A U.S.-Specific Budget Impact Model (BIM) of Semaglutide 2.4 mg in the Treatment of Metabolic Dysfunction-Associated Steatohepatitis (MASH) Using Most-Favored-Nation (MFN) Pricing

EE109

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Aim

A budget impact model (BIM) was developed to estimate the financial impact of adopting semaglutide for MASH treatment using the Most-Favored-Nation (MFN) price.

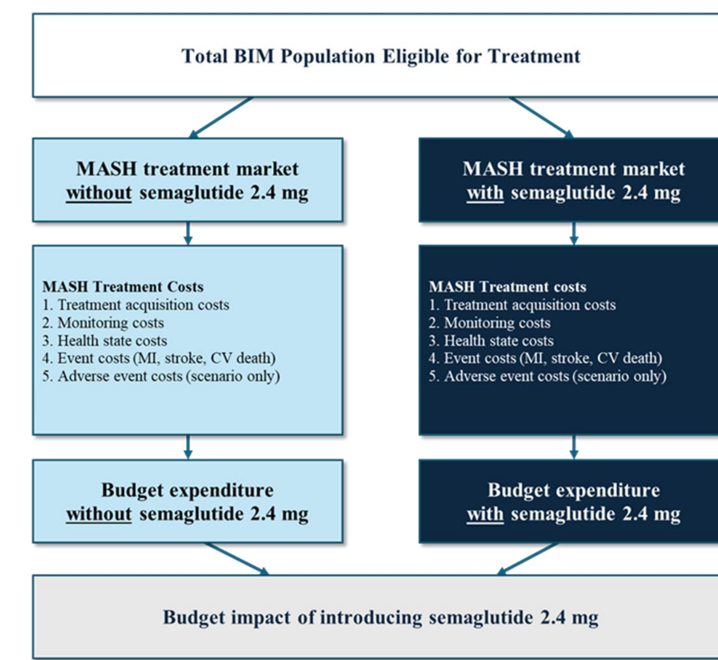
Introduction

- Metabolic dysfunction-associated steatohepatitis (MASH) is a form of liver inflammation and injury caused by nonalcohol-related fat buildup that can eventually progress to serious complications such as cirrhosis, liver failure, and cancer.[1]
- Many of the risk factors for MASH include obesity, type 2 diabetes (T2D), high levels of low-density lipoprotein (LDL), and metabolic syndrome, contributing to significant clinical and economic burden.
- Semaglutide was recently approved for the treatment of non-cirrhotic MASH, with moderate to advanced liver fibrosis (consistent with F2 to F3 fibrosis) in adults.[2]

Methods

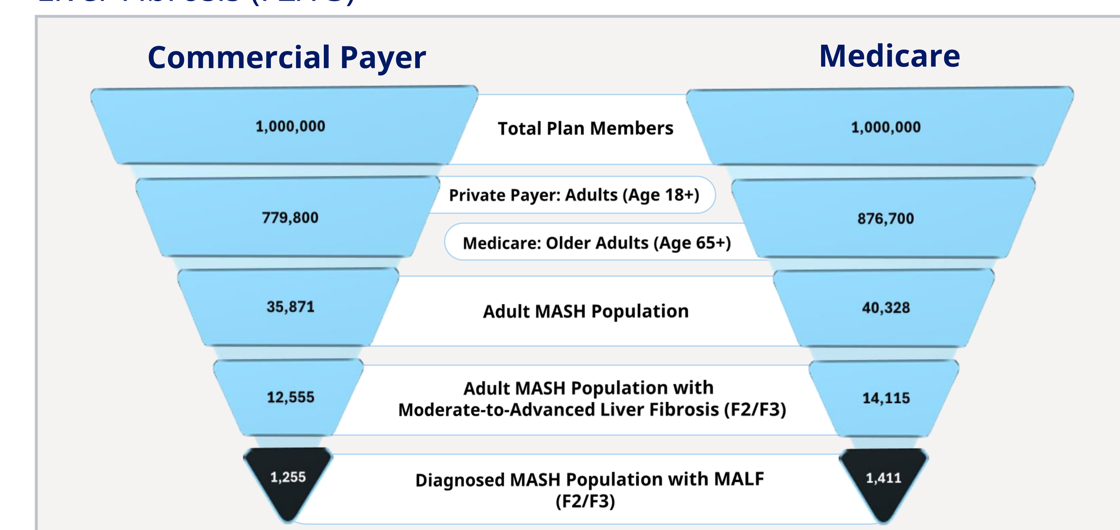
- A BIM was developed from U.S. commercial payer and Medicare perspectives, focusing on direct medical costs, as shown in **Figure 1**.
- Disease state transitions were modeled using a Markov cohort structure.
- Budget impact was calculated by comparing costs between two scenarios where semaglutide is included as a treatment option vs. excluded from the treatment mix.
- The eligible population from each payer perspective was estimated using publicly available national-level data and published literature.[3,4]

Figure 1: Budget Impact Model Diagram



See bottom right for abbreviations.

