

Patients with Higher Initial BMIs and Greater Weight Loss While on GLP-1s Most Likely to Maintain or Continue Weight Loss After Stopping GLP-1s

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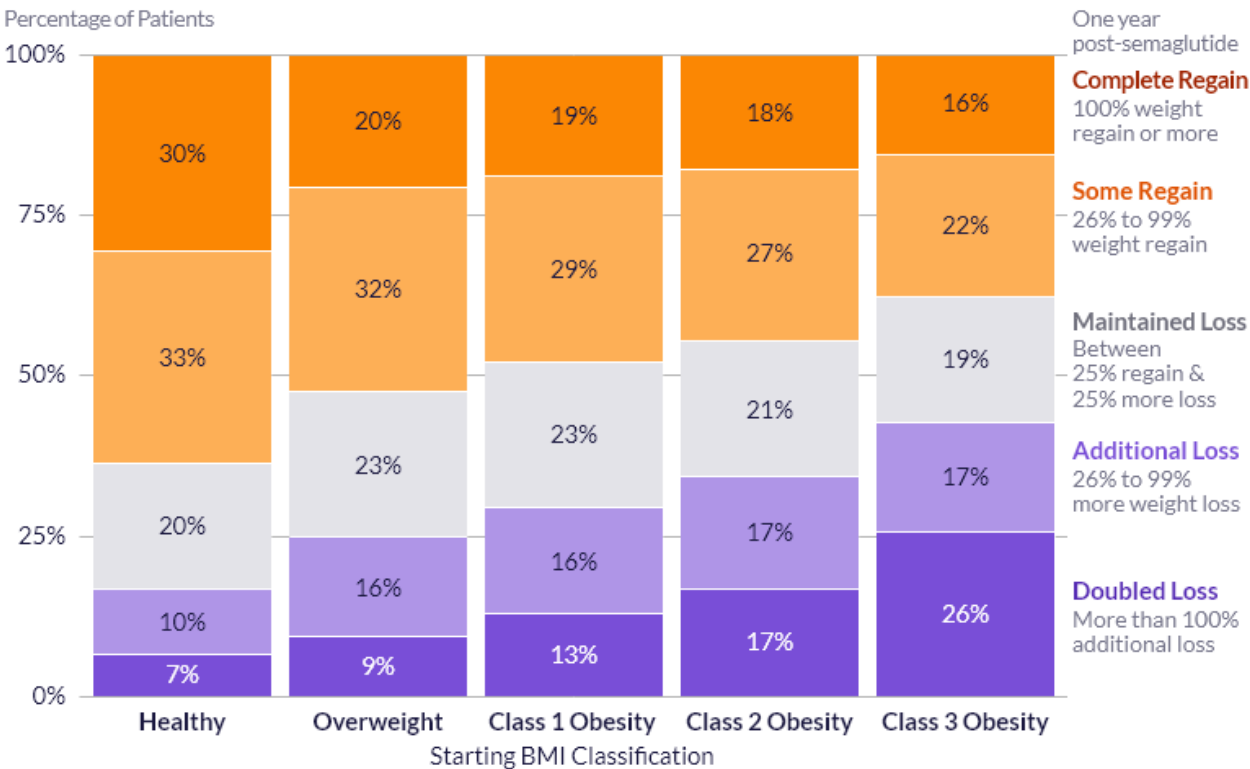
Key Findings:

- One in four patients who started a glucagon-like peptide-receptor agonist (GLP-1) medication at a BMI of 40 or higher doubled their weight loss one year after discontinuing semaglutide or liraglutide.
- Two in three patients who lost at least 40 pounds on semaglutide or liraglutide maintained or continued their weight loss one year after discontinuing the medication.
- More than half of patients who were prescribed semaglutide or liraglutide for at least 90 days were able to maintain or continue their weight loss one year after treatment.

