan Type

PAIRED T-TEST: The T-TEST Procedure Difference: in_AV - oon_AV			
	Mean	**t Value**	**Pr > |t|**
HMO	0.8546	43569.6	<.0001
PPO	0.1612	10557.5	<.0001
POS	0.1513	4149.42	<.0001
HDED	0.1855	8880.76	<.0001
All (excl HMO)*	0.1684	14265.7	<.0001
* Includes PPO, POS and High Ded plans (excludes HMO)			

The results in Table 37 above show that there is a statistically significant difference between the in-network and out-of-network AVs for each plan type analyzed.

VI. Limitations

Actuarial values provide a basis of common comparison across plans and standard populations, all other things being equal, and thus serve as an important tool for examining richness of benefits. However, while actuarial values and average net paid claims provide measures of plan richness, there are limitations to both. Actuarial values are based solely on the cost-sharing parameters of a health insurance plan (deductible, coinsurance, copays, and out of pocket maximums) and do not incorporate parameters for utilization management and review, preauthorization requirements, network richness, provider availability within a network, or provider availability in general as well as if referrals are needed for specialty care – all of which may affect utilization and cost. A plan can appear to be very rich in actuarial value or even in net payment of claims, but the actuarial value does not account for a restrictive network. This is the case with many HMOs. Additionally, the net payment of claims data excludes claims that were not filed and paid completely out-of-pocket. The total payments reported in MarketScan also omit balance billing which affects the out-of-network payments. Unfiled claims, denied claims, and balance billing are not considered in the actuarial value calculation.

Actuarial values also represent the experience of a standard population, whereas individual beneficiaries may have varying experiences based on their own conditions and use of services. To truly consider the prevalence and effects of “ghost networks”, claims data is not sufficient.

Additionally, the out-of-network plan parameter data was sourced from small group plans. While these serve as a reasonable proxy, in general, larger group employer benefits may be richer than those in the small group market.

VII. Conclusions

Out-of-network benefits, as demonstrated by actuarial value, were statistically different than those in-network and are consistently lower for all plan types, as well as for each individual plan type. Based on the network usage observed in the MarketScan data, however, the proportion of claims paid out-of-network was low and thus did not have a substantial impact on the effective net plan payment rate, which as noted in the validation section, can act as a proxy for actuarial value. To address this limitation, we have assessed three scenarios of out-of-network usage that allow us to blend our calculated in-network and out-of-network actuarial values. These blended AVs showed little variation due to network usage. Even in a scenario where physician services (including mental health and substance used disorder) are utilized 50% of the time, the non-HMO AV drops to about 0.80, where 80% is the ACA Marketplace "gold" tier.

While the results of our analysis, including the blended AVs, present overall effects of plan cost-sharing and assumptions of out-of-network usage, individual users of out-of-network benefits may feel an effect, particularly in the mental health space, even though across a standard population it was not impactful. We found that the standard measure of in-network AV calculation was indeed a good proxy when out-of-network usage is small as was observed in both the claims data and the literature. However, HMO plans, in particular, may be so restrictive in their network of providers that claims are not filed, and thus these claims may not appear in the MarketScan data. Consistent with the limitations throughout this analysis, we note that the composite AV scenarios presented cannot address restrictive networks. All plans do provide the protection of emergency services with coverage consistent with in-network benefits. If participants were forced to use only out-of-network services, actuarial values as demonstrated in the analysis would be lower.

Plan type, firm size, and sector were key factors in the AV calculations, while funding and premiums appeared to have little effect. Both psychotherapy and mental health/substance use disorder services in general had higher levels of out-of-network usage and lower proportion of payment once out-of-network services were taken into account compared to overall services, which may be unexpected given the requirements around mental health parity. A few possible reasons for this are outlined in the literature.

Many studies on out-of-network usage have looked at either mental health (and related) services or emergency room use. The No Surprises Act was passed to address the issue of the prevalence of out-of-network use for services where participants and beneficiaries had no choice in their providers, including emergency services, out-of-network providers at in-network facilities where sufficient notice and consent has not been provided, and air ambulance services. In the absence of better data on prevalence, particularly with respect to both foregone care or choices to self-pay in full, we did not see overall out-of-network cost-sharing greatly impacting AV.

Benson and Song (2020) noted an increasing shortage of behavioral health providers, resulting in people with no access or long wait times for services.[45] The authors suggest that one reason "*for this phenomenon is the decline in participation of psychiatrists in insurance networks, particularly commercial insurance networks, during the past decade*." This may be a cause of higher out-of-network usage.

[45] Benson, N., and Song, Z. (2020). Prices And Cost Sharing For Psychotherapy In Network Versus Out Of Network In The United States. HealthAffairs. Vol. 39, No.7. Accessed: Prices And Cost Sharing For Psychotherapy In Network Versus Out Of Network In The United States | Health Affairs.

A reason for a lack of provider participation is posited by Mark, Olesiuk et. al.'s analysis of 2014 MarketScan data which demonstrated that "*Psychiatrists receive lower in-network reimbursement than nonpsychiatrist medical doctors for many of the same services. This may contribute to psychiatrists' lower participation in insurance networks relative to other providers and has implications for patient cost-sharing and access to psychiatrists*."[46]

The potential lack of actual mental health parity is considered by the Center for American Progress.[47] Limitations of parity laws come into play because "*quantitative treatment limits (QTLs), such as annual and treatment limitations, are more straightforward to assess and enforce than nonquantitative treatment limits (NQTLs), such as network adequacy, prior authorization, and step-therapy*." In addition, barriers to accessing in-network providers abound such as out-of-date directories, providers moving in and out of network, and non-responses to phone calls ("ghost networks"), which may have a greater effect for mental health and substance use disorder services.

Finally, the 2023 KFF EHBS survey notes that only 67% of surveyed firms offering health benefits believe their network contains a sufficient number of mental health providers.[48] Similarly, 59% indicated there are sufficient substance use disorder providers in the network to provide timely coverage. Conversely, 91% of firms believe their network contains enough primary care providers. This suggests that mental health and substance use disorder network availability continue to be an important area for further research.

In summary, the analysis of in-network, out-of-network, and composite AVs for ESI plans helps to quantify the disparity in network coverage and shows how characteristics of the plan can influence the extent of these differences. As previously mentioned, these findings can also be leveraged by EBSA to update AVs imputed to EBSA's Auxiliary Data ESI policy holder records.

[46] Mark, Tami L., Olesiuk, W., et al. Differential Reimbursement of Psychiatric Services by Psychiatrists and Other Medical Providers. Psychiatry Online, 1 December 2017. Accessed: https://doi.org/10.1176/appi.ps.201700271.
[47] The Behavioral Health Care Affordability Problem - Center for American Progress. May 26, 2022.
[48] 2023 Employer Health Benefits. KFF. October 18, 2023. https://www.kff.org/health-costs/report/2023-employer-health-benefits-survey/.