LONGEVITY MARKET & SOCIETY INTELLIGENCE · STUDY NO. SBL-50

After the Weight Comes Off

The economic, medical, and cultural consequences of the GLP-1 revolution — a systematic, evidence-graded study of what happens beyond weight loss.

SOUTH BEACH LONGEVITY · 19 AUGUST 2026 · RESEARCH USE ONLY · SHAREABLE · NOT MEDICAL, INVESTMENT, OR FINANCIAL ADVICE

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GLP-1 SECOND- & THIRD-ORDER EFFECTS · SBL-50 STUDY · 2026 · RESEARCH USE ONLY

After the Weight Comes Off

The economic, medical, and cultural consequences of the GLP-1 revolution — a systematic, evidence-graded study of what happens beyond weight loss

GLP-1 medicines began as treatments for diabetes and obesity. When tens of millions of people change how much they eat, what they weigh, and how they think about their bodies, the consequences spread far beyond the pharmacy. This study traces those ripples across nineteen industries and the culture itself — and grades, honestly, which are real, which are exaggerated, and which are not yet proven.

Compiled by South Beach Longevity · 19 August 2026 · **Evidence base** 32,659 news articles (26,866 full-text) and 18,147 social-media posts on GLP-1 and related drugs (corpus collected 2026), verified against primary sources — clinical trials, government surveys, regulatory filings, company disclosures, and named analyst and academic studies. **Method** Compile → Analyze → Synthesize → Write → Verify. Every quantitative claim is graded for evidence strength and labeled *measured* or *projected*. **Audience** Written to be read by consumers, journalists, investors, businesspeople, policymakers, and healthcare and wellness professionals alike. No specialist training is assumed; complexity is explained, not removed. **Classification** Shareable — contains no confidential cost or margin data. **Constraint** This document describes and grades existing evidence. It is not medical, investment, or financial advice; it recommends no drug, dose, regimen, or security, and no human use is prescribed anywhere in it.

Executive summary

The one-sentence finding. GLP-1 drugs are a genuine medical revolution whose *medical* second-order effects are already large and proven, whose *consumer* second-order effects are real but — so far — modest, leaky, and widely overstated, and whose *cultural* effects may ultimately prove the most consequential of all.

This study examines the second- and third-order consequences of the GLP-1 class — the medicines sold as **Ozempic** and **Wegovy** (semaglutide), **Mounjaro** and **Zepbound** (tirzepatide), and a fast-arriving pipeline of oral and next-generation drugs. The primary effects are not in dispute: people eat less, lose 15–23% of their body weight, and, in large randomized trials, suffer fewer heart attacks, strokes, and kidney and liver complications. Our subject is everything downstream of that — groceries and restaurants, alcohol and addiction, clothing and fitness, dermatology and insurance, pharma and telehealth, and the way an entire culture is re-thinking obesity.

Six conclusions organize the study:

1. **The medical downstream is proven; the consumer downstream is not — yet.** Five large randomized trials establish that these drugs reduce cardiovascular events, kidney decline, heart failure, sleep apnea, and liver disease. The clearest *market* consequence, the displacement of roughly a third of bariatric surgeries, is measured two independent ways. By contrast, most consumer-sector claims — the collapse of snacking, the death of the diet industry, an epidemic of sobriety — are anecdote, survey, corporate speculation, or projection, and the best transactional data show effects that are real but small.
2. **Attention has badly outrun impact.** The sectors the press covers most (alcohol, addiction) rest on some of the thinnest evidence; the best-evidenced effects draw less coverage. A reader who indexed reality to headlines would be systematically wrong about which effects are solid.
3. **Three filters explain nearly all the over-claiming.** *Scale* (a large per-user effect on a still-small user base), *confounding* (trends like declining alcohol use that predate the drugs), and *durability* (effects that reverse when people stop) account for the gap between narrative and evidence across every sector.
4. **The user base is large for a drug and small for a mass market — and leaky.** About one in eight US adults has tried a GLP-1; only about one in twenty-five is actively on one. Roughly half to two-thirds of weight-loss starters stop within a year, though newer patients are persisting longer. This is why consumer effects are "detectable at the margin" rather than "transformative."
5. **For the professional and investor, the signal is in medicine and pharma, not the supermarket.** The documented facts are Eli Lilly's ascent to a trillion-dollar valuation, Novo Nordisk's stumble, the surgery decline, the pressure on sleep-apnea and diabetes-device makers, and the enormous, near-term cost borne by employers and public payers against savings that are modeled, delayed, and — in the only large real-world dataset — not yet appearing. The "which snack stock is doomed" question is, on current evidence, unanswerable and premature.
6. **The largest effects may still be ahead, and they hinge on persistence and price, not potency.** Whether this becomes a lasting economic and public-health transformation rather than a cultural moment depends on whether people stay on the drugs and whether enough people can afford them. Both are uncertain, and both are moving — oral drugs and cash-pay pricing are widening access even as employers and state Medicaid programs retreat from coverage.

The body of the study walks through the science, then nineteen sectors one causal chain at a time, then the market map, the bear case, and three scenarios for a world where usage doubles. Throughout, each claim carries an evidence grade and a *measured*-or-*projected* label, and the claims that do not survive scrutiny are flagged as prominently as the ones that do.

FOR THE READER IN A HURRY — THE PLAIN-LANGUAGE VERSION

If you take nothing else from this study, take this. These drugs make people less hungry, so they eat less and lose a lot of weight — and, unlike every diet before them, they also prevent heart attacks and other serious illness. That much is rock-solid. Everything *after* that — the idea that they are wrecking the snack business, emptying the gyms, killing off wine, or reshaping the whole economy — is a mix of a little truth and a lot of hype. The truth is that when roughly one American adult in twenty-five is on these drugs today, and about half stop within a year, the ripple effects are real but small, and they show up clearly only in a few places: far fewer weight-loss surgeries, more protein on shopping lists, a wave of newly-needed smaller clothes, and a booming, chaotic business of clinics and websites selling the drugs. The rest is worth watching, not believing yet. And the deepest change may not be economic at all: for the first time, medicine can treat obesity as a disease of biology rather than a failure of willpower — and that is quietly rewriting how a whole society thinks about weight.

How to read this study

This is a long document with a simple spine. It moves from the drug, to the person, to the market, to the culture — the same primary → secondary → tertiary chain applied nineteen times. Three conventions recur throughout, and understanding them is most of what a reader needs.

Every major claim carries an evidence grade. We do not treat all "GLP-1 causes X" statements as equal. Each is graded on a five-step scale, and the grade tells you how much weight the claim can bear.

THE EVIDENCE GRADES

GRADE	WHAT IT MEANS	TYPICAL BASIS
ESTABLISHED	Strong, direct evidence. Safe to rely on.	Randomized trial; comprehensive administrative data
STRONGLY SUPPORTED	Several independent datasets agree, but no controlled experiment.	Multiple cohorts, scanner data, converging surveys
EMERGING	Real early evidence, but limited, preliminary, or unreplicated.	One good study; first company data
PLAUSIBLE	A sound mechanism and a little signal.	Reasonable theory, thin data
SPECULATIVE	An interesting hypothesis with little behind it.	Analyst extrapolation; viral anecdote

Every figure is labeled *measured* or *projected*. A number counted from real receipts, claims, or a trial is *measured*. A number a bank or consultancy modeled for 2030 is *projected* — and we say so, however precise it looks. Confusing the two is the most common error in this field.