In a previous study, we found that a majority of patients maintain their weight loss a year after stopping GLP-1 use.¹ To further understand what factors might influence whether patients were likely to maintain, regain, or lose more weight, we studied 25,552 patients prescribed semaglutide and 33,456 patients prescribed liraglutide for at least 90 days continuously between January 1, 2017, and February 1, 2023.

In the year following discontinuation of semaglutide or liraglutide, patients with class 3 obesity—a BMI of 40 or greater—when starting a GLP-1 medication were much more likely to maintain or lose additional weight compared to those who started treatment with a healthy weight—a BMI between 18.5 and 25. Among patients prescribed semaglutide, 62% of patients with class 3 obesity maintained or continued to lose weight after one year, compared to 37% of patients with a healthy BMI. Patients prescribed liraglutide saw similar rates with 62% of patients with class 3 obesity and 45% of patients with a healthy BMI maintaining or losing additional weight after one year.

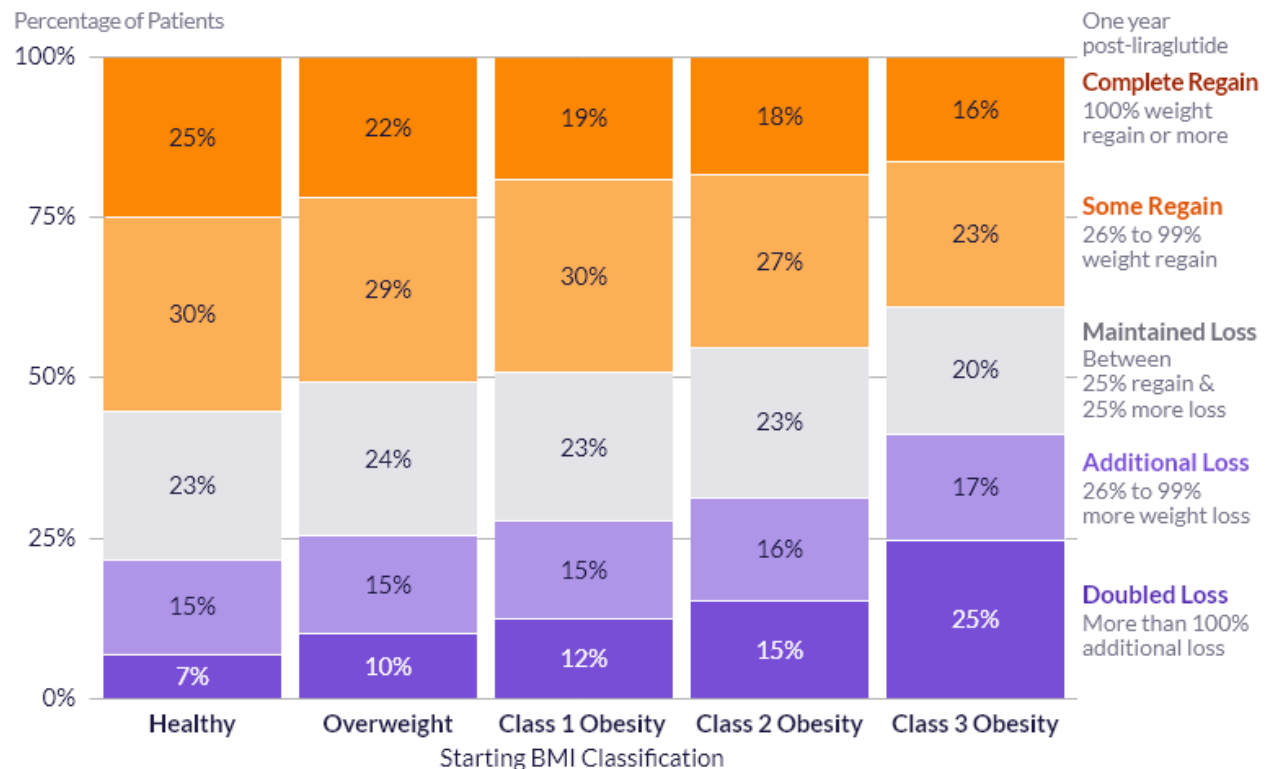
Post-Semaglutide Weight Change by Starting BMI Classification



N=25,552 patients "Post-Semaglutide Weight Change by Starting BMI Classification," 2024. EpicResearch.org

Figure 1a. Weight change one year after stopping semaglutide by starting BMI classification.

Post-Liraglutide Weight Change by Starting BMI Classification



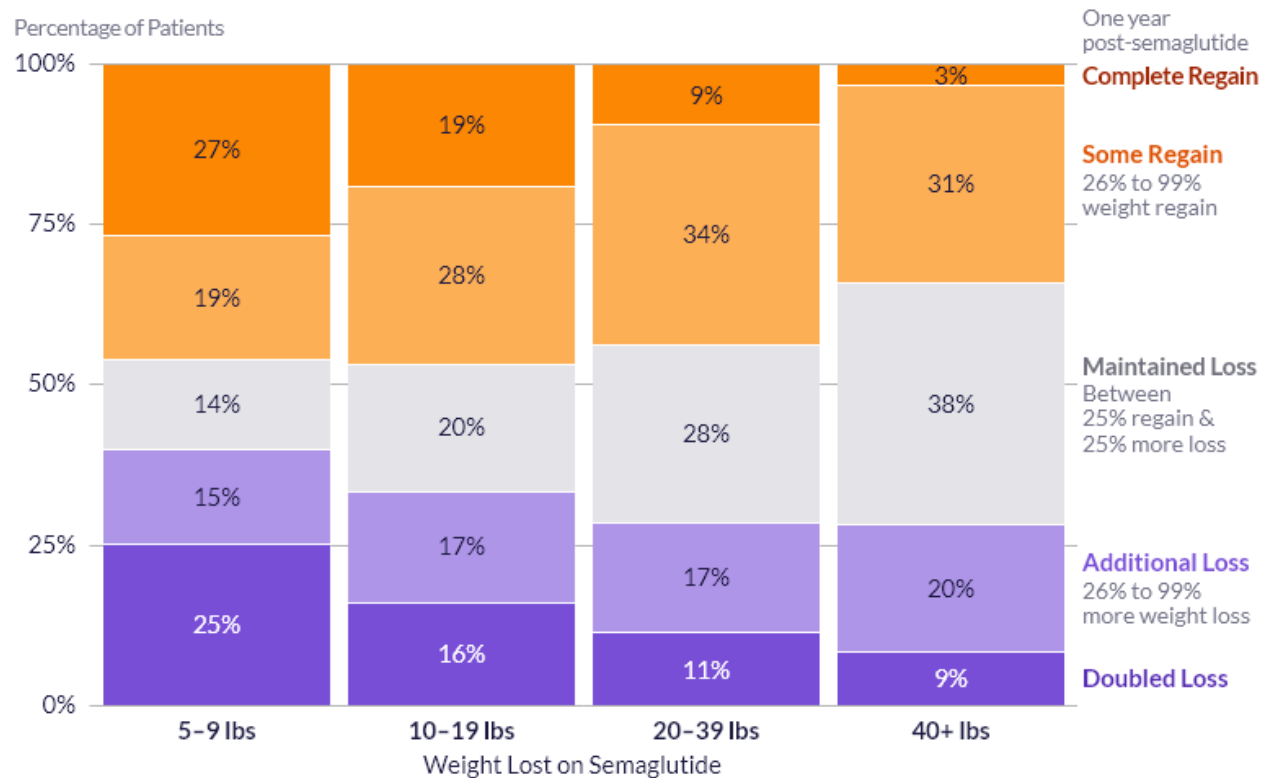
N=33,456 patients

"Post-Liraglutide Weight Change by Starting BMI Classification," 2024. EpicResearch.org

Figure 1b. Weight change one year after stopping liraglutide by starting BMI classification.

