WHITE PAPER

Weight of the Matter: Obesity's Financial Impact in Medicare Populations

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BACKGROUND

Obesity rates in the United States have reached unprecedented levels, with nearly 42% of adults now classified as obese[1]—a trend that presents profound implications for the healthcare system. Among Medicare-age individuals, obesity is closely linked to chronic conditions such as diabetes, cardiovascular disease, and musculoskeletal disorders, all of which drive up healthcare utilization and spending. As policymakers, payers, and providers grapple with rising costs, understanding the financial impact of obesity management has never been more critical.

At the same time, the healthcare landscape is rapidly evolving with the growing availability of weight-loss medications such as glucagon-like-peptide-1 receptor agonists, known as GLP-1 receptor agonists, and the expanding role of care management vendors focused on improving outcomes while reducing costs. While these interventions hold promise, their true effect on total cost of care remains uncertain. Do investments in obesity treatment and care management lead to long-term cost savings, or do they introduce new financial burdens to the system? This whitepaper aims to explore these questions by using detailed claims and eligibility data for traditional Medicare to analyze the relationship between obesity levels in Medicare-aged members and healthcare expenditures. We also evaluate the impact over time as members increase or decrease in diagnosed levels of obesity.

RESULTS

Our analysis examined medical allowed per member per month (PMPM) costs across Medicare-aged beneficiaries segmented by obesity severity, as classified using International Classification of Diseases (ICD-10) diagnosis codes. The results show a consistent and intuitive pattern: individuals with higher levels of obesity incur greater healthcare costs, and transitions in obesity status are closely associated with shifts in spending—though not always as expected.

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[1] The prevalence of obesity among U.S. adults 20 and over was 41.9% during 2017–March 2020. Stierman B, Afful J, Carroll MD, et al. National Health and Nutrition Examination Survey 2017-March 2020 Prepandemic Data Files-Development of Files and Prevalence Estimates for Selected Health Outcomes. National Center for Health Statistics. *National Health Statistics Reports*. June 14, 2021. Available at: https://stacks.cdc.gov/view/cdc/106273.

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Consistent Severity Analysis

To analyze the impact of obesity on healthcare costs, we organized the populations within the dataset into various cohorts by severity of obesity. Note that the definitions for each of the obesity cohorts are based on standard groupings of body mass index (BMI) diagnosis codes within the detailed claims and are more defined further in the Data and Methodology section below. For this first analysis, we only evaluated the costs for members who did not cross between cohorts during the timeframe of the study. For example, the Class 1 Obesity row only includes individuals who had a corresponding diagnosis of Class I Obesity in all three years. Table 1 below shows the results of this comparison. The results of this initial analysis are in line with expectations as we generally expect to see higher medical cost among higher severity cohorts. The full differential in costs between Healthy and Class III Obesity ranges from $418 in 2021 up to $567 in 2023. We also observed a two-year trend in the 30% to 32% range among the cohorts.

Table 1. Consistent Severity

Severity		Medical Allowed PMPM			
Cohort	**Members**	**2021**	**2022**	**2023**	**2-yr Trend**
Healthy	17,772	$846	$911	$1,105	31%
Overweight	28,941	$812	$874	$1,056	30%
Class I Obesity	21,223	$963	$1,011	$1,249	30%
Class II Obesity	9,475	$1,007	$1,087	$1,318	31%
Class III Obesity	9,957	$1,264	$1,319	$1,672	32%

While the analysis uses standard BMI categories via ICD-10 codes, the minimal cost difference between the Healthy and Overweight cohorts in Table 1 suggests that BMI thresholds might not fully capture the onset of cost-driving comorbidities. This opens the door to exploring more nuanced metrics—such as waist circumference, fat distribution, or even metabolically healthy obesity statuses—as potential cost predictors. However, this would require more detailed medical records compared to the claims data used in the study.

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Increasing Severity Analysis

We next evaluated members whose obesity status worsened over the study period. In general, we expected to see that as beneficiaries increase in obesity severity that their costs would increase and conversely as they decrease in severity that costs would decrease. Additionally, we also expected that costs would materialize between the respective initial and final cohort costs from Table 1. For example, a member increasing in severity from Overweight to Class I might have costs between $1,056 and $1,249 by 2023.

