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Executive Summary

UnitedHealthcare (UHC) has a complete suite of care management solutions, disease management, patient advocacy, and digital solutions, working closely with employers and patients to achieve effectiveness and affordability in healthcare outcomes.

Wakely conducted this analysis to help UHC evaluate the effectiveness of their care management programs by comparing costs and utilization to industry averages. Given the large variations in cost resulting from the COVID-19 pandemic, 2019 UHC claims costs were compared to IBM® MarketScan® © IBM Corporation 2019 (MarketScan®).

The following table normalizes MarketScan® data to UHC's risk, geographic, and unit cost composition to create valid benchmarks directly comparable to UHC experience.[1] **UHC achieves lower medical costs and utilization than benchmark in several areas of care as shown in the table below:**

	MarketScan®		UHC			
	Allowed PMPM	Utilization/ 1000[2]	Allowed PMPM	Utilization/ 1000	Utilization Difference	Allowed PMPM Difference
Emergency Room	$37.60	180	$33.36	172	-4%	-$4.24
Urgent Care	$3.05	232	$3.45	266	15%	$0.39
Inpatient Medical/Surgical[3]	$104.78	37	$93.89	43	15%	-$10.90
Outpatient Surgery[4]						
Ambulatory Surgical Center	$13.51	51	$18.48	55	7%	$4.96
Hospital	$41.50	69	$36.84	72	4%	-$4.67
Pharmaceuticals[5]						
Office Setting	$13.16	302	$13.24	559	85%	$0.08
Outpatient Facility	$15.15	83	$12.54	69	-16%	-$2.62
OP Radiology and Pathology	$24.16	659	$19.48	545	-17%	-$4.68
Prof Radiology and Pathology	$31.83	3,828	$32.95	4,174	9%	$1.12
Preventive Services	$14.85	1,227	$14.87	1,358	11%	$0.02
Other[6]	$154.40		$130.81			-$23.76
Total Cost	$454.00		$409.89			-$44.12
Difference			-9.7%			

[1] Risk, geographic, and unit cost normalized Marketscan® data is referred to as benchmark within this report.
[2] MarketScan® utilization per 1000 are risk adjusted to UHC's risk level, using HHS-HCC risk adjustment method for Gold plans on ACA Exchanges.
[3] Allowed PMPM costs include professional services rendered in an inpatient setting, while Utilization represents Admissions per 1000.
[4] Allowed PMPM costs include associated professional services. Utilization represents Ambulatory Surgical Center or Outpatient Hospital visits per 1000.
[5] Only includes pharmaceuticals (i.e. oncology) that are covered under the medical benefit administered by medical professionals (excludes retail and mail-order pharmacies).
[6] Represents all services not represented in the table, including, but not limited to, Maternity, Mental Health and Substance Abuse Disorders, and professional Office Visits. More detail can be found in Appendix D.

As compared to benchmark, UHC drive value in the following areas:

- **Aggregate medical spend** – UHC members had approximately 10% lower allowed costs than the benchmark.
- **Emergency Room utilization** – UHC showed a 4% lower Emergency Room utilization with site of care shifting to Urgent Care settings; this generated a 9% reduction in total allowed charges PMPM for Emergency Room and Urgent Care services in aggregate.
- **Inpatient Medical/Surgical** – With a 15% higher number of admissions per 1000 members, UHC had 10% lower Inpatient Medical/Surgical allowed costs, which indicated UHC drives lower severity admissions relative to benchmark.
- **Medical Drugs** – UHC had 16% lower utilization of pharmaceuticals administered in an outpatient hospital setting, some of which appeared to have shifted to an office setting.
- **Outpatient Hospital Radiology and Pathology** -- UHC drives 17% lower utilization of radiology and pathology in an outpatient hospital setting.
- **Preventive Care** – UHC drove 11% higher preventive care utilization at a similar overall PMPM cost to benchmark.

Some of the UHC programs[7] that may have contributed to these cost differences are:

- **Advocate4Me®** – Healthcare Advocates work with the patient to give personalized guidance, with an eye toward better health and lower costs.
- **Blended Census Report** – A report encompassing machine learning to identify readmission risk. It is also used to manage an appropriate number of bed days for each patient, including discharge and post-acute care planning.
- **Medical Necessity and Prior Authorization Reviews** – Ensures that the suitable level and site of care is provided for a reasonable duration, while coordinating transition of a patient to a new site of care when appropriate for the patient.
- **Payment Integrity Reviews** – UHC conducts thorough reviews of claims for fraud and abuse, adherence to payment policies, hospital bill audits, coordination of benefits, and subrogation. UHC uses advanced analytics to identify claims for a closer examination for potential payment integrity issues.