We also found that patients who lost at least 40 pounds while on semaglutide or liraglutide were more likely to maintain or continue their weight loss one year after the end of their treatment compared to those who lost less weight during treatment. Of patients who lost at least 40 pounds, 67% prescribed semaglutide and 68% prescribed liraglutide either maintained their weight or continued to lose additional weight one year after ending treatment.

Post-Semaglutide Weight Change by Weight Lost on Treatment

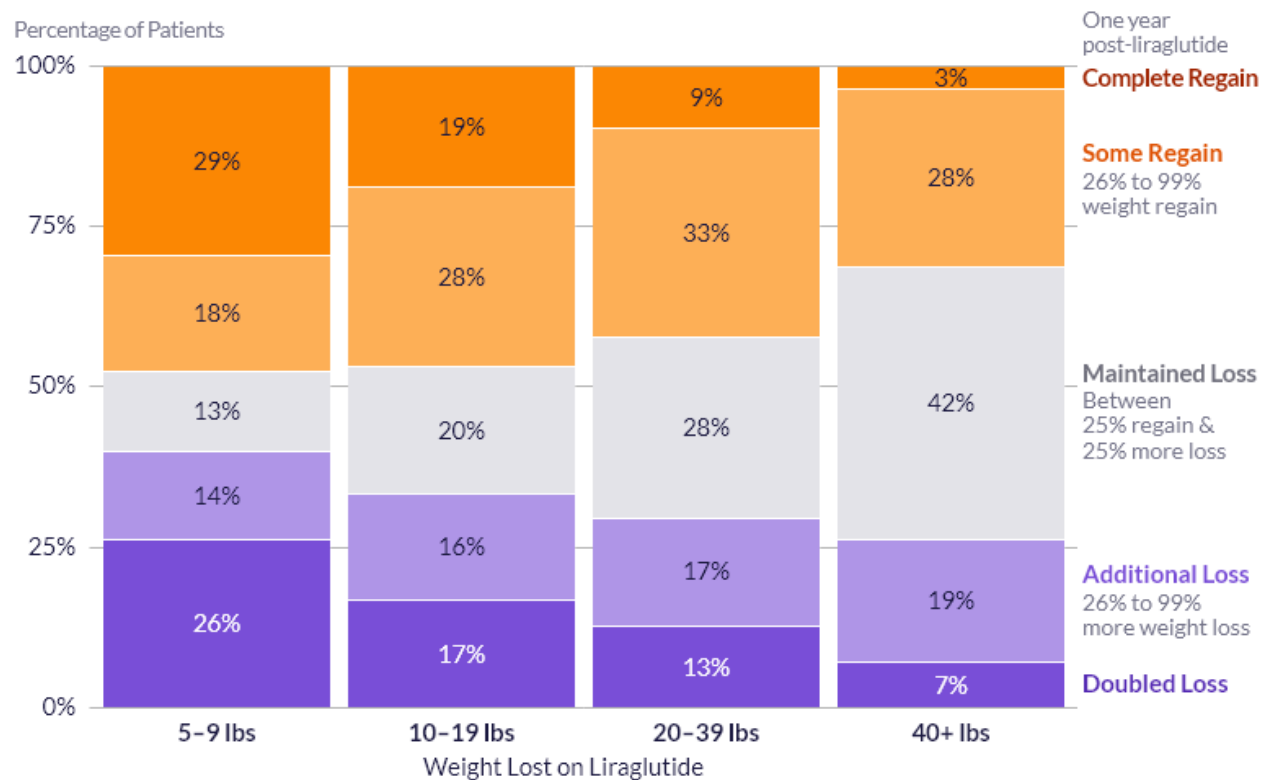


N=25,552 patients

"Post-Semaglutide Weight Change by Weight Lost on Treatment," 2024. EpicResearch.org

Figure 2a. Weight change one year after stopping semaglutide by weight lost on treatment.