Table 2 below shows results for beneficiaries increasing one degree of severity at any point between 2021 and 2023. We observed that each cohort has a higher starting cost than the corresponding cohort from **Table 1** (e.g., $1,178 vs. $846 for the Healthy cohort). The ending costs varied for each cohort whether they were higher or lower than their Table 1 counterparts with all but Class III Obesity being higher. Generally, these results seem to imply that there may be higher comorbidities in these populations which could be contributing to the weight gain which warrants further analysis to confirm. The Class III Obesity result is lower but that may be due to statistical variance since there are fewer members in that cohort.

It's also noteworthy from **Table 2** that while the starting costs are higher, the costs aren't trending as high as the cohorts in **Table 1**. This may imply that while weight gain may be associated with other comorbidities, the weight gain itself doesn't immediately cause significant complications that contribute to higher medical expenditures.

Table 2. Increasing Severity

Severity Cohort			Medical Allowed PMPM			
2021	**2023**	**Members**	**2021**	**2022**	**2023**	**2-yr Trend**
Healthy	Overweight	2,854	$1,178	$1,041	$1,122	-5%
Overweight	Class I Obesity	3,637	$1,231	$1,058	$1,275	4%
Class I Obesity	Class II Obesity	2,815	$1,429	$1,342	$1,487	4%
Class II Obesity	Class III Obesity	1,519	$1,471	$1,329	$1,603	9%

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Decreasing Severity Analysis

We also assessed individuals whose obesity severity improved over time. **Table 3** below shows results for beneficiaries decreasing severity between 2021 and 2023. Similar to the cohorts in **Table 2**, we observe that the majority of comparison groups had starting and ending costs materially higher than the stable severity cohorts in **Table 1**. However, we observe a much more significant increase in the ending costs compared to **Table 1** and **Table 2**, particularly in less severe cohorts. Just like there are comorbidities that contribute to weight gain, there are comorbidities that contribute to weight loss which may explain the higher costs compared to **Table 1**.

Table 3. Decreasing Severity

Severity Cohort			Medical Allowed PMPM			
2021	2023	Members	2021	2022	2023	2-yr Trend
Overweight	Healthy	5,316	$929	$1,304	$1,679	81%
Class I Obesity	Overweight	6,218	$1,033	$1,308	$1,655	60%
Class II Obesity	Class I Obesity	4,416	$1,150	$1,363	$1,698	48%
Class III Obesity	Class II Obesity	2,560	$1,263	$1,617	$1,993	58%

Given the results we felt it was important to further segment the populations in Table 3 based on the year they decreased in severity. We found that there were more favorable cost outcomes for members who reduced obesity severity in Year 2 and maintained the reduced severity through Year 3. This implies that sustained efforts to reduce weight and keep it off may produce cost savings over time but we may need a longer time horizon to observe savings. It's unclear based on the parameters of this study whether the elevated costs are due to comorbidities contributing to weight loss or if members are engaged more in their healthcare and thus utilizing more costly medical intervention.

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Table 3.1. Decreasing Severity (Year 2 Decrease)

Severity Cohort				Medical Allowed PMPM			
2021	2022	2023	Members	2021	2022	2023	2-yr Trend
Overweight	Healthy	Healthy	2,480	$977	$1,403	$1,564	60%
Class I	Overweight	Overweight	2,978	$1,128	$1,372	$1,517	34%
Class II	Class I	Class I	2,255	$1,211	$1,410	$1,519	25%
Class III	Class II	Class II	1,132	$1,363	$1,595	$1,811	33%

Gender

From **Table 3.1** we've broken out the cohort of those shifting from Class I Obesity to Overweight. Within the cohort transitioning from Class I Obesity to Overweight and maintaining that classification, females had lower baseline costs in 2021 but experienced a higher percentage increase in PMPMs over the two-year period compared to males (38% vs. 30%). This divergence may reflect differences in healthcare engagement, utilization patterns, or the clinical trajectory of weight loss interventions between males and females.

Table 4. Cohort Class I, Overweight, Overweight – Gender Breakout

Gender	Members	Medical Allowed PMPM			
		2021	2022	2023	2-yr Trend
Male	1,312	$1,253	$1,535	$1,634	30%
Female	1,666	$1,030	$1,243	$1,424	38%
Total	2,978	$1,128	$1,372	$1,517	34%

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Service Category Breakout

In addition to the gender breakout, we also reviewed major service category-level results to see if there were any particular service categories contributing to the change in costs. While total PMPMs rose 34% for the selected Class I to Overweight cohort, the largest growth occurred in inpatient facility costs (60%) and the 'Other' category (90%). This suggests that reductions in obesity severity may coincide with increased acute care episodes or ancillary services—potentially due to heightened clinical engagement or underlying health conditions.

Table 5.1. Cohort Class I, Overweight, Overweight – Service Category Breakout

Service Category	Medical Allowed PMPM			
	2021	**2022**	**2023**	**2-yr Trend**
Total Cost of Care	$1,128	$1,372	$1,517	34%
Total Inpatient Facility	$315	$448	$504	60%
Total Outpatient Facility	$241	$287	$341	41%
Total Professional	$505	$544	$545	8%
Total Other	$67	$94	$127	90%

In Table 5.2 below, we normalized the allowed costs using raw risk scores from the v28 risk score model. This revealed a mostly flat trend (0%) despite significant growth in the unadjusted allowed. Professional service spending dropped by 19%, while inpatient costs rose 19%. Assuming that risk score is a perfect predictor of morbidity, this further suggests that the weight loss is most likely caused by medical intervention or else we wouldn't observe the large increases in inpatient costs coupled with decreases in professional costs. This is corroborated by the fact that the inpatient trend is flat from 2022 to 2023 suggesting that the increase in cost is incurred as a one-time expense in the first year of weight reduction. Additionally, the fact that the normalized costs are flat from 2021 to 2023 could either suggest that this population has morbidity that is outpacing trend or that reducing severity of obesity has a relatively immediate savings impact which is obscured by comorbidities.

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Table 5.2. Cohort Class I, Overweight, Overweight – Normalized Service Category Breakout

Service Category	Medical Allowed PMPM			
	2021	2022	2023	2-yr Trend
Total Cost of Care	$1,170	$1,196	$1,176	0%
Total Inpatient Facility	$327	$390	$390	19%
Total Outpatient Facility	$250	$250	$265	6%
Total Professional	$523	$474	$422	-19%
Total Other	$69	$82	$99	42%

Summary

This analysis confirms a direct relationship between the severity of obesity and healthcare costs for Medicare-aged beneficiaries, with stable Class III Obesity members incurring over $500 more in PMPM than stable Healthy individuals by 2023. Members transitioning between severity categories experienced the sharpest cost changes, signaling the importance of these inflection points.

Weight gain correlated with higher starting PMPMs but moderate trend growth which together implies there are existing comorbidities but the weight gain contributes slowly to further cost increases. Perhaps unintuitively, weight reduction often brought steeper cost increases, especially in less severe cohorts. This is possibly driven by increased healthcare engagement or adverse events. Sustained intentional weight loss produced more favorable outcomes, including normalized cost declines, suggesting long-term savings potential.

For the broader healthcare system, these findings spotlight obesity not just as a clinical concern but as a driver of long-term system sustainability. Stratifying risk by severity of obesity can highlight the opportunities to improve outcomes and generate savings over time if the outcomes are sustained. Benefit designs that encourage engagement without relying solely on short-term cost signals—and that factor in the risk-adjusted trajectory of care—are more likely to achieve durable impact.

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DATA AND METHODOLOGY

To evaluate the cost of care implications for Medicare-aged members with varying obesity levels, we conducted a longitudinal analysis using Limited Data Set (LDS) medical claims data spanning 2021–2023. Pharmacy claims were not included in this analysis. Our approach ensured consistency in tracking individuals over time while applying specific inclusion and exclusion criteria to refine our study population.

We included only non-ESRD and non-Hospice members who aged into Medicare and maintained continuous enrollment in Medicare for 12 months in each of the three study years. Obesity status was determined using ICD-10 Z68 codes, which denote BMI categories. Members without any corresponding diagnosis were not included in the study. Members were segmented according to standard diagnosis groupings of BMI as follows:

- **Healthy:** Z6820 - Z6824
- **Overweight:** Z6825 - Z6829
- **Class I Obesity:** Z6830 - Z6834
- **Class II Obesity:** Z6835 - Z6839
- **Class III Obesity:** Z6840 - Z6845

Members were assigned cohorts according to the most frequent diagnosis they received in a calendar year. For example, if a member has three diagnoses for Class I Obesity and one diagnosis for Class II Obesity then they were assigned to Class I Obesity. If after applying this logic an individual has a tie in an assigned cohort then they are removed from the study since we have less confidence as to which cohort to assign them. We note that these cases are infrequent though.

We excluded the following ICD codes from classifying overweight because they were either too broad or were pediatric-specific: Z681, Z6851, Z6852, Z6583, and Z684.

Regarding claims, we relied on the allowed costs from LDS without adjustment unless otherwise stated (i.e., no adjustments were made for trend, comorbidities, or potential effects of COVID-19 on healthcare utilization and costs). Table 5.2 includes allowed results that are normalized using risk scores from the v24 risk model. For results that show cost breakouts by major service category we relied on Wakely's proprietary grouper model to assign claims into service category.

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CAVEATS

As with any modeling or analytical effort, several caveats should be noted to provide appropriate context for the findings presented. The following caveats outline important limitations and assumptions underlying this analysis.

1. The analysis relies on claims data from LDS including diagnosis reporting. The rigor and accuracy of diagnosis reporting may vary geographically and may not always be reliably populated. Similarly, diagnoses for BMI may be underreported unless the visit is directly associated with the individual's weight or potentially for an annual wellness visit.
2. BMI diagnoses while generally accepted may not be an accurate clinical measure of obesity.
3. There are inconsistency in the diagnoses, such as a member being assigned both Class II Obesity and Class III Obesity within the same year. In these instances we rely on the diagnosis mapping with the highest levels of frequency within the calendar year. Individuals with equal frequency between two or more groupings are excluded.
4. COVID-19 may play a role in healthcare costs, utilization, and diagnosis patterns since the data spans from 2021 to 2023.
5. We assign claims to categories based on our mapping of revenue codes, bill type codes, HCPCS, etc. This could cause differences if someone were to replicate this study.
6. We do not know what the underlying cause of the weight loss in the data is. I.e. are these members losing weight due to medical intervention (such as lap band surgery or pharmaceuticals) or if the weight loss is caused by lifestyle changes such as reduced caloric intake coupled with increased exercise. Unintentional weight loss attributable to underlying illness (e.g., cancer or endocrine disorders) may also bias the results. This type of weight loss is more common among individuals aged 65 and older. Assessing such considerations was beyond the scope of this analysis. As such, we cannot conclude that the results presented are what will be expected in the case of widespread change in benefit offerings such as for coverage of GLP-1s.
7. In addition to the above analyses, we also considered reviewing cases where there were more drastic changes in obesity status (e.g., shifting from Class III to Class I) or where members shifted back and forth between a cohort (e.g., Overweight to Class I to Overweight) but did not find that there was sufficient membership in these situations such that results would be reliable. Expanding the analysis to 100% of Medicare data may allow for further analysis of these cohorts and may be worthwhile to understand cost impacts of medical or pharmaceutical interventions.

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CONCLUSION

This study reinforces the clear financial implications of obesity across varying levels of severity in a Medicare-aged population. A consistent correlation emerges between obesity severity and total medical allowed PMPM costs, with higher BMI categories consistently associated with increased expenditures. Notably, changes in obesity status, whether increases or decreases, also correspond to shifts in healthcare costs, although not always in immediately predictable ways.

Importantly, members transitioning to higher obesity classes exhibited both elevated starting costs and more moderate trends over time, potentially signaling underlying comorbidities that complicate outcomes. Conversely, members reducing severity, especially those with prolonged weight loss, often demonstrated lower or even negative cost trends, particularly among the highest severity cohort. The stark PMPM differences are clearest in the Class III cohort, both when increasing (44% trend) and decreasing (-1% trend in the prolonged weight loss subgroup). This supports the hypothesis that interventions targeting the most severe obesity cases could produce the most immediate and measurable economic impact However, the reliability of these results is constrained by limitations in diagnosis coding, membership thresholds, and unmeasured variables such as the cause of weight change.

As the healthcare industry evaluates the role of emerging treatments such as GLP-1s and holistic care management programs, these findings suggest meaningful opportunities to improve both health outcomes and system sustainability. Future research should expand data sources, refine methodologies, and incorporate clinical indicators to more clearly isolate the impact of interventions and guide sound policy decisions.

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ABOUT WAKELY

Founded in 1999, Wakely Consulting Group, an HMA Company, is well known for its top-tier healthcare actuarial consulting services. With nine locations nationwide, Wakely boasts deep expertise in Medicare Advantage, Medicaid managed care, risk adjustment and rate setting, market analyses, forecasting, and strategy development. The firm's actuaries bring extensive experience across all sectors of the healthcare industry, collaborating with payers, providers, and government agencies.

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