Figure 2: Adult MASH Population with Diagnosed Moderate-to-Advanced Liver Fibrosis (F2/F3)[3,4]



See bottom right for abbreviations.

Table 1: Key Baseline Demographic and Clinical Characteristics of the Model Cohort

	Commercial (Age 18+)	Medicare (Age 65+)
Demographic		
Age, years	56	70
Sex, % (Male)	42.9	34.7
BMI, kg/m²	34.6	32.0
Fibrosis Stage, %		
F2	31.3%	22.3%
F3	68.8%	77.7%
Comorbidities, %		
Prediabetes	20.7%	21.4%
T2D	55.5%	56.9%
Obesity	72.8%	61.4%
CVD	2.9%	2.9%

See bottom right for abbreviations.

- Patients entered the model in either F2 or F3 health states at baseline.
- The baseline population characteristics were derived from the ESSENCE trial[5] and published literature.
- Key baseline cohort characteristics are shown in **Table 1**.

Table 2: Model Overview

Attributes	Value
Time Horizon	5 years
Cycle Length	1-year with half-cycle correction
Perspectives	U.S. Commercial Payer and Medicare
Intervention	Semaglutide 2.4 mg once-weekly SC injection
Comparator	SoC†, resmetirom 80 mg or 100 mg PO once daily
Inputs	Drug acquisition costs, monitoring costs, health state costs, event costs across liver disease, comorbidities (CVD, prediabetes, T2D, and obesity), treatment-related clinical inputs, adverse events‡, discontinuation, background and disease-associated mortality
Outputs	Total and annual drug acquisition costs, monitoring costs, adverse event costs, disease management costs
Outcomes	Total and disaggregated costs per subjected population, PMPM, and PTMPM

†SoC includes lifestyle modifications (i.e. diet, exercise, weight loss);
‡Serious adverse events reported in the trials were included in the base case and assumed to require hospitalization.
See bottom right for abbreviations.

- The model attributes are outlined in **Table 2**. Clinical inputs and costs were sourced from clinical trials (e.g. REGENERATE, ESSENCE, MAESTRO-NASH)[5-7], and published literature.
- Key cost inputs included drug acquisition costs (WAC) sourced from Micromedex RED BOOK.[8] For semaglutide, the MFN price was used for the commercial payer ($350 per month) and Medicare perspectives ($245 + $50 copay per month).[9]
- Market share was assumed to be 55.3% by resmetirom and 44.7% by SoC in the absence of semaglutide. With semaglutide included, semaglutide uptake was assumed to be 26.9% at Year 1 and grow to 87.2% by Year 5. Resmetirom's share declined proportionally to 7% by Year 5, with the remaining share allocated to SoC.

Results

- Budget impact estimates from the commercial payer and Medicare perspectives are presented in **Table 3** and **Table 4**, respectively.
- Estimated avoided liver disease events from the commercial payer and Medicare perspectives are presented in **Figure 3** and **Figure 4**, respectively.

Table 3: Incremental Total and Disaggregated Costs from the Commercial Payer Perspective

Budget Impact Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Budget Impact	-$7,559,433	-$10,830,227	-$16,347,277	-$23,263,270	-$31,577,040	**-$89,577,247**
Per Member Per Month (PMPM)	-$0.630	-$0.898	-$1.348	-$1.908	-$2.576	**-$1.477**
Per Treated Member Per Month (PTMPM)	-$502	-$619	-$803	-$982	-$1,147	**-$860**

Incremental Results Cost Outcomes	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Drug Acquisition Costs	-$7,400,504	-$9,880,644	-$14,226,311	-$19,583,896	-$25,949,574	**-$77,040,929**
Monitoring Costs	$22,526	$31,862	$47,131	$66,251	$89,359	**$257,129**
Adverse event costs	$74,627	$32,597	$53,207	$67,264	$82,175	**$309,870**
Disease Management Costs	-$256,082	-$1,014,042	-$2,221,304	-$3,812,889	-$5,799,000	**-$13,103,316**
Total Incremental Costs	**-$7,559,433**	**-$10,830,227**	**-$16,347,277**	**-$23,263,270**	**-$31,577,040**	**-$89,577,247**

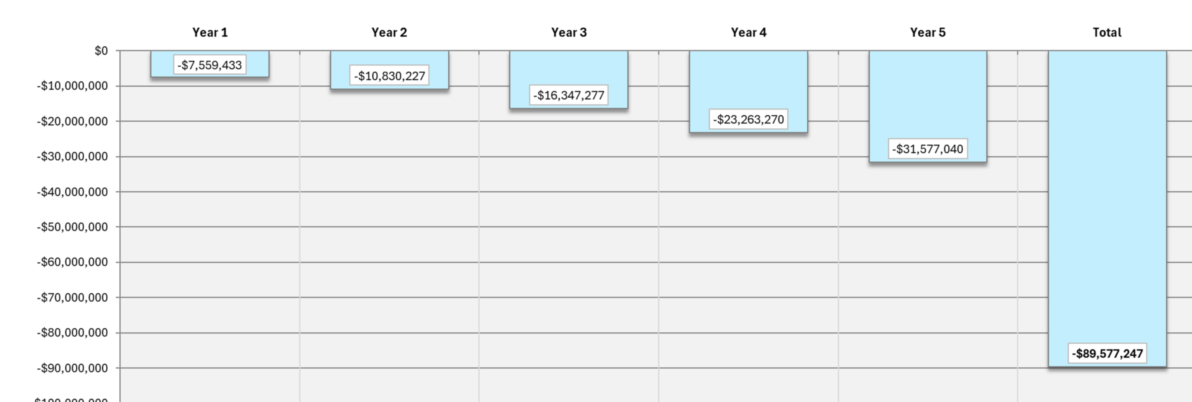
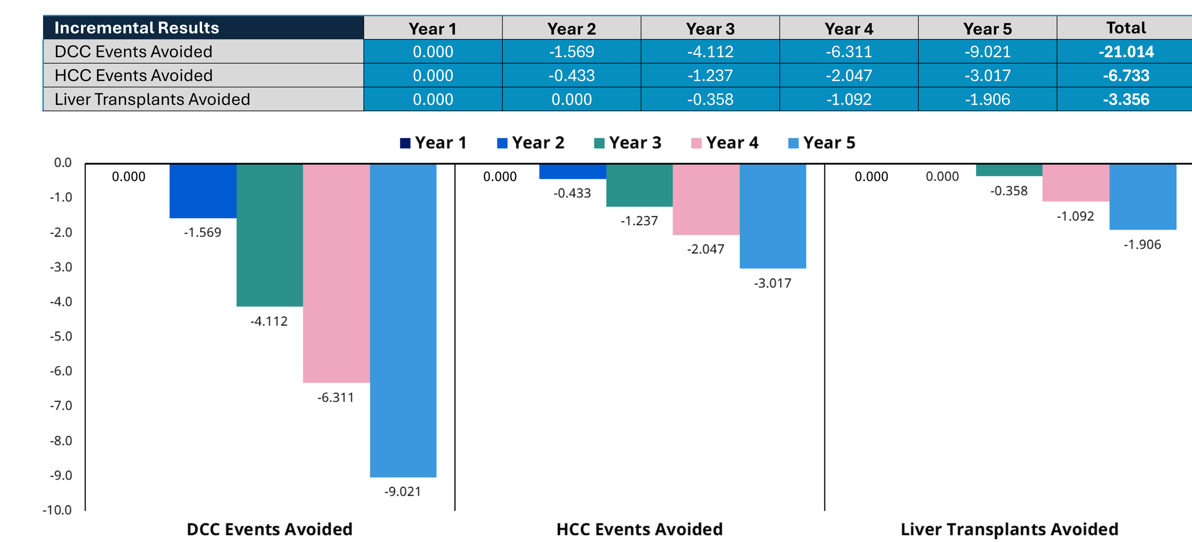


Figure 3: Liver Disease Events Avoided from the Commercial Payer Perspective



Incremental Results	Year 1	Year 2	Year 3	Year 4	Year 5	Total
DCC Events Avoided	0.000	-1.569	-4.112	-6.311	-9.021	**-21.014**
HCC Events Avoided	0.000	-0.433	-1.237	-2.047	-3.017	**-6.733**
Liver Transplants Avoided	0.000	0.000	-0.358	-1.092	-1.906	**-3.356**