[7] This paper relies on the qualitative descriptions provided by UHC of their programs in this paper. The impact of these programs specifically were not independently verified by Wakely. However, these programs as described to Wakely, may have had some impact on the quantitative results shown in this report.

Introduction and Scope

The purpose of this study was to examine the cost and utilization outcomes within UnitedHealthcare's 2019 medical claims and measure those outcomes in relation to the large group market during the same period. This study was performed at the service category level, breaking claims and utilization into subcategories of inpatient, outpatient, professional, and other services. With this level of granularity for both UHC and industry claims, we have the potential to measure areas of savings, distribution of costs, and areas of reduced utilization for UHC as compared to the industry.

The effectiveness of UHC's clinical programs relative to the MarketScan® benchmark may have contributed to outcomes captured within this report. These effects and their programs[8] are further detailed in the review of results.

- Medical Necessity and Prior Authorization programs
- UHC's digital experience an mobile app
- Advocate4Me®

Data and Methodology

We collected several data elements from UHC and performed the analysis methodology outlined below to arrive at the findings and conclusions in this report.

Data Sources

UnitedHealthcare

UHC provided 2019 medical claims data and enrollment in select Metropolitan Statistical Areas (MSAs). The datasets included allowed claims with service dates in 2019 and paid through December 2020. No completion factors were necessary to account for unpaid claims due to the 12 months of runout. Since we compared to MarketScan®, where MSA is the most granular geographic field, a select subset of MSAs were chosen. These MSAs represented approximately 1.4 million members for UHC.

[8] This paper relies on the qualitative descriptions provided by UHC of their programs in this paper. The impact of these programs specifically were not independently verified by Wakely. However, these programs as described to Wakely, may have had some impact on the quantitative results shown in this report.

Market Benchmark Group

The multi-employer benchmark population was derived from the IBM® MarketScan® © IBM Corporation 2019 Database. This dataset, referred to herein as MarketScan®, represents the 2019 medical claims and the experience of hundreds of commercial employers and payers nationwide.[9] Employers represented in the IBM MarketScan® databases tend to be larger self-insured entities with more sophisticated benefits programs in place, and thus the cost baselines represented by these databases are broadly representative of the experience of the largest self-insured employer purchasers of healthcare in the country. A select subset of MSAs were chosen for this analysis, to analyze in geographic congruence to the UHC data, representing over four million lives.

Methodology and Assumptions

The following adjustments were applied to the datasets prior to evaluating results:

- This analysis excluded retail and mail-order pharmacy claims, focusing on medical claims only. Both datasets were grouped into subcategories of inpatient, outpatient, professional, and other medical services, using the Wakely Grouper tool.[10]

- All MarketScan® data was adjusted to UHC's geographic distribution, weighting costs and utilization by the weighting of UHC members in the selected MSAs.

- MarketScan® claims and utilization was risk-adjusted relative to UHC members. Both datasets were run through a risk score calculation using the HHS-HCC method for year 2019 at the gold metal level (as defined in the Patient Protection and Affordable Care Act), using medical hierarchical condition category (HCC) codes only. This adjustment excluded the impact of prescription drug hierarchical condition categories (RxHCCs). This risk score calculation measures age, gender, and medical chronic conditions as defined by HCCs. These risk scores are correlated with total costs and are adjusted for in this analysis. The intent of this risk adjustment is remove the relative differences in morbidity, attrition, and new hires to isolate the cost savings from managing care.

- Both UHC and MarketScan® datasets were run through Wakely Medicare Repricing Analysis Tool (WMRAT).[11] In this process, the MarketScan® allowed charges were adjusted by a factor representing the difference in unit costs to UHC, relative to Medicare. This factor is calculated separately by MSA and service category: Inpatient Facility, Outpatient Facility, and Professional Claims; it is equal to the UHC allowed charges as a percent of Medicare fees divided by the MarketScan® allowed charges as a percent

[9] Furthermore, the risk and geographic normalized MarketScan® experience is referred to as benchmark within this report.
[10] The Wakely Grouper considers bill type codes, revenue codes, procedure codes, diagnosis codes, and place of service, as available in the datasets, to determine in which service subcategory claims fall.
[11] WMRAT reprices claims datasets to estimate what Medicare would have allowed for similar claims.

of Medicare fees. Due to data limitations, there is a small, but not insignificant, amount of claims that were unable to be repriced by WMRAT. These claims were ignored when determining both UHC and MarketScan® allowed charges as a percentage of Medicare Fees in the calculation described above. Additional documentation on the WMRAT tool is found in Appendix B.

Review of Results

On a geographic, risk and unit cost adjusted basis, our analysis revealed UHC members had 10% lower allowed costs ($44 per member per month) across top MSAs, relative to the MarketScan® benchmark in the same MSAs. Allowed amounts were used since they reflect total costs, including the member cost share portion of the claim.