Post-Liraglutide Weight Change by Weight Lost on Treatment



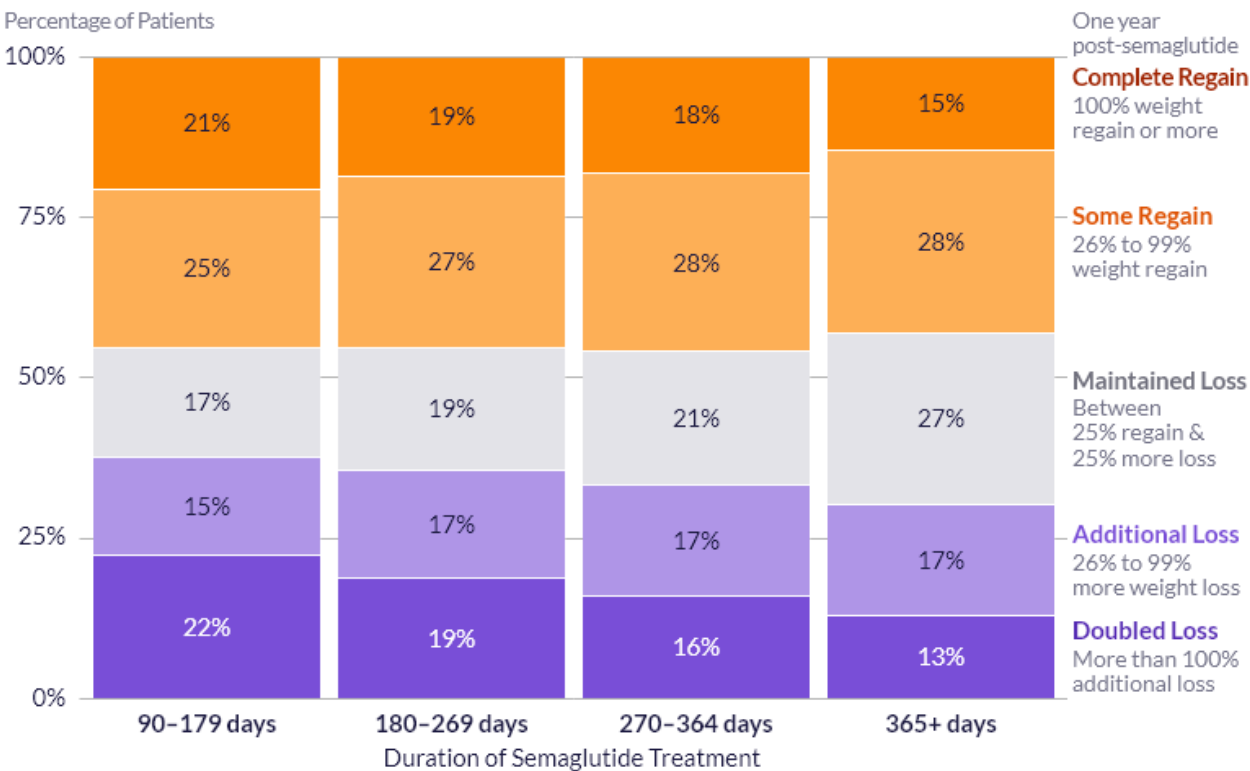
N=33,456 patients

"Post-Liraglutide Weight Change by Weight Lost on Treatment," 2024. EpicResearch.org

Figure 2b. Weight change one year after stopping liraglutide by amount of weight lost on treatment.

Patients who were prescribed semaglutide or liraglutide for at least one year were slightly more likely to maintain or continue to lose weight in the year following treatment. More than half of patients prescribed semaglutide or liraglutide for all treatment durations studied were able to maintain or continue their weight loss one year after treatment.

Post-Semaglutide Weight Change by Duration of Treatment

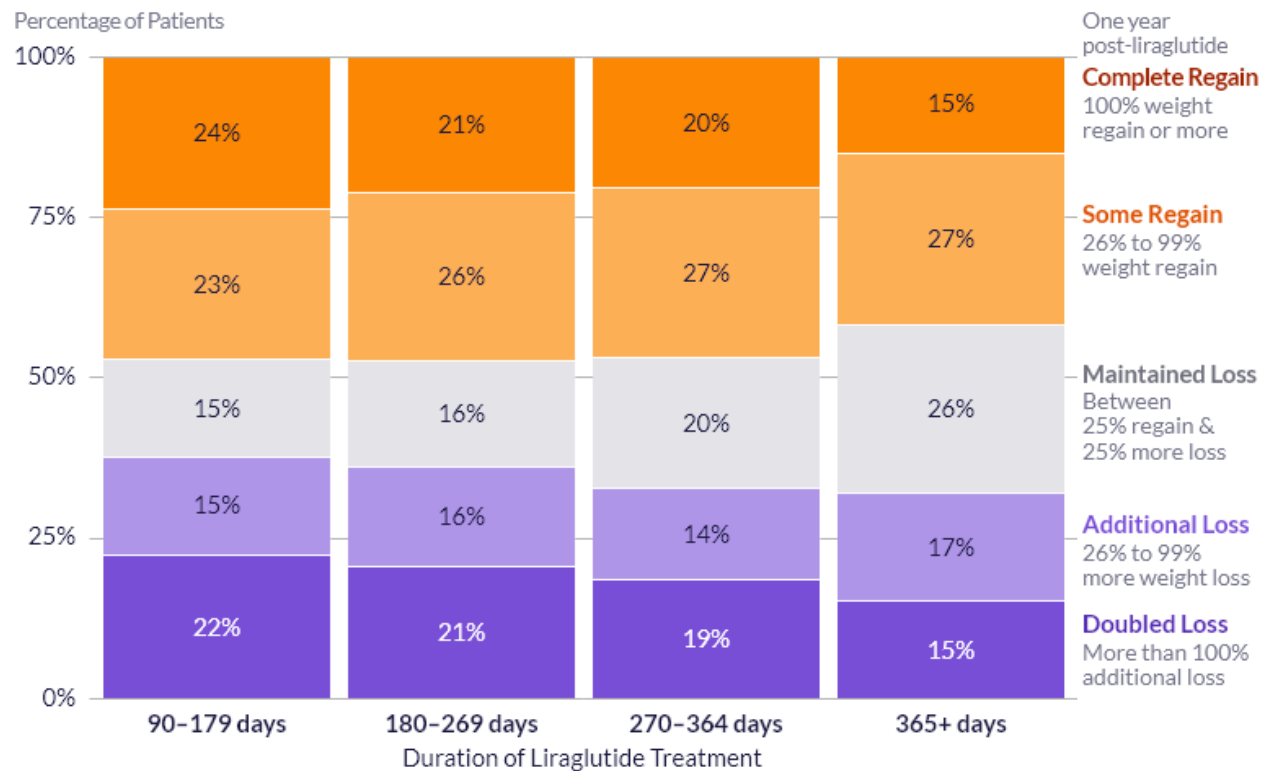


N=25,552 patients

"Post-Semaglutide Weight Change by Duration of Treatment," 2024. EpicResearch.org

Figure 3a. Weight change one year after stopping semaglutide by duration of treatment.

Post-Liraglutide Weight Change by Duration of Treatment



N=33,456 patients

"Post-Liraglutide Weight Change by Duration of Treatment," 2024. EpicResearch.org

Figure 3b. Weight change one year after stopping liraglutide by duration of treatment.

These data come from Cosmos, a dataset created in collaboration with a community of Epic health systems representing more than 246 million patient records from 1,400 hospitals and more than 32,500 clinics from all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

References

1. Bartelt K, Mast C, Deckert J, Gracianette M, Joyce B. Many Patients Maintain Weight Loss a Year After Stopping Semaglutide and Liraglutide. Epic Research. <https://epicresearch.org/articles/many-patients-maintain-weight-loss-a-year-after-stopping-semaglutide-and-liraglutide>. Accessed on April 11, 2024.

Data Definitions

Term	Definition
Study period	1/1/2017 - 2/1/2024

Study population	<p><i>Index Date: Estimated end of GLP-1 medication</i></p> <p>Cohort definitions:</p> <ul style="list-style-type: none"> • Patient's first ever recorded GLP-1 medication usage • Patients prescribed a GLP-1 medication for at least 90 days • Patient must have a male or female sex • Patient must have an SVI recorded • Patient must have a BMI >30 within the 180 days prior to being prescribed the GLP-1 medication • Patient must have a recorded weight within the 60 days prior to or 7 days following start of treatment • Patient must have a recorded weight within 60 days prior to or 60 days following end of treatment • Patient must have a recorded weight within 60 days prior to or 60 days following one year after their end of treatment • No additional GLP-1 medications taken in the year and a half following completion of treatment
Estimated end of GLP-1 medication	<p>Calculated the date following the last end date of a contiguous period of GLP-1 medication represented by either:</p> <ol style="list-style-type: none"> 1. The end date noted on the order 2. The end date calculated based on the number of refills as (refills + 1) * 28 after the treatment start date <p>End date on the order is prioritized.</p>
GLP-1 medication	Any drug with one of the following pharmaceutical classes: ANTI-OBESITY GLUCAGON-LIKE PEPTIDE-1 RECEPT AGONIST ANTIHYPERGLYCEMIA INCRETIN MIMETIC (GLP-1 RECEPT AGONIST) ANTIHYPERGLYCEMIA INCRETIN, LONG ACT-GLP-1 RECEPT AGONIST
GLP-1 medication of interest	<p>Within the GLP-1 medication group, any medication with a simple generic name like:</p> <ul style="list-style-type: none"> • Semaglutide • Liraglutide
Uncertain treatment	If two or more different drugs are prescribed one after another or the dosage doesn't match a drug on file, we mark the treatment instance drug as "Unsure"
BMI classification	<p>Healthy weight: BMI between 18.5 and 25</p> <p>Overweight: BMI between 25 and 30</p> <p>Class 1 obesity: BMI Between 30 and 35</p> <p>Class 2 obesity: BMI Between 35 and 40</p> <p>Class 3 obesity: BMI 40+</p>
Weight loss while on GLP-1 medication	<p>The weight lost while on a GLP-1 medication is the difference between when the patient started taking the medication and when they stopped taking the medication.</p> <p>Pre-GLP-1 measurements – Measurement within 180 days prior to or 7 days following the GLP-1 medication start date. If there are multiple measurements, the measurement closest to the <i>index date</i> is taken.</p> <p>Post-GLP-1 measurements – Measurement within 60 days prior to or 60 days following the GLP-1 medication end date. If there are multiple</p>

	measurements, the measurement closest to the estimated end of GLP-1 medication is taken.
Type 2 diabetes	A diagnosis with SNOMED code 44054006
Current or former smoker	One of the following: <ul style="list-style-type: none"> Smoking status of: <ul style="list-style-type: none"> Former Current Every Day Smoker Every Day Heavy Tobacco Smoker Former Smoker Light Smoker Heavy Smoker Smoker, Current Status Unknown Some Days Light Tobacco Smoker Current Some Day Smoker Cigarette pack years greater than 0 Cigarette packs per day greater than 0
History of bariatric surgery	Any historical diagnoses associated with the following CPT codes: 43770, 43771, 43772, 43773, 43774, or 43775
History of eating disorders	A diagnosis with ICD-10-CM code F50*
Thyroid conditions	A diagnosis with ICD-10-CM code E03* or E05*