Three filters catch nearly all the over-claiming. Before believing any downstream claim, we test it against: **scale** (a big per-user effect can still be tiny in a trillion-dollar market with few users); **confounding** (many trends blamed on GLP-1s — falling alcohol sales, weak retail — were already underway); and **durability** (an effect that reverses when people quit, and about half do within a year, is a fragile foundation for any forecast). When a claim fails one of these filters, we flag it.

Finally, a word on **who this is for**. Each sector section is written on two levels. The main prose explains the science, the behavior, and the evidence in plain language, for any reader. Set apart in shaded boxes labeled **THE PROFESSIONAL READ** is the investor- and operator-grade layer — market structure, exposed companies and tickers, magnitudes, and the specific variable that will decide the outcome. A general reader can skip those boxes and lose no thread; a professional can read them as a briefing.

Part I · The phenomenon and the science

1 · The GLP-1 shock

For most of modern medicine, obesity had no effective drug. Diets worked for a while and then stopped working; the few weight-loss pills that reached the market were modest, short-lived, or withdrawn for safety. Against that history, the arrival of the GLP-1 class was less an improvement than a rupture — the first time medicine could reliably produce, with a weekly injection, the kind of weight loss previously reachable only through surgery.

The drugs are not new in concept. **GLP-1** — glucagon-like peptide-1 — is a hormone the gut releases after a meal; it is one of the body's natural "I've eaten" signals. Drugmakers learned to build long-lasting synthetic copies of it, first to control blood sugar in type 2 diabetes and then, once the weight-loss effect became impossible to ignore, for obesity itself. Three approvals turned a diabetes drug into a phenomenon: **semaglutide** reached the US market for diabetes as Ozempic (2017) and for weight loss as **Wegovy** in June 2021; **tirzepatide** — a "dual" molecule that mimics a second gut hormone, GIP, alongside GLP-1 — arrived as **Mounjaro** for diabetes in May 2022 and as **Zepbound** for weight loss in November 2023. What set these apart from every prior diet drug was the size of the effect: roughly 15% of body weight lost on semaglutide, about 21% on tirzepatide, in the pivotal trials.

Two further events pushed the shock beyond medicine. First, in November 2023 the **SELECT** trial showed semaglutide cut heart attacks, strokes, and cardiovascular death by 20% in people with obesity and existing heart disease — proof these were cardiovascular drugs, not cosmetic ones. Second, the drugs went viral: celebrity disclosure, before-and-after content on TikTok and Instagram, and acute two-year shortages made "Ozempic" a household word and, briefly, a punchline. That combination — unprecedented efficacy, hard outcome data, and a cultural wildfire — is what we mean by the **GLP-1 shock**. It is the starting condition for everything that follows.

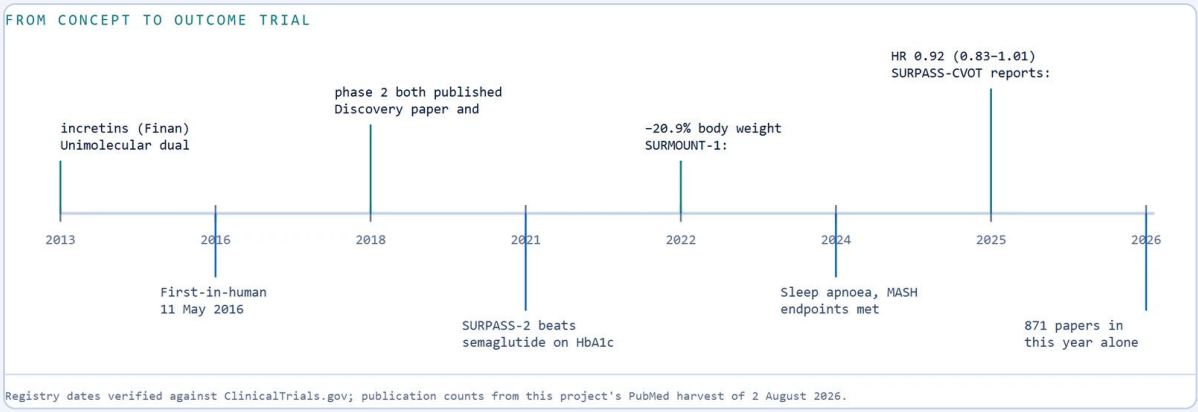

FIGURE 1 · Thirteen years from concept to cardiovascular outcome (from the SBL tirzepatide monograph). The incretin class did not appear overnight: from the 2013 design of the first "unimolecular" dual gut-hormone drug, through first-in-human dosing (2016), the pivotal trials that beat older drugs on blood sugar (2021) and delivered ~21% weight loss (SURMOUNT-1, 2022), to sleep-apnea and liver endpoints (2024) and a cardiovascular-outcome readout (2025). Dates are drawn from the trial registry; the 2026 publication count is a partial year. *Rendered from the monograph's own authored timeline figure.*

> ***A note on names.*** *Throughout, "GLP-1 drugs" is shorthand for the whole incretin class used for weight and metabolic health, including the dual- and triple-hormone agonists that are not, strictly, GLP-1-only. Where a distinction matters — semaglutide versus tirzepatide, approved versus compounded, injectable versus the oral pills now arriving — we name the specific drug.*

2 · The science: how the drugs actually work

To judge what these drugs do to society, it helps to understand what they do to a person — because the biology explains both why the effects are so broad and why some downstream claims are credible while others are not. This section is the one place we go under the hood. A reader uninterested in mechanism can skip to Section 4; a reader who wants to know *why* GLP-1s plausibly touch the heart, the kidney, the liver, the brain's reward system, and the appetite thermostat all at once will find the answer here.

The hormone and the "incretin effect." GLP-1 is a small peptide released by cells in the intestine within minutes of eating. It does three things at once: it tells the pancreas to release insulin (but only when blood sugar is actually high — which is why these drugs rarely cause dangerous lows on their own), it slows how fast the stomach empties, and it signals the brain that you are full. Natural GLP-1 lasts barely one to two minutes before an enzyme destroys it; the entire pharmaceutical achievement is engineering that fleeting signal into something that lasts a week (Section 3).

The appetite thermostat. Deep in the hypothalamus sit two opposing sets of neurons that behave like a thermostat for hunger — one set (POMC) says *stop eating*, the other (AgRP) says *keep going*. GLP-1 drugs turn up the "stop" neurons and turn down the "keep going" neurons. A second control point sits in the brainstem, in a region that lies *outside* the blood-brain barrier and can therefore sense hormones directly in the blood. Two neighboring spots there matter: one produces genuine fullness, the other is the brain's nausea trigger. GLP-1 drugs hit both — which is precisely why satiety and nausea travel together, and why the central goal of the next generation of molecules is "fullness without the queasiness." Grade: **ESTABLISHED** for the circuitry, with the cleanest human-neuron confirmations still **EMERGING**.

"FOOD NOISE" — A POP TERM THAT TURNED OUT TO NAME SOMETHING REAL

Users kept describing the same thing: the drug "quiets the food noise" — the constant, intrusive background chatter about what to eat next. The phrase began among patients, entered the medical literature over the following years, and by 2025 had a formal clinical definition (in *Nutrition & Diabetes*) and a validated questionnaire. It matters because it points at the third thing these drugs do beyond hunger and digestion: they act on the brain's **reward and craving** circuitry — the ventral tegmental area, nucleus accumbens, and prefrontal cortex, the same wiring implicated in cravings for alcohol, nicotine, and highly palatable food. In animals, GLP-1 drugs blunt the dopamine surge that alcohol or a milkshake provokes *without* flattening normal motivation. This is the mechanistic seed of every "does Ozempic cure addiction?" headline in Section 11 — real biology, genuinely promising, and, in humans, still largely unproven.