The most significant variances from market are listed below, which includes about half of the total Allowed Charge difference, as well as descriptions of UHC programs that may have contributed to these results.

Emergency Room and Urgent Care Costs

UHC shows a 4% lower Emergency Room utilization than the MarketScan® benchmark. We also see much of this utilization going to an Urgent Care setting and a 15% higher usage of urgent care in the UHC data. The combination of this utilization pattern results in a 9% reduction, worth approximately $4 PMPM in total costs of Emergency Room and Urgent Care.

	MarketScan® Benchmark	UHC
Emergency Room Visits per 1000 members	180	172 (4% lower)
Urgent Care Visits per 1000 members	232	266 (15% higher)
Total Emergency Room and Urgent Care costs PMPM	$40.65	$36.81 (9% lower)

UHC's patient Advocacy and Digital Assets may have contributed to these findings:

- UHC Advocates4Me® may help direct members to the appropriate level of care, appropriately directing probable Emergency Room visits to an Urgent Care setting.
- UHC's Digital assets, including myuhc.com and the UHC Mobile App, use real-time patient information to proactively guide members to find in-network, high-quality and low-cost health care.

Inpatient and Surgical Costs

With similar number of medical/surgical inpatient admits per 1000 members, UHC has 10% lower Inpatient Medical/Surgical allowed costs ($11 PMPM), which would indicate that UHC drives lower severity admissions relative to the MarketScan® benchmark.

	MarketScan® Benchmark	UHC
Inpatient Medical/Surgical admits per 1000 members	37.2	42.7 (15% higher)
Inpatient Medical/Surgical Allowed Costs per member per month (PMPM)	$104.78	$93.89 (10% lower)

The use of the following UHC Inpatient Care Management programs may have contributed to these results.

- The use of medical necessity criteria in an inpatient hospital setting – during an inpatient concurrent or retrospective review, evidence-based medicine standards are used to evaluate whether the care provided to a member is at the appropriate level, whether there were any unnecessary delays in service, and if the length of stay is medically appropriate.
- The appropriate use of prior authorization to determine benefit coverage based on medical necessity criteria, for services, tests or procedures that are appropriate and cost-effective for the individual member. It is a member-centric review to evaluate the clinical appropriateness of requested services in terms of the type, frequency, extent and duration, especially for complex cases.
- The Blended Census Report (BCRT) Rounds is bed day management tool used by advocates that uses machine learning models for readmission risk. Each inpatient admission is tagged with a score, which is how outreach is prioritized in the hospitals. This is the tool used by the Daily Rounds team to outreach and ensure the proper discharge and post-acute planning, in order to minimize unnecessary bed days and avoidable readmissions.

Pharmaceuticals and Therapeutic Injections administered by a medical professional

As compared to benchmark, UHC has 16% lower utilization of pharmaceuticals administered in an outpatient hospital setting, while office-based therapeutic injections maintain similar PMPM Allowed charges. This results in a total of 9% lower costs for these services ($3 PMPM).

	MarketScan® Benchmark	UHC
Pharmacy units in an Outpatient Hospital setting, per 1000 members	83	69 (16% lower)
Pharmacy Allowed Charges in an Outpatient Hospital setting, PMPM	$15.15	$12.54 (17% lower)
Office-based Therapeutic Injections Allowed Charges PMPM	$13.16	$13.24 (1% higher)
Total of these two categories Allowed Charges PMPM	$28.31	$25.77 (9% lower)

UHC's patient Advocacy may have contributed to these findings:

- UHC Advocates4Me® may help direct members to the appropriate level of care, helping members know they can get certain injections at an office and typically at a lower cost share.

Outpatient Hospital Radiology and Pathology

Relative to the MarketScan® benchmark, UHC drives 17% lower utilization of radiology and pathology in an outpatient hospital setting, resulting in 6% lower total radiology and pathology costs ($4 PMPM).

	MarketScan® Benchmark	UHC
Outpatient Hospital Radiology and Pathology Services per 1000	659	545 (17% lower)
Outpatient Radiology and Pathology Allowed Charges PMPM	$24.16	$19.48 (19% lower)
Professional Radiology and Pathology Services per 1000	3,828	4,174 (9% higher)
Professional Radiology and Pathology Allowed Charges PMPM	$31.83	$32.95 (4% higher)
Total Radiology and Pathology Allowed Charges PMPM	$55.99	$52.43 (6% lower)

Preventive Care

UHC drives 11% higher preventive care utilization at a similar overall PMPM cost as the benchmark. Preventive care includes immunizations, wellness visits, health screenings, chronic disease management, etc. and is critical to for monitoring and improving member's health.[12]

	MarketScan® Benchmark	UHC
Preventive Care Visits per 1000 members	1,227	1,358 (11% higher)
Preventive Care Allowed Charges PMPM	$14.85	$14.87 (<0.5% difference)

This shows that with UHC's care management and cost containment programs, they are able to maintain a higher usage of preventive care than benchmark.