- From the commercial perspective over five years, semaglutide at the MFN price generated cumulative cost savings of approximately $89.6 million, a majority of which was driven by drug acquisition costs. This translated to $1.48 PMPM and $860 PTMPM in savings.
- Estimated avoided liver disease events grew each year over five years with the introduction of semaglutide, resulting in a total of 21.01 DCC events, 6.73 HCC events, and 3.36 liver transplant events avoided in the commercially insured population.
- From the Medicare perspective, semaglutide generated cumulative cost savings of approximately $101.3 million, which translated to savings of $1.67 PMPM and $877 PTMPM.
- Among the Medicare population, a total of 39.31 DCC events, 12.86 HCC events, and 8.07 liver transplant events were avoided with the introduction of semaglutide.
- From both perspectives, incremental monitoring costs and adverse event costs were minimal, without a substantial impact on total cost savings.

Table 4: Incremental Total and Disaggregated Costs from the Medicare Perspective

Budget Impact Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Budget Impact	-$8,527,077	-$12,062,407	-$18,507,055	-$26,427,479	-$35,820,712	**-$101,344,730**
Per Member Per Month (PMPM)	-$0.711	-$1.000	-$1.526	-$2.168	-$2.923	**-$1.671**
Per Treated Member Per Month (PTMPM)	-$503	-$617	-$818	-$1,007	-$1,177	**-$877**

Incremental Results Cost Outcomes	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Drug Acquisition Costs	-$8,391,414	-$11,166,816	-$16,415,228	-$22,747,471	-$30,193,333	**-$88,914,262**
Monitoring Costs	$15,344	$22,079	$33,422	$47,412	$64,174	**$182,431**
Adverse event costs	$71,942	$33,749	$57,075	$71,657	$87,551	**$321,974**
Disease Management Costs	-$222,948	-$951,420	-$2,182,324	-$3,799,077	-$5,779,105	**-$12,934,873**
Total Incremental Costs	**-$8,527,077**	**-$12,062,407**	**-$18,507,055**	**-$26,427,479**	**-$35,820,712**	**-$101,344,730**

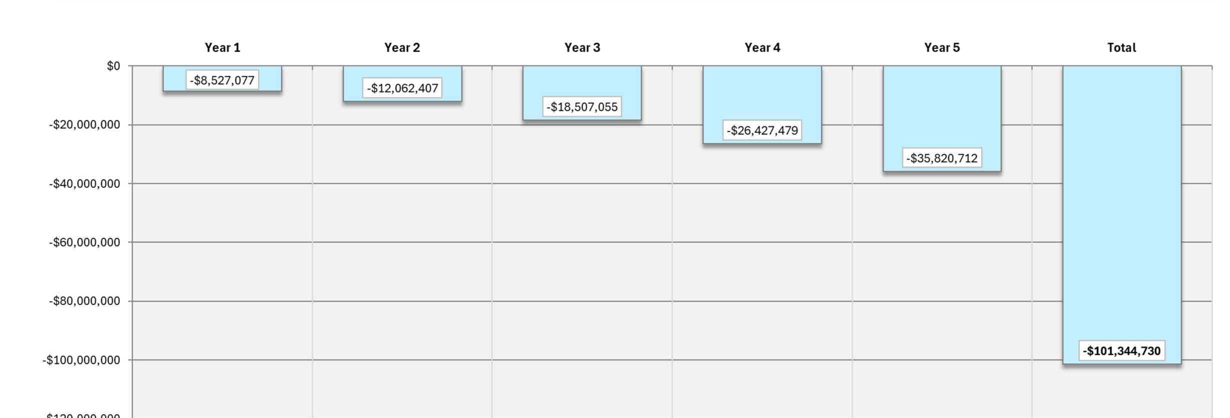
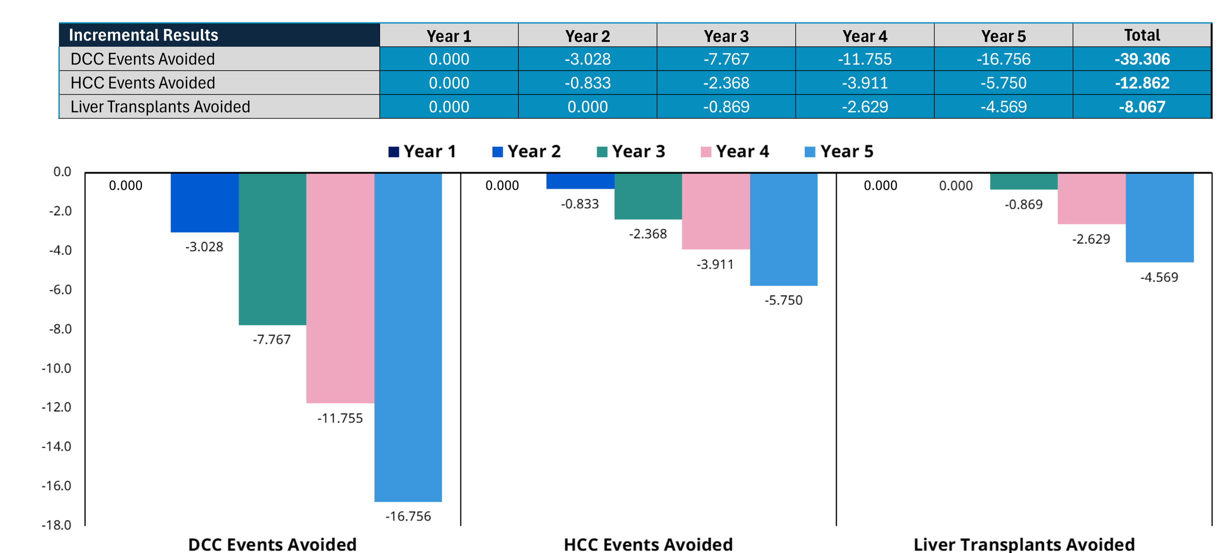


Figure 4: Liver Disease Events Avoided from the Medicare Perspective



Incremental Results	Year 1	Year 2	Year 3	Year 4	Year 5	Total
DCC Events Avoided	0.000	-3.028	-7.767	-11.755	-16.756	**-39.306**
HCC Events Avoided	0.000	-0.833	-2.368	-3.911	-5.750	**-12.862**
Liver Transplants Avoided	0.000	0.000	-0.869	-2.629	-4.569	**-8.067**

Limitations

- The MFN price does not reflect the rebate or negotiated price for commercially insured patients and only applies to patients paying cash for their treatment without insurance coverage.
- Plan size was assumed fixed at 1 million members and may not capture variation across payer types, regional demographics, or benefit structures.
- Market share uptake of semaglutide and resmetirom was based on manufacturer-provided assumption.
- Real-world adherence and long-term effectiveness remain uncertain and could influence future budget impact.

Conclusion

- The introduction of semaglutide for MASH at the MFN price was associated with substantial five-year net savings from the U.S. payer perspectives.
- These savings were largely driven by reduced treatment and disease management costs that outweighed the modest increases in monitoring and adverse event costs.
- This analysis supports considering semaglutide as a treatment option in formulary decision-making.

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Abbreviations: BMI, body mass index; CVD, cardiovascular disease; DCC, decompensated cirrhosis; F2, moderate fibrosis; F3, severe fibrosis; HCC, hepatocellular carcinoma; LDL, low-density lipoprotein; LT, liver transplant; MALF, moderate-to-advanced liver fibrosis; MASH, metabolic dysfunction-associated steatohepatitis; MFN, Most-Favored-Nation; MI, myocardial infarction; PMPM, per member per month; PO, by mouth; PTMPM, per treated member per month; T2D, type 2 diabetes; SC, subcutaneous; SoC, standard of care; WAC, wholesale acquisition cost;

References: (**1**) Taylor et al. Gastroenterology, 2020; 158: 1611-25; (**2**) Wegovy [*Package Insert*]; Plainsboro, NJ: Novo Nordisk, Inc.; 2026; (**3**) U.S. Census Bureau. "Happy New Year 2024!" Accessed 2024; (**4**) Fishman et al. J Med Econ. 2024:27(1):1108-1118; (**5**) Sanyal et al. N Engl J Med. 2025:5;392(21): 2089–2099; (**6**) Younossi et al. Lancet 2019; 394(10215): 2184-2196; (**7**) Harrison et al. N Engl J Med. 2024; 390 (6): 497-509; (**8**) RED BOOK. IBM Micromedex. 2025; (**9**) Fact Sheet. The White House Washington. 6 Nov 2025;