Table 1: Semaglutide Weight Maintenance Characteristics

Semaglutide													
				Doubled Loss		Additional Loss		Maintained Loss		Some Regain		Complete Regain	
				General Pop.		(-,-100]		(-100,-25)		[-25,25]		(25,100)	
Grouping	Subgrouping	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Overall	Overall	25,552	100%	4,487	100%	4,236	100%	5,404	100%	6,821	100%	4,604	100%
BMI	Healthy	717	3%	47	7%	73	10%	140	20%	239	33%	218	30%
	Overweight	3,655	14%	340	9%	567	16%	828	23%	1,171	32%	749	20%
	Class 1 Obesity	6,439	25%	842	13%	1,051	16%	1,463	23%	1,872	29%	1,211	19%
	Class 2 Obesity	5,951	23%	1,003	17%	1,033	17%	1,259	21%	1,603	27%	1,053	18%
	Class 3 Obesity	8,790	34%	2,255	26%	1,512	17%	1,714	19%	1,936	22%	1,373	16%
Weight Loss Group	[5,10)	8,495	33%	2,153	25%	1,248	15%	1,190	14%	1,651	19%	2,253	27%
	[10,20)	9,211	36%	1,494	16%	1,587	17%	1,836	20%	2,556	28%	1,738	19%
	[20,40)	5,856	23%	669	11%	1,010	17%	1,626	28%	2,003	34%	548	9%
	[40,+)	1,990	8%	171	9%	391	20%	752	38%	611	31%	65	3%
Duration	[90,180)	8,395	33%	1,865	22%	1,292	15%	1,435	17%	2,057	25%	1,746	21%

	[180,270)	5,373	21%	1,006	19%	905	17%	1,022	19%	1,437	27%	1,003	19%
	[270,365)	3,589	14%	568	16%	621	17%	750	21%	997	28%	653	18%
	[365,+)	8,195	32%	1,048	13%	1,418	17%	2,197	27%	2,330	28%	1,202	15%

Table 2: Liraglutide Weight Maintenance Characteristics

Liraglutide													
				Doubled Loss		Additional Loss		Maintained Loss		Some Regain		Complete Regain	
		General Pop.		(-,-100]		(-100,-25)		[-25,25]		(25,100)		[100,+)	
Grouping	Subgrouping	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Overall	Overall	33,456	100%	5,963	27%	5,348	24%	7,342	33%	8,717	39%	6,086	27%
BMI	Healthy	504	2%	35	7%	74	15%	117	23%	152	30%	126	25%
	Overweight	3,360	10%	339	10%	512	15%	807	24%	968	29%	734	22%
	Class 1 Obesity	7,629	23%	951	12%	1,158	15%	1,766	23%	2,291	30%	1,463	19%
	Class 2 Obesity	8,344	25%	1,263	15%	1,355	16%	1,949	23%	2,239	27%	1,538	18%
	Class 3 Obesity	13,619	41%	3,375	25%	2,249	17%	2,703	20%	3,067	23%	2,225	16%
Weight Loss Group	[5,10)	10,378	31%	2,731	26%	1,417	14%	1,315	13%	1,866	18%	3,049	29%
	[10,20)	11,629	35%	1,960	17%	1,917	16%	2,313	20%	3,270	28%	2,169	19%
	[20,40)	7,980	24%	1,024	13%	1,346	17%	2,244	28%	2,614	33%	752	9%
	[40,+)	3,469	10%	248	7%	668	19%	1,470	42%	967	28%	116	3%
Duration	[90,180)	6,558	20%	1,475	22%	1,000	15%	991	15%	1,541	23%	1,551	24%
	[180,270)	4,898	15%	1,010	21%	761	16%	806	16%	1,283	26%	1,038	21%
	[270,365)	3,901	12%	724	19%	556	14%	793	20%	1,038	27%	790	20%
	[365,+)	18,099	54%	2,754	15%	3,031	17%	4,752	26%	4,855	27%	2,707	15%