[12] Preventive care is primarily composed of immunizations (~50% of allowed spend), wellness visits, screenings, diabetes and other chronic disease management, testing and screenings.

Limitations

Factors that are not controlled and could positively or negatively affect the cost comparisons in this study include:

- Differences in programs, vendors and protocols that may have influenced patient care and utilization patterns
- Differences in claims administration or quality of data provided, including the potential impact on the repricing claims to Medicare levels
- Socioeconomic factors that could drive different utilization patterns beyond medical risk exposure
- When looking at specific types of services, the use of HHS-HCC risk adjustment for Gold plans is a good predictor of total costs, but when looking at specific types of services, the use of this risk adjustment method may not fully reflect (or overcompensate for) differences in risk.
- Differences in the geographic footprint within a MSA between UHC and MarketScan® datasets.
- The differences in the intensity of ICD-10 diagnosis coding between UHC and MarketScan® datasets. In order to partially control for this factor, for the purposes of risk adjustment, we use the same number of diagnosis codes per claim in both datasets.
- Differences in Out-of-Network utilization patterns and management
- The Center for Medicare and Medicaid Services (CMS) periodically creates updated tables used for determining Medicare payment rates. The repricing performed for this analysis was based on rate tables as of February 2022. If there are significant changes based on future CMS updates or to Wakely's Medicare Repricing model, results may vary significantly.
- All data analyzed for this report was for services rendered prior to the COVID-19 pandemic. Any temporary or permanent changes to medical utilization patterns during and after the COVID-19 pandemic may affect future results and associated cost and utilization differences.

As a result, the medical cost outcomes for any current or future client of UHC may vary substantially from the cost differences shown.

Disclosures

Conflict of Interest. Wakely provides services to a variety of clients throughout the health industry. Our clients include commercial, Medicare, and Medicaid health plans, the federal government and state governments, medical providers, and other entities that operate in the domestic and international health insurance markets. Wakely has implemented various internal practices to reduce or eliminate conflict of interest risk in serving our various clients. The responsible consultants are financially independent and free from conflict concerning all matters related to performing the services underlying this analysis. In addition, Wakely is organizationally and financially independent to UHC.

Responsible Actuaries. Bethanna Good and Adam Rudin are the actuaries responsible for this communication. Both are Members of the American Academy of Actuaries. Bethanna is an Associate of the Society of Actuaries, and Adam is a Fellow of the Society of Actuaries. They meet the Qualification Standards of the American Academy of Actuaries to issue this report.

Intended Users. This paper has been prepared for the sole use of the management of UHC and cannot be distributed to or relied on by any other third party without prior written permission of Wakely, except that UHC may share this report with prospective UHC clients as long as the report is shared in its entirety, including the description of the methodology, all limitations, and other caveats to this analysis.

Risks and Uncertainties. The assumptions and resulting estimates included in this analysis are inherently uncertain. Users of the results should be qualified to use it and understand the results and the inherent uncertainty. **Actual results may vary, potentially materially, from our estimates.** It is the responsibility of the organization receiving this output to review the assumptions carefully and notify Wakely of any potential concerns.

COVID-19. All data analyzed for this report was for services rendered prior to the COVID-19 pandemic. Any temporary or permanent changes to medical utilization patterns during and after the COVID-19 pandemic may affect future results and associated cost and utilization differences. For example, nationwide across multiple payors, we have seen dramatic increases in the use of telemedicine because of the pandemic, which is not considered in this analysis. In addition, the use of emergency rooms and urgent care settings were substantially affected in some markets and may or may not settle at a new level once all of the pandemic impacts are known.

Reliance on UnitedHealthcare. We have relied on UHC to provide detailed data and descriptions of their medical cost management services. We have reviewed these materials for reasonableness, but have not performed any independent audit or otherwise verified the accuracy of the information. If the underlying information is incomplete or inaccurate, our conclusions may be impacted, potentially significantly.

MarketScan® Data. Certain data used in this study were supplied by International Business Machines Corporation. Any analysis, interpretation, or conclusion based on these data is solely that of the authors and not International Business Machines Corporation.

Contents of Report. This document constitutes the entirety of the report and supersedes any previous communications on the project.

Deviations from ASOPs. Wakely completed the analyses using sound actuarial practice. To the best of our knowledge, the report and methods used in the analyses comply with the appropriate ASOPs with no known deviations. A summary of ASOP compliance is listed below:

ASOP No. 23, Data Quality
ASOP No. 41, Actuarial Communication
ASOP No. 45, The Use of Health Status Based Risk Adjustment Methodologies
ASOP No. 56, Modeling

Potential Future Research

The scope of this project was limited to all incurred 2019 claims, within the top MSAs, limited to high-level service categories. We have described a few examples of further analyses that could potentially be pursued using UHC claims data.

Study of Cohorts

This study was designed to capture a realistic cost comparison based on all plan members covered in each plan year and for costs reported within the year. Certain detailed comparisons, such as studying the impacts of improved navigation and care management on chronic conditions and clinical disease progression may be better explored through a cohort design that tracks the same patients over more than 12-month periods.

Geographic Expansion

This study focused on the MSAs with significant enrollment in UHC. This analysis could potentially be expanded to cover all of UHC's experience, which may reveal differences in urban versus rural cost management. However, the comparison to industry would be much more complex given the geographic weighting method used to compare to MarketScan® MSAs.

Detailed Analysis

The Wakely Grouper split both UHC and MarketScan® claims into forty-four subcategories within inpatient, outpatient, professional, and other medical services. More detailed service subcategories could assist in the analysis of specific chronic condition management and the evaluation of Supplemental Case Management. This analysis could also be expanded to include pharmacy claims, as well as incorporate RxHCCs in the risk adjustment process.

Appendix A: Geographic Areas Studied

- Boston, MA Metropolitan Statistical Area (MSA)
- Chicago-Naperville-Arlington Heights, IL MSA
- Dallas-Plano-Irving, TX MSA
- Denver-Aurora-Lakewood, CO MSA
- Houston-The Woodlands-Sugar Land, TX MSA
- Jacksonville, FL MSA
- New York-Jersey City-White Plains, NY-NJ MSA
- Orlando-Kissimmee-Sanford, FL MSA
- Philadelphia, PA MSA
- Phoenix-Mesa-Scottsdale, AZ MSA
- Tampa-St. Petersburg-Clearwater, FL MSA

Appendix B: WMRAT Documentation

Below contains details on the data and methodology used by the Wakely Medicare Repricing Analysis Tool (WMRAT) process to reprice IBM® MarketScan® © IBM Corporation 2019 (MarketScan®) and UnitedHealthcare (UHC) medical claims to Medicare fee-for-service rates.

1. Data

The datasets used to perform this analysis are the IBM Watson Health MarketScan® (MarketScan®) data as well as data supplied by UHC. MarketScan® is a detailed claim and enrollment database for a nationally representative sample of insured lives. The commercially insured lives span different types of health plans such as HMO, POS, PPO, and indemnity. The data includes dates of service ranging from 2009 to 2019, although for this analysis, we used the 2019 data. We also used medical claims data incurred in 2019 supplied by UHC for comparison in this analysis.

Wakely reviewed the data for reasonableness, but we did not perform an audit or otherwise validate the accuracy of the data provided. We have relied on the MarketScan® categorization as well as the Wakely Grouper categories to identify inpatient, outpatient, and professional claims.

Wakely made no adjustment to the historical allowed amount in the data for trend or for completion. We calculated MarketScan® and UHC costs as a percentage of Medicare assuming the contracts are gross sequestration. In addition, we made no adjustment for MACRA/MIPS in our calculations. Since the analysis was limited to applicable service settings, Wakely excluded all other claims, including disallowed claims, from the analysis.

In MarketScan®, some admits appear to be composed of multiple claim IDs which can be labeled as both in-network and out-of-network. We have assigned each facility claim to be in-network if at least one claim line on the claim was labeled as in-network; otherwise, we label the claims as out-of-network.

The WMRAT process requires that claims and claim lines be uniquely identified in the data set. Since the UHC data contained duplicated claim line numbers on most claims (due to reversals and denied claims), Wakely scrubbed and aggregated the data to try to consolidate claims to one unique row per claim line for outpatient and professional claims and to one unique row per admit for inpatient claims. We also added our own unique proxy claim line number to the scrubbed data before running it through our Medicare repricing tool.

Furthermore, since MarketScan® is a national de-identified data set that excludes some necessary fields such as provider identifiers and billed charges, we have used some simplifying assumptions when repricing this data which are described in the methodology sections below. Even though UHC's data set did include these fields, we have used the same simplifying assumptions on UHC's data when repricing it to Medicare rates. This was

done to ensure that any market-level comparisons between UHC's and Marketscan's® Medicare repriced results are valid.

It is important to stress that the results shown are based on large group commercial experience. Therefore, differences in market contracting levels between UHC's lines of business and large group should be considered in any analysis.

2. Inpatient Hospital Medicare Repricing Methodology

The final rule and correction notice version of the Medicare Inpatient Prospective Payment System (IPPS) Fee Schedule for the fiscal year the claim was incurred was used for this analysis. Standard (i.e., non-HMO) rates were used for the repricing.

Medicare reimburses inpatient hospital services using a prospective payment system. This system assigns a facility a base rate comprised of various components. We have calculated the base rates assuming standard pricing, as indicated, to reflect certain components (such as the Indirect Medical Expense portion of the operating cost) are included in the rate. When a service is rendered in a facility, it is assigned a DRG, which has a specific payment weight. The reimbursement rate is then calculated by multiplying the facility's base rate by the DRG payment weight.

Additional calculations are made to determine if an outlier payment is needed and if a facility receives any pass-through per diems. Furthermore, when available, ICD-10 diagnosis and procedure codes are analyzed to identify if the claim has a New Technology Add-On Payment (NTAP), a COVID-19 add-on payment, or a New COVID-19 Treatment Add-on Payment (NCTAP).

Since MarketScan® does not include the provider identifier, we have mapped each Marketscan® and UHC Core-Based Statistical Area[13] (CBSA) to all possible inpatient providers for that area according to the CMS IPPS Impact File. We have repriced each admit using the list of providers from the admits respective CBSA, so each claim gets repriced multiple times. We roll up the repriced amounts at the end by calculating a weighted average of the repriced amount and the average stays per facility according to the IPPS Impact File for that fee schedule year.

Inpatient Assumptions and Caveats

Some additional assumptions and caveats for Inpatient repricing follow:

- The IPPS Medicare Repriced amount is calculated based on the submitted DRG, and no additional pricing adjustment has been applied to account for Hospital Acquired Conditions (HACs.) Similarly, the

[13] All Metropolitan Statistical Areas (MSA) discussed in this paper are also considered CBSAs.

special add-on payment for costs of furnishing blood clotting factor to those with hemophilia has not been calculated nor are charges removed for purposes of calculating cost outliers.

- We made no adjustment for limited instances where condition code or value code may impact inpatient reimbursement.
- We have not performed any steps to exclude interim claims from the data set. We assume the data represents final adjudicated claims.
- MarketScan® does not contain billed charges, so we are unable to calculate the outlier amount for admits where outlier payments are applicable. In order to make the results comparable, we also excluded outlier payments when repricing UHC's data.
- Data issues can arise on the inpatient-side that can skew the allowed-to-Medicare ratio. We have made an adjustment to smooth for potential anomalies in the underlying MarketScan® data. In the event an individual claim's total allowed dollars were less than 20% (INN and ONN) or greater than 500% (INN) and 1000% (ONN) of the Medicare repriced amount, the adjusted Medicare repriced amount was reset to an average percentage of Medicare by provider and based on the cap and floor. This adjustment excludes any admits with DRGs related to maternity and mental health and substance abuse as well as DRGs 998 and 999.

3. Outpatient Hospital Medicare Repricing Methodology

The Final Rule version of the Outpatient Prospective Payment System (OPPS) and the Ambulatory Surgical Center (ASC) Payment System for the calendar year of the date the claim was incurred was used for this repricing analysis. Similarly, the Medicare Professional Fee Schedule for the calendar year the date the claim was incurred was used for the outpatient claims where MPFS applies in this analysis; note this includes any quarterly updates by CMS to the professional fee schedules.

Medicare reimburses outpatient facility claims using a prospective payment system. This system primarily uses the procedure codes on a claim line which corresponds to an Ambulatory Payment Classification (APC) and Status Indicator (SI). Status Indicator logic is applied on all services rendered during an encounter at the APC bundled rate, which reflects a discount and/or are they "packaged" into the payment with the other services performed. Not all outpatient procedure codes are paid on an APC basis; rather, some claims are repriced using the RBRVS Professional Fee Schedule, which typically includes laboratory and pathology-related services. The APC reimbursement level is also facility specific.

Claims with the first two digits of Bill Type equal to '83' are considered outpatient ASC. Medicare pays certain surgical procedures that occur in a freestanding or hospital operated ambulatory surgical center using different logic than the OPPS. These are surgeries that are not significantly risky and do not require the patient to stay overnight. Examples include surgeries such as colonoscopies, cataract removal, and upper gastrointestinal endoscopies.

Since MarketScan® does not include the provider identifier, we have calculated the average wage index, average sole community hospital adjustment, and average cost-to-charge ratio for each CBSA for both the Marketscan® and UHC data using all possible outpatient providers for that area according to the CMS OPPS Impact File and have used those average factors when repricing. Moreover, since MarketScan® does not include the provider zip code, we have mapped each CBSA to the prominent zip code for that location using the U. S. Department of Housing and Urban Development's CBSA to zip code mapping. This is used to identify the carrier and locality as well as whether the location is rural or urban.

Outpatient Assumptions and Caveats

Some additional assumptions and caveats for Outpatient repricing follow:

- We made no adjustment for limited instances where condition code or value code may impact outpatient reimbursement. Pricing is not adjusted for device intensive claims where the procedure is discontinued.
- For claims subject to MPFS, payment reductions for split surgical care are not employed. This may affect results mainly in the Eye & Ocular Adnexa bodily system.
- Due to potential issues and differences with how anesthesia units are reported, we have used the assumption that anesthesia units are reported in minutes in the MarketScan® and UHC data, so we have divided units by 15 when repricing anesthesia claims (i.e., the anesthesia fee schedule assumes a 15 minute unit increment). Units for anesthesia in MarketScan® appear to be reported inconsistently across claims and may represent different increments claim to claim; however, assuming units represent minute increments is our best estimate for the data in aggregate.
- MarketScan® data does not include the second procedure modifier. Wakely used a sample from the Medicare Carrier file from CMS' Limited Data Set to analyze the impact of using one procedure modifier versus two procedure modifiers in Wakely's professional claims repricing process. We estimate that the professional repriced amounts in that sample are overstated by about 1% in total due to only using one procedure modifier instead of two. The impact of the MarketScan® data only including one procedure modifier may vary from this estimate. In order to make results comparable, we also excluded the second modifier from UHC's data when repricing to Medicare rates.
- Due to not having Billed Charges in the MarketScan® data, assumptions are necessary to apply the Cost to Charge Ratio (CCR) appropriately. The final 2021 regulation for OPPS maintains a 1.0% pool for outlier payments; the repricing does not include any adjustment for outliers. In order to make the results comparable, we also excluded outlier payments when repricing UHC's data.
- Claims with units of 100 or more are excluded from the analysis.
- Data issues can arise within outpatient services that can skew the allowed-to-Medicare ratio. The most common among these issues is a line item with an incorrect quantity or unit's value, which directly impacts

the repriced Medicare amount. As a result, we excluded services that were priced using OPPS Status Indicator K and G, which reflect non-pass through drugs and non-implantable biologicals, including therapeutic radiopharmaceuticals. Any services payable under a packaged OPPS grouping under K status continue to be included in results.

- We have made an adjustment to smooth for potential anomalies in the underlying client data. In the event an individual claim's total allowed dollars were less than 20% (INN and ONN) or greater than 500% (INN) or 1000% (ONN) of the Medicare repriced amount, the adjusted Medicare repriced amount was reset based on the cap and floor.

4. Professional Medicare Repricing Methodology

The Medicare Professional Fee Schedule for the calendar year of the date the claim was incurred was used for this analysis; note this includes any quarterly updates by CMS to the professional fee schedules.

Medicare reimburses professional claims using a prospective payment system. This system primarily uses the procedure codes and modifiers on a claim line. These claims are repriced using the RBRVS Professional Fee Schedule.

Other fee schedules that are modeled:

- Clinical Laboratory Fee Schedule (CLFS)
- Durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS)
- Durable medical equipment parenteral and enteral nutrition (DMEPEN)
- Anesthesia
- Ambulance
- Part B RX

Since MarketScan® does not include the provider zip code, we have mapped each CBSA to the prominent zip code for that location using the U. S. Department of Housing and Urban Development's CBSA to zip code mapping. This is used to identify the carrier and locality as well as whether the location is rural or urban.

Professional Assumptions and Caveats

Some additional assumptions and caveats for Professional repricing follow:

- Due to potential issues and differences with how anesthesia units are reported, we have used the assumption that anesthesia units are reported in minutes in the MarketScan® and UHC data, so we have

divided units by 15 when repricing anesthesia claims (i.e., the anesthesia fee schedule assumes a 15 minute unit increment). Units for anesthesia in MarketScan® appear to be reported inconsistently across claims and may represent different increments claim to claim; however, assuming units represent minute increments is our best estimate for the data in aggregate.

- Claim lines with units of 100 or more are excluded from the analysis.
- MarketScan® data does not include the second procedure modifier. Wakely used a sample from the Medicare Carrier file from CMS' Limited Data Set to analyze the impact of using one procedure modifier versus two procedure modifiers in Wakely's professional claims repricing process. We estimate that the professional repriced amounts in that sample are overstated by about 1% in total due to only using one procedure modifier instead of two. The impact of the MarketScan® data only including one procedure modifier may vary from this estimate. In order to make results comparable, we also excluded the second modifier from UHC's data when repricing to Medicare rates.
- Some HCPCS codes are not present in the Physician Fee Schedule National Payment File due to not being covered by Medicare but have RVUs and GPCIs included in the Medicare Physician Fee Schedule. For these codes, we utilized the RVUs and GPCIs to calculate a repriced amount.
- Payment reductions for split surgical care are not employed. This may affect results mainly in the Eye & Ocular Adnexa bodily system.
- Data issues can arise on the professional-side that can skew the allowed-to-Medicare ratio. The most common among these issues is a line item with an incorrect quantity or unit's value, which directly impacts the repriced Medicare amount. We have made an adjustment to smooth for potential anomalies in the underlying MarketScan® data. In the event an individual claim line's total allowed dollars were less than 20% (INN and ONN) or greater than 500% (INN) or 1000% (ONN) of the Medicare repriced amount, the adjusted Medicare repriced amount was reset based on the cap and floor.

Appendix C: One-Pager

UHC experience comparison to benchmark[1]

Experience for 2019 Calendar Year	MarketScan® Allowed PMPM[2]	MarketScan® Utilization/ 1000[3]	UHC Allowed PMPM	UHC Utilization/ 1000	Utilization Difference	Allowed PMPM Difference
Emergency Room	$37.60	180	$33.36	172	-4%	-$4.24
Urgent Care	$3.05	232	$3.45	266	15%	$0.39
Inpatient Medical/Surgical[4]	$104.78	37	$93.89	43	15%	-$10.90
Outpatient Surgery[5]						
Ambulatory Surgical Center	$13.51	51	$18.48	55	7%	$4.96
Hospital	$41.50	69	$36.84	72	4%	-$4.67
Pharmaceuticals[6]						
Office Setting	$13.16	302	$13.24	559	85%	$0.08
Outpatient Facility	$15.15	83	$12.54	69	-16%	-$2.62
OP Radiology and Pathology	$24.16	659	$19.48	545	-17%	-$4.68
Prof Radiology and Pathology	$31.83	3,828	$32.95	4,174	9%	$1.12
Preventive Services	$14.85	1,227	$14.87	1,358	11%	$0.02
Other[7]	$159.36		$135.60			-$23.76
Total Cost	$454.00		$409.89			
Difference			-9.7%			

9% allowed charge reduction from shifting ER to Urgent Care

10% cost savings for Inpatient Med/Surg

9% allowed charge reduction in pharmaceuticals and 6% in radiology/pathology, due to shifting services to an office setting

11% higher preventive utilization with similar costs

Overall Allowed Charges PMPM are ~10% lower than the MarketScan® Benchmark

The assumptions and resulting estimates included in this analysis are inherently uncertain. Users of the results should be qualified to use it and understand the results and the inherent uncertainty. **Actual results may vary, potentially materially, from our estimates**. It is the responsibility of the organization receiving this output to review the full whitepaper with disclosures, limitations, and assumptions carefully.

Notes:
1 Benchmark uses IBM® MarketScan® © IBM Corporation 2019 (MarketScan ®) adjusted to eliminate risk, unit cost, and geographical differences between the two datasets. See full whitepaper for details.
2 MarketScan® Allowed Charges are adjusted to eliminate the differences in unit costs between UHC and MarketScan®. In addition, the amounts risk adjusted and geographically adjusted to create a valid benchmark to UHC data.
3 MarketScan® units per 1000 are risk adjusted to UHC's risk level, using HHS-HCC risk adjustment method for Gold plans on ACA Exchanges.
4 Allowed PMPM costs include professional services rendered in an inpatient setting, while Utilization represents Admissions per 1000.
5 Allowed PMPM costs include associated professional services. Utilization represents Ambulatory Surgical Center or Outpatient Hospital visits per 1000.
6 Only includes pharmaceuticals (i.e. oncology) that are covered under the medical benefit administered by medical professionals (excludes retail and mail-order pharmacies).
7 Remaining medical services not represented in the table, including, but not limited to, Maternity, Mental Health/Substance Abuse, and professional Office Visits.

Appendix D: Other Categories

	Market		UHC		Utilization Difference	Allowed PMPM Difference
	Allowed	Units	Allowed	Units		
Maternity	$16.17	17	$17.74	22.95	33%	$1.57
Physician Office Visits	$36.23	3,684	$32.72	3,372	-8%	-$3.50
OP Observations	$16.30	42	$14.04	38	-11%	-$2.26
Ancillary Services	$10.84	368	$9.38	399	8%	-$1.45
Physician Services (Allergy, Chiro, Hearing, Cardiovascular, etc.)	$22.76	2,618	$20.22	2,784	6%	-$2.54
OP Cardiovascular	$3.30	32	$2.80	28	-12%	-$0.50
OP Therapy	$3.83	97	$2.19	71	-27%	-$1.64
OP Dialysis	$4.71	15	$0.80	13	-12%	-$3.91
Prof OP Surgery Office	$8.25	371	$8.01	366	-1%	-$0.24
Prof OP Surgery Anesthesia	$8.01	105	$7.61	100	-5%	-$0.40
SNF	$0.40	1	$0.34	1	18%	-$0.06
Miscellaneous	$23.60	154	$14.95	12	-92%	-$8.65
Other - Total	$154.40		$130.81			-$23.59