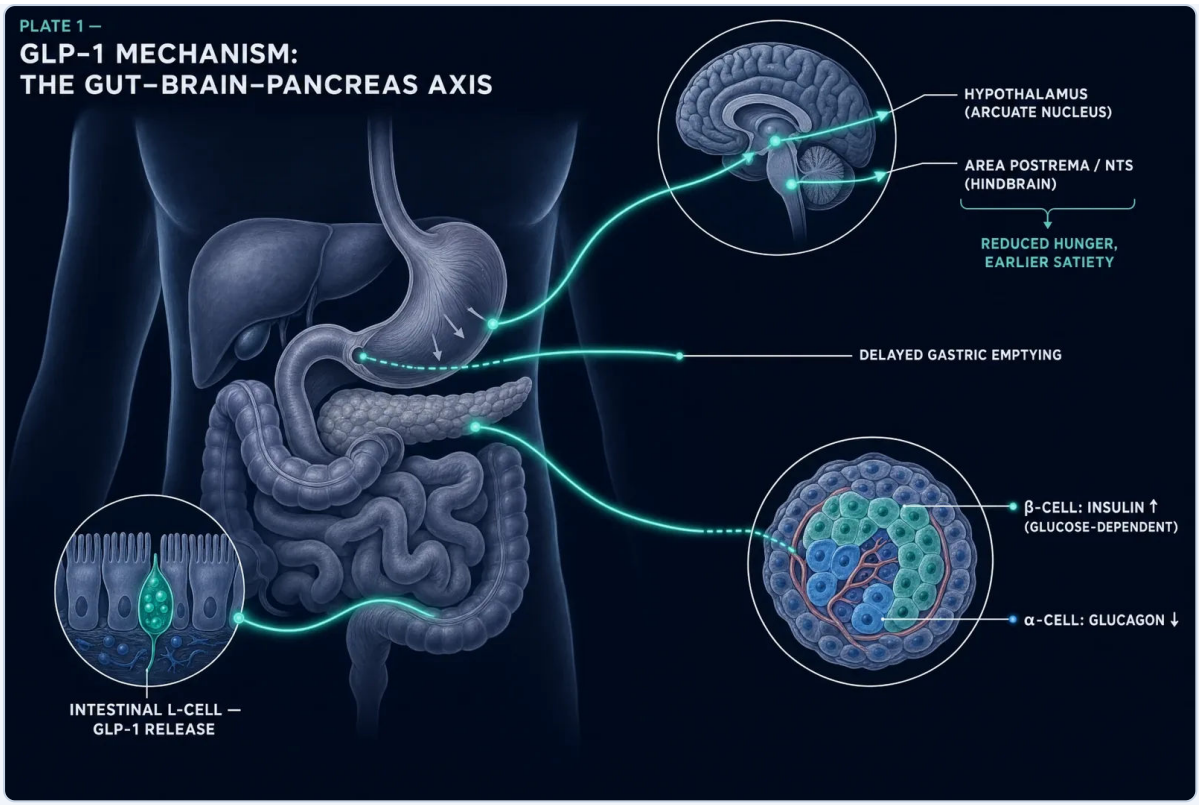

FIGURE 2 · The gut–brain–pancreas axis (commissioned plate). Gut L-cells release GLP-1, which acts on three fronts at once: the brain's appetite centres — the hypothalamic arcuate nucleus and the hindbrain area postrema / NTS — to reduce hunger and bring on earlier satiety; the stomach, to slow gastric emptying; and the pancreatic islet, where it raises insulin from β-cells and lowers glucagon from α-cells, both *glucose-dependently* (the reason the drugs rarely cause low blood sugar on their own). *Schematic:* islet architecture is stylised and cell proportions are not to scale.

Why the effects reach so many organs. The reason a weight drug ends up in cardiology, nephrology, and hepatology journals is that GLP-1 receptors are not confined to the pancreas. They are expressed in the brain's appetite and reward centers, the stomach and gut, the pancreas, the heart, and the kidney. A drug that engages that whole distribution, and that also produces large weight loss and better blood sugar and blood pressure, has many separate paths to a downstream benefit. That breadth is the biological basis for the entire secondary-effects thesis of this study.

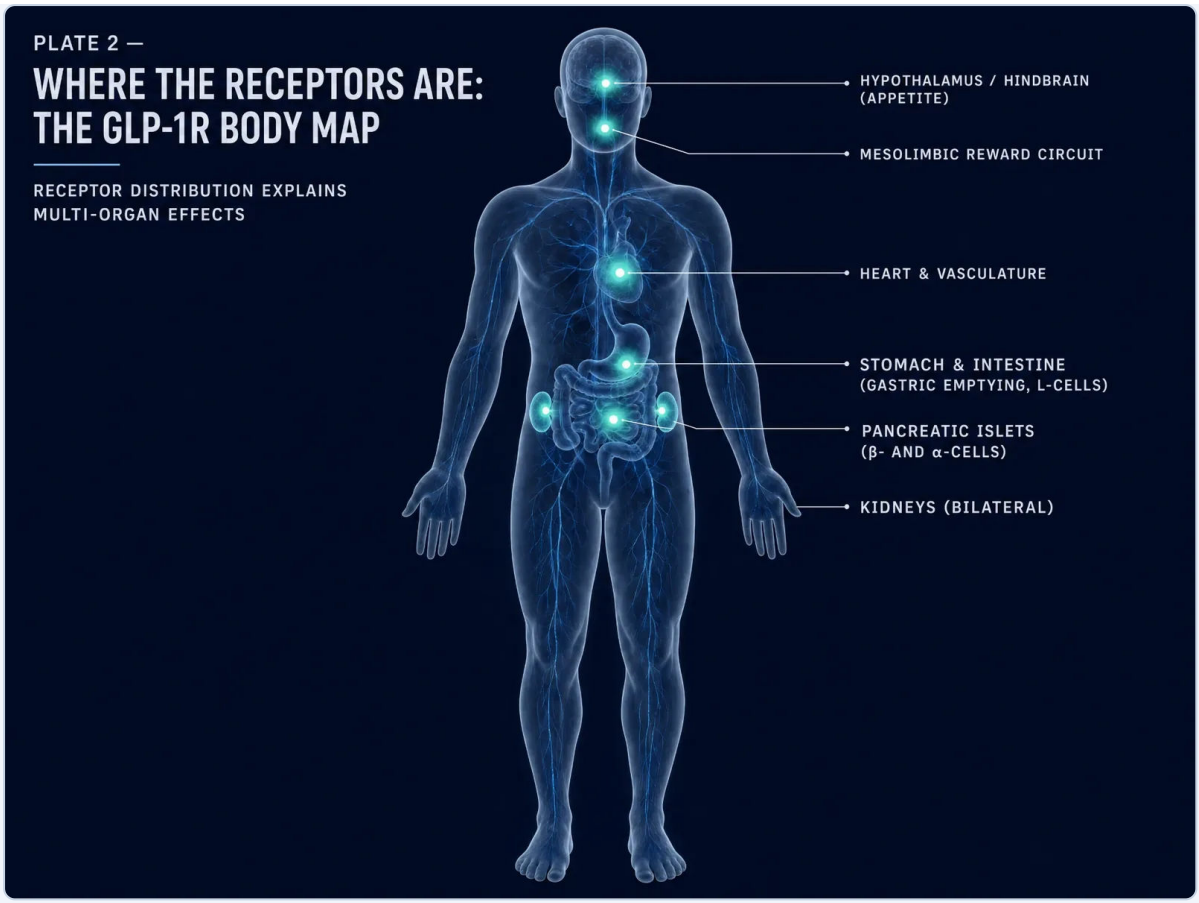

FIGURE 3 · Where the receptors are: the GLP-1R body map (commissioned plate). GLP-1 receptors are expressed far beyond the pancreas — in the brain's appetite and reward centres, the stomach and intestine, the pancreatic islets, the heart and vasculature, and the kidneys. That distribution is the biological reason a weight drug produces cardiovascular, renal, and behavioural effects (Sections 7 and 16). *Schematic locator, not an anatomical atlas; marked sites indicate receptor-bearing tissues, not exact positions.*

Not just more hormone — a better-engineered signal. The newer drugs do not simply flood the body with more of the natural hormone; they are engineered to act on the receptor differently, which is part of why they outperform. Two features matter. The first is *which* hormones a drug engages: tirzepatide adds a second gut hormone, GIP, whose biology is distinct from GLP-1's.

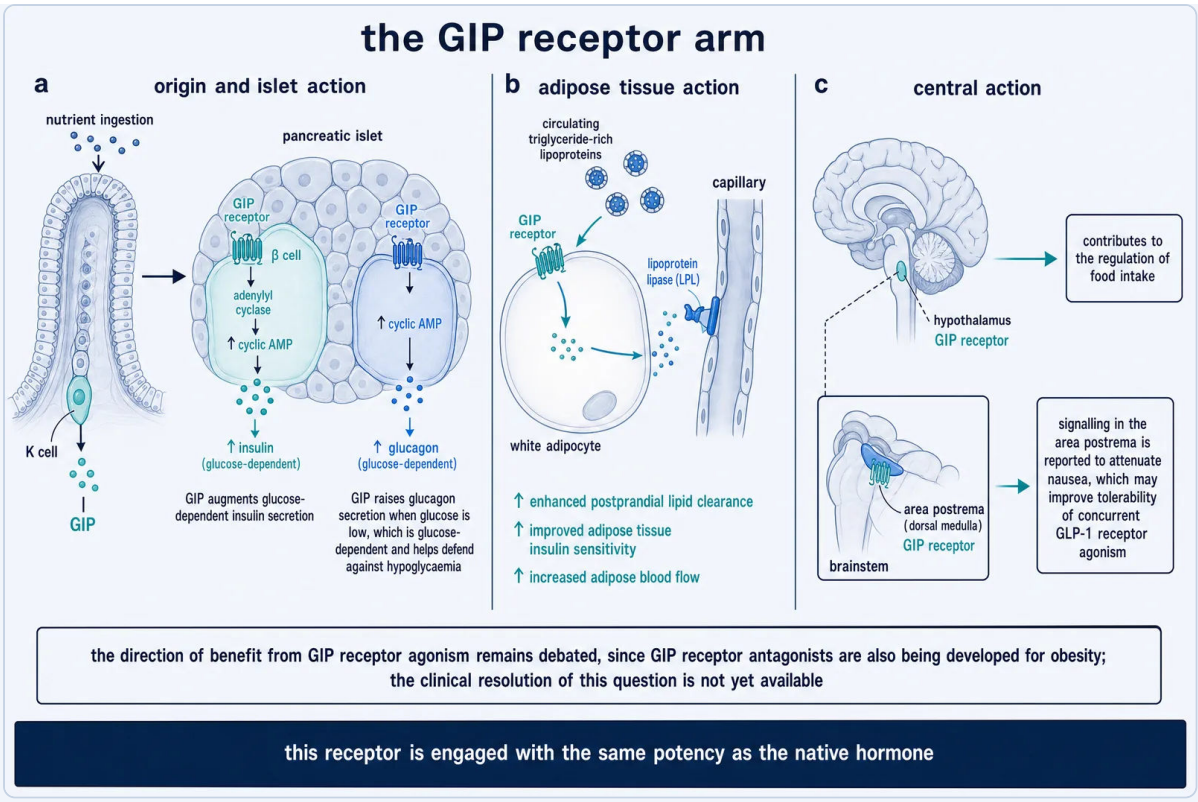

FIGURE 4 · What the second hormone (GIP) does (from the SBL tirzepatide monograph). GIP prompts glucose-dependent insulin from the pancreatic islet and acts on fat tissue to speed the clearance of dietary fat and improve insulin sensitivity; it may also, through a nausea-related brainstem region, blunt the queasiness of the GLP-1 arm — a plausible reason the dual drug can be both stronger and better tolerated. *The islet and fat actions are established physiology; the nausea-attenuation role is a hypothesis, and the plate's own footer flags the unresolved puzzle: GIP-receptor blockers are in development for the same purpose, and which direction ultimately helps is not settled.*

The second feature is *how* the receptor is switched on.

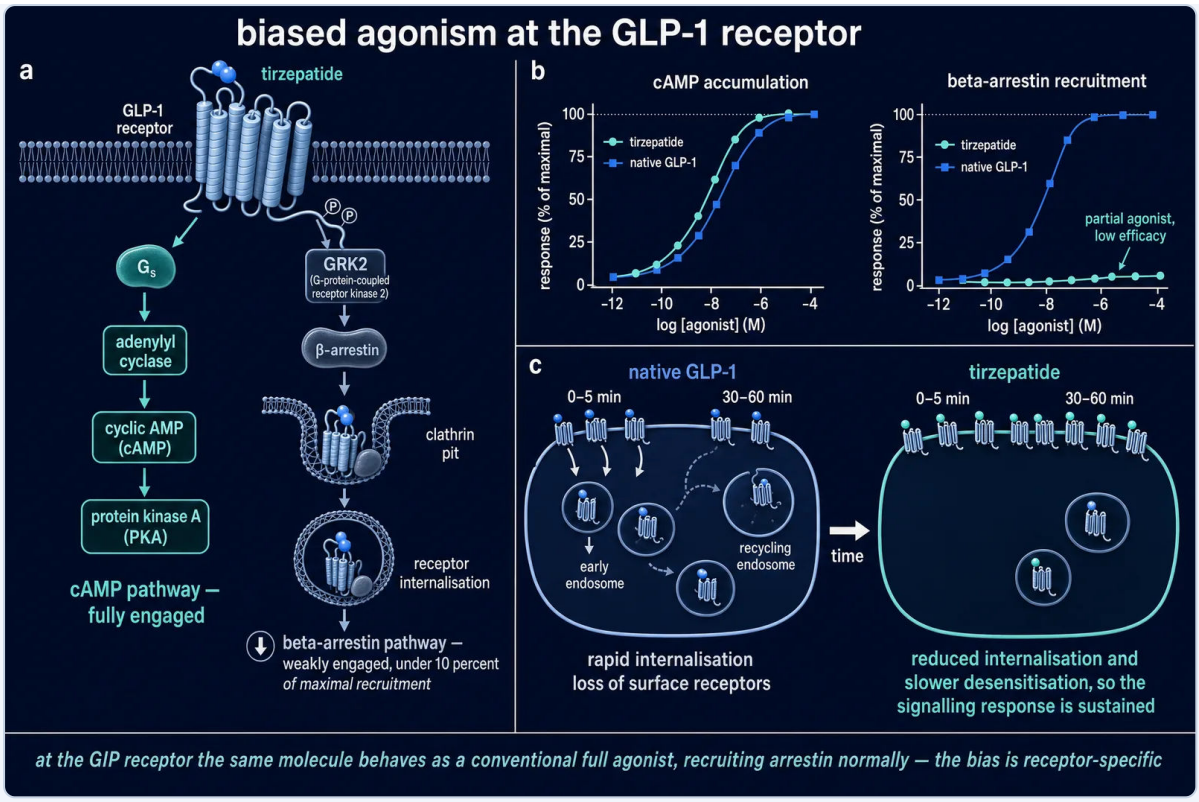

FIGURE 5 · Biased agonism: why the receptor keeps responding (from the SBL tirzepatide monograph). A receptor can be switched on in more than one way. Tirzepatide fully drives the useful "go" signal (via cyclic AMP) but barely triggers the built-in "off-switch" (β-arrestin, which normally pulls the receptor off the cell surface and quiets it), so the receptor stays active and the signal is sustained rather than self-limiting. The direction of every effect shown is supported by Willard and colleagues (2020); the exact "under 10%" ceiling printed on the plate is approximate. *The bias is receptor-specific — at the GIP receptor the same molecule behaves normally.*

DEEP SCIENCE – WHY "BIASED" SIGNALLING MATTERS

Picture a hormone receptor as a light switch wired to two circuits: one turns on the light (the useful metabolic signal), the other, after a delay, unscrews the bulb — it pulls the receptor inside the cell and quiets it, the body's way of preventing over-stimulation. Natural GLP-1 flips both. A **biased** agonist flips mainly the first. Tirzepatide does exactly this at the GLP-1 receptor: it drives the useful signal fully while leaving the "unscrew the bulb" circuit mostly untouched, so the receptor stays on the surface and keeps working. This is part of why the newer drugs beat simply giving "more hormone" — it is better engineering, not just a bigger dose, and it is one reason this study is careful never to treat the molecules as interchangeable.

Obesity is a disease of that system — not of willpower. The deepest scientific point, and the one with the largest cultural consequence (Section 25), is what the drugs reveal about obesity itself. Since a 2017 Endocrine Society scientific statement, the mainstream scientific position has been that body-fat stores are actively regulated by the brain, and that obesity is a disorder of that energy-homeostasis system rather than a moral failing. The evidence is stark: in the famous

"Biggest Loser" follow-up, contestants who lost enormous weight showed a resting metabolism suppressed by roughly 500 calories a day *six years later*, and 13 of 14 regained weight — the body defending its fat stores. GLP-1 drugs work because they act on that control system directly. If a weekly injection can do what a lifetime of dieting could not, the premise that weight is simply a matter of trying hard becomes hard to sustain.

3 · The molecules and the class

The drugs differ in ways that matter for the market as much as the clinic, so a brief tour of the chemistry pays off. The engineering problem is always the same — natural GLP-1 is destroyed in two minutes — and the solution is to bolt a fatty-acid "tail" onto the peptide that grabs onto albumin, the most abundant blood protein, shielding the drug and slowing its clearance. Tuning that tail tunes the dosing: semaglutide's tail gives a ~7-day half-life (weekly), tirzepatide's ~5 days (weekly), liraglutide's shorter tail only ~13 hours (daily).

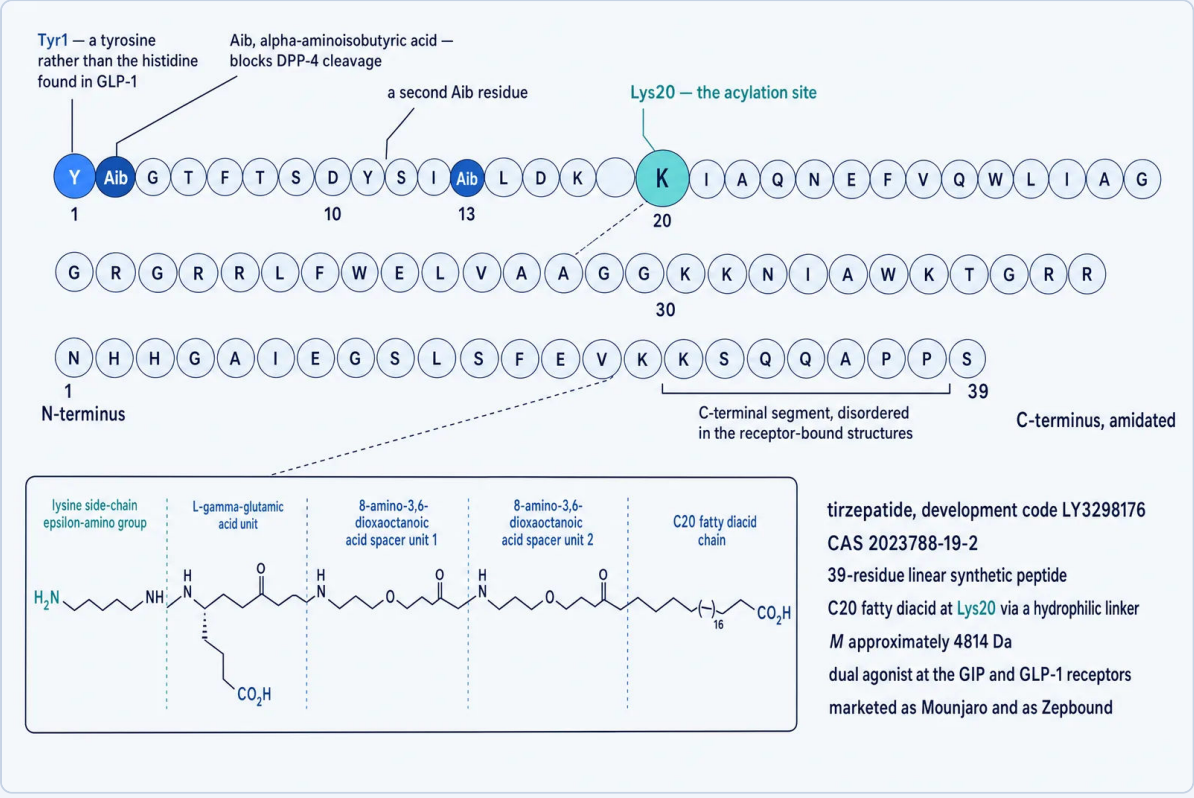

FIGURE 6 · The molecule in full (from the SBL tirzepatide monograph). Tirzepatide is a single 39-amino-acid peptide built on a GIP-derived backbone, with two synthetic "Aib" residues that resist the destroying enzyme and a long C20 fatty-diacid tail (carried on Lys20 through spacer chemistry) that provides the albumin grip behind weekly dosing; molecular weight ~4,813. *Read this plate for its chemistry and annotations, not as a sequence key — the monograph flags that the drawn residue letters run one position out of step from residue 3 onward, and the lower rows are illustrative.*

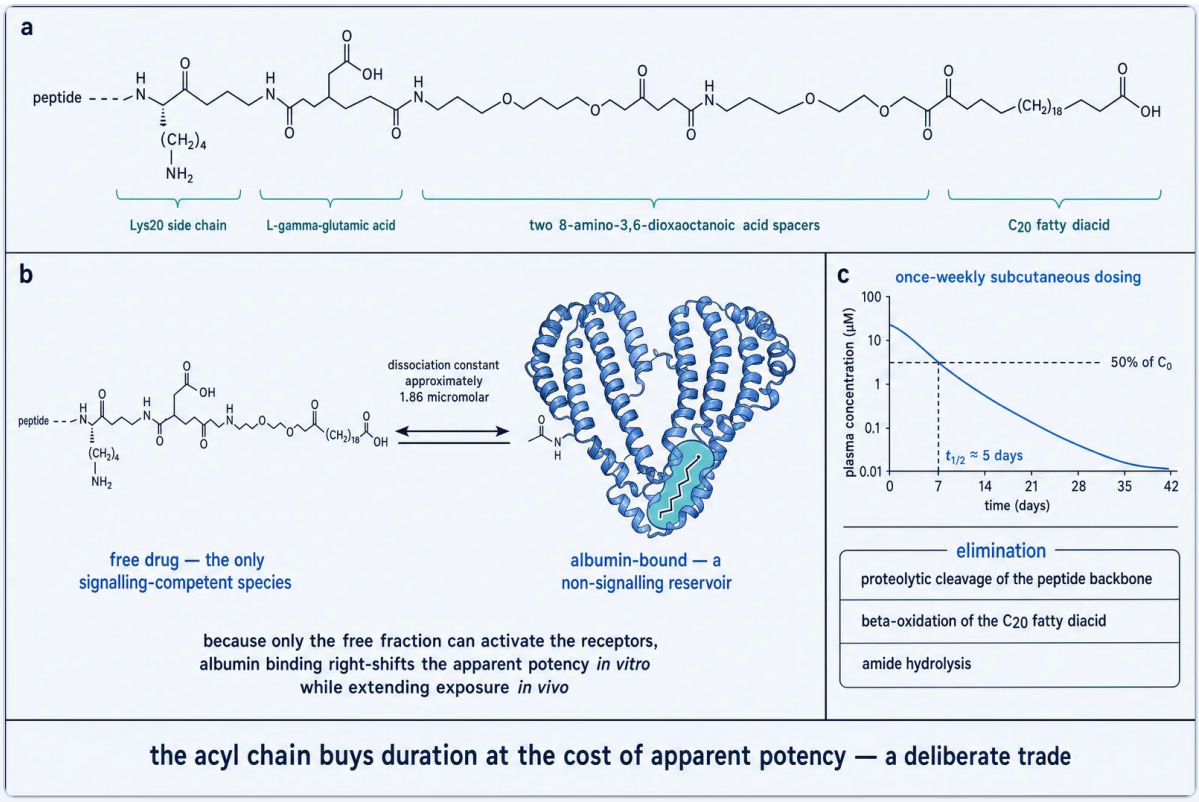

FIGURE 7 · Why the drug lasts a week (from the SBL tirzepatide monograph). The fatty-acid tail binds the peptide to serum albumin, the blood's most abundant carrier protein. Because only the small **free** (unbound) fraction can reach a receptor or be filtered by the kidney, albumin acts as a slow-release reservoir — trading a little apparent potency for days of exposure. Roughly 99% of circulating drug is albumin-bound and the half-life is about five days, which is what permits a once-weekly injection. *(A dissociation-constant value printed on the plate is unverified in the source corpus and is not relied on here.)*

DEEP SCIENCE — HOW A TWO-MINUTE HORMONE BECOMES A WEEKLY SHOT

Natural GLP-1 is destroyed within about two minutes. To make a once-a-week medicine, chemists bolt a fatty-acid "tail" onto the peptide; that tail latches onto albumin, and the drug rides around shielded, releasing only a slow trickle of its active free form. Lengthen or shorten the tail and you tune the clock: liraglutide's shorter tail lasts about 13 hours (a daily shot), semaglutide's and tirzepatide's about 5–7 days (weekly). The oral pill orforglipron takes the opposite route — it is not a peptide at all, so it survives digestion without any tail (Figure 8).

Two developments define the current moment. The first is the **pill**. Peptides normally cannot survive digestion, so they are injected; the workarounds are either to glue an absorption-helper onto a semaglutide tablet (Rybelsus, with only ~1% of the dose absorbed) or to design a wholly non-peptide "small molecule" that survives on its own. Lilly's **orforglipron** is the latter, and its April 1, 2026 FDA approval (as Foundayo) made it the first oral non-peptide GLP-1 — a genuine inflection point, because a pill with no food-and-water restrictions is far cheaper to make and

easier to take, and can scale to a global market that injectables cannot. The second is **potency escalation**: from one hormone (semaglutide) to two (tirzepatide, adding GIP) to three (retatrutide, adding glucagon), with weight loss climbing across the class.

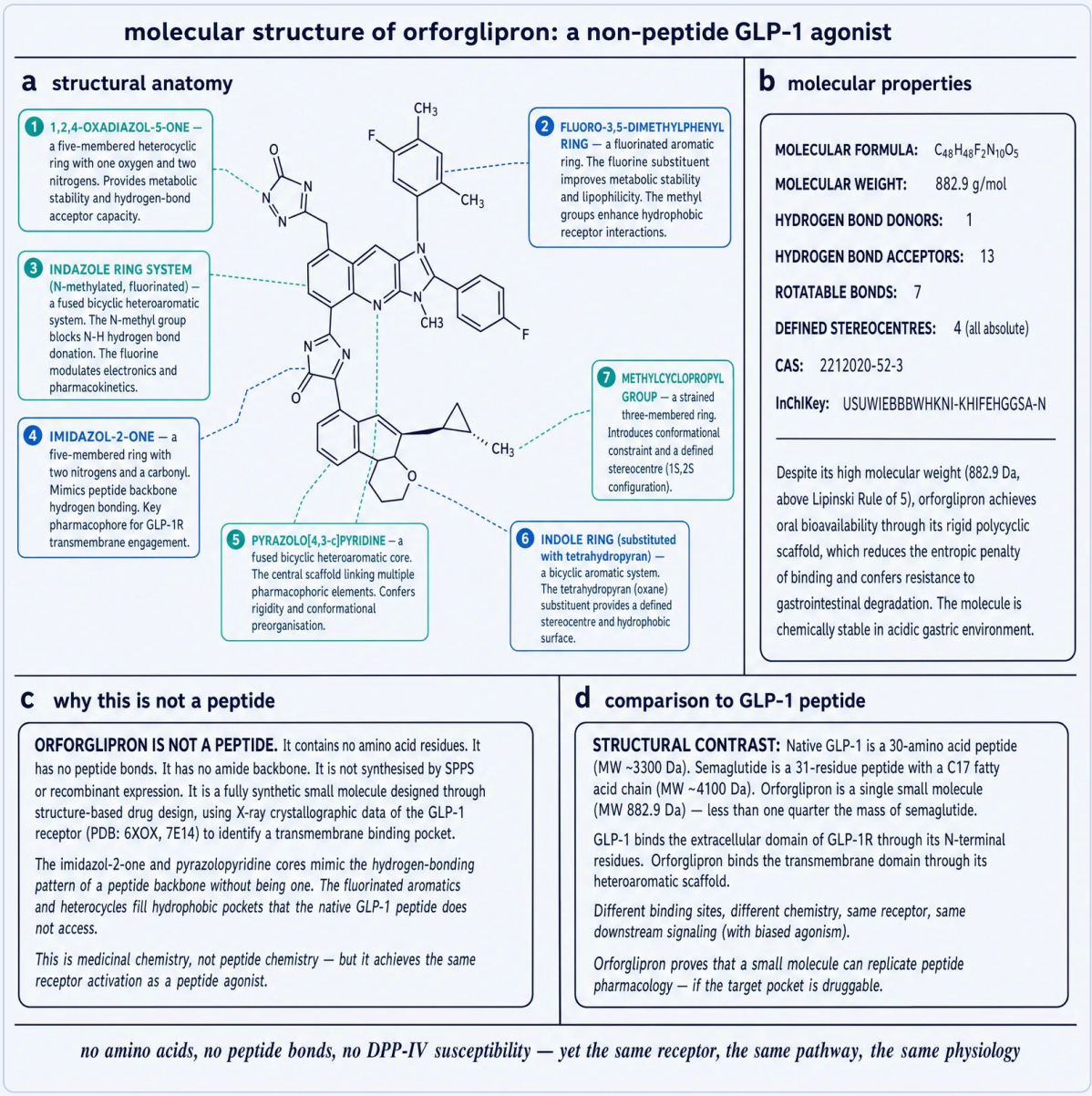

FIGURE 8 · The pill: a non-peptide GLP-1 drug (from the SBL orforglipron monograph). Peptides are normally destroyed in the gut, which is why the injectables exist. Orforglipron sidesteps this by not being a peptide at all — it is a small molecule (molecular weight ~883, less than a quarter of semaglutide's) that mimics GLP-1 and survives digestion, so it can be taken as a daily tablet with no food-and-water restrictions. That manufacturability and convenience are why the pill matters for global scale and the coming price war (Section 23), even though it trades away some potency. *(The plate reproduces a supplier structure; one hydrogen-bond-acceptor count printed on it differs from the public database and is not relied on here.)*

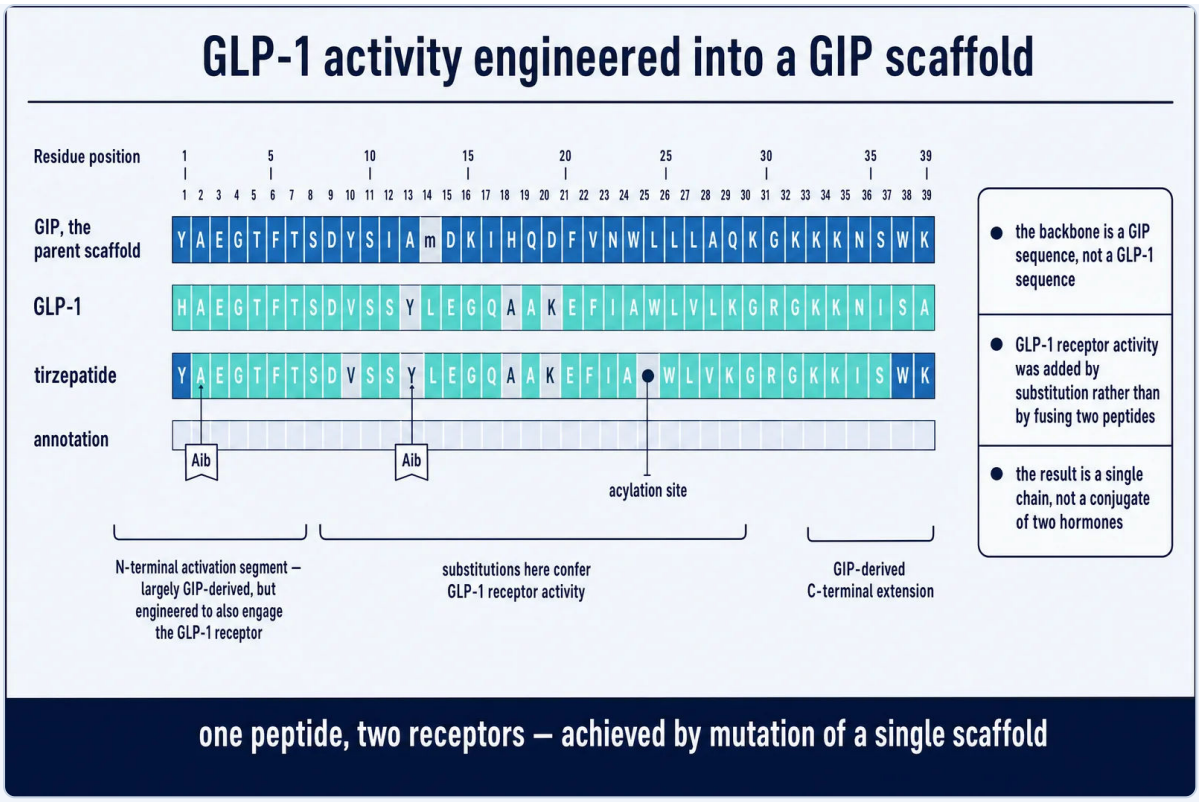

FIGURE 9 · How one peptide hits two receptors (from the SBL tirzepatide monograph). Tirzepatide is not two hormones stitched together (a "fusion protein"); it is a *single* chain, engineered by substituting a handful of residues into a GIP backbone so that the same molecule also activates the GLP-1 receptor. That "one peptide, two receptors" design is the core engineering idea behind the whole dual- and triple-agonist generation. *The residue-level alignment is a stylisation — read it for the argument, not the letters.*

THE CLASS, HEAD TO HEAD — MEASURED TRIAL WEIGHT LOSS

DRUG (BRAND)	TARGETS	LANDMARK TRIAL	WEIGHT LOSS (TOP DOSE)
Liraglutide (Saxenda)	GLP-1, daily	SCALE	−8.0%
Semaglutide (Wegovy)	GLP-1, weekly	STEP 1	−14.9%
Tirzepatide (Zepbound)	GIP/GLP-1, weekly	SURMOUNT-1	−20.9%
— head-to-head —	dual vs mono	SURMOUNT-5	−20.2% tirz vs −13.7% sema
CagriSema	amylin+GLP-1, weekly	REDEFINE-1	−22.7%
Retatrutide	GIP/GLP-1/glucagon	TRIUMPH-4 (Ph3)	−28.7%
Orforglipron (Foundayo, oral)	GLP-1, daily pill	ATTAIN-1 (Ph3)	−12.4%

All are placebo- or comparator-controlled RCTs (approved drugs **ESTABLISHED**; pipeline phase-3 topline **STRONGLY SUPPORTED**). Note the pill trades some potency for enormous reach. *The professional read:* the ~25% ceiling is now retatrutide's to defend, and the oral-versus-injectable split is the axis on which the pricing war (Section 23) will be fought.

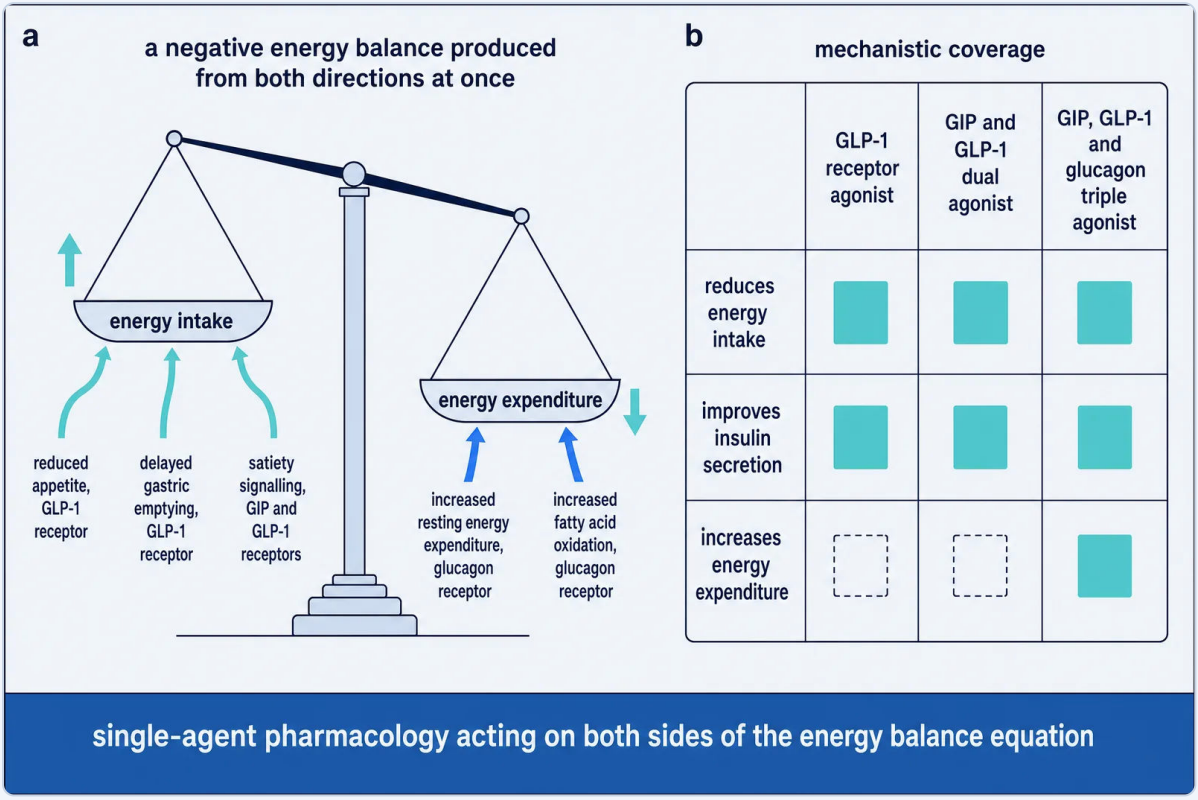

FIGURE 10 · What the third hormone adds: attacking energy balance from both sides (from the SBL retatrutide monograph). The incretin ladder is not just "more of the same." GLP-1 and GIP reduce energy *intake* (less appetite, slower gastric emptying, satiety). Retatrutide adds a third hormone, glucagon, which raises energy *expenditure* — the body burns more — so the energy gap is opened from both sides at once. Only the triple agonist fills that bottom row; the dual and single agonists leave it empty. *Read the increased-expenditure claim as a design intention supported by animal data, not yet a measured human finding.*

DEEP SCIENCE — WHY POTENCY CLIMBS ACROSS THE CLASS

Each rung of the incretin ladder recruits a different arm of metabolism. **GLP-1** curbs appetite and prompts insulin. **GIP** (the second hormone, in tirzepatide) works on fat tissue and insulin handling, and may soften nausea. **Glucagon** (the third, in retatrutide) does something counterintuitive: alongside its familiar role raising blood sugar, it *increases the calories the body burns* — adding a "spend more" lever to the "eat less" ones. That is why measured weight loss rises from roughly 15% (GLP-1 alone) to ~21% (dual) to ~24% and beyond (triple). The catch: the biology is not fully tamed — for GIP, both switching it *on* and *off* have shown benefit in different studies, a genuine open puzzle the field calls the "GIP paradox."

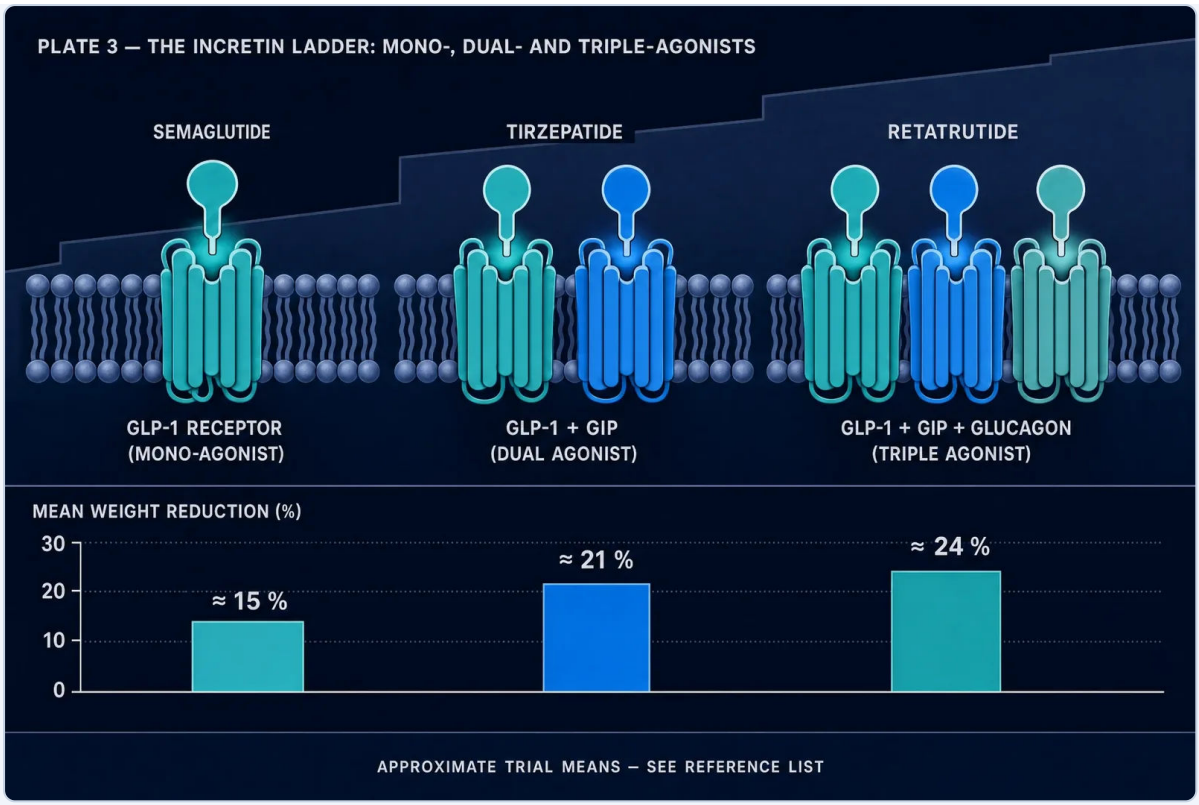

FIGURE 11 · The incretin ladder: mono-, dual-, and triple-agonists (commissioned plate). Potency rises as a drug engages more gut-hormone receptors — semaglutide (GLP-1 alone), tirzepatide (GLP-1 + GIP), retatrutide (GLP-1 + GIP + glucagon) — with approximate mean weight loss climbing across the class. The receptors are drawn as class-B GPCRs (schematic). *Note on the numbers:* the "≈24%" shown for retatrutide is its **Phase-2** mean; its Phase-3 TRIUMPH-4 result was higher (~29% — see the head-to-head table above). Figures are approximate trial means; exact values, trials, and Ns are in the head-to-head table and the reference list.

The safety ledger, briefly and honestly. The dominant real-world issue is gastrointestinal — nausea, vomiting, diarrhea, worst during dose escalation, and the leading medical (non-cost) reason people quit. Beyond that: gallbladder disease is a real, dose-related risk (**STRONGLY SUPPORTED**); pancreatitis, an early fear, has largely *not* held up in pooled trials (a labeled caution, not a demonstrated risk); the thyroid-cancer boxed warning rests on *rat* studies whose human relevance is undetermined; a 2024 signal linking semaglutide to a rare "eye stroke" (NAION) remains genuinely contested, not consistently replicated; and muscle loss is real (roughly 20–30% of weight lost is lean mass) but its functional harm is debated, with some studies showing *improved* strength. We return to muscle in Section 13 and to the safety signals as investment risks in Section 27.

4 · From weight-loss drug to economic force

A medicine becomes an economic force in three steps: it has to reach enough people to matter, its effect on each person has to be large enough to change behavior, and that behavior has to touch something an industry sells. GLP-1 drugs clear the first two bars decisively — one in eight

US adults has now tried one, and appetite suppression changes the daily hundreds of small decisions about what to buy and eat. The third step then follows almost automatically; the only real questions are *which* industries, *how much*, and *how fast*.

The clearest measure of the force is where the money already moved — the drug market itself. Before any downstream sector bends, the primary economic event has already happened, and it is one of the largest wealth transfers in the history of consumer medicine. In 2024, total US net spending on medicines grew 11.4% — roughly $50 billion — and, by IQVIA's accounting, *the GLP-1 class alone accounted for about 29% of that entire growth.* One drug family bent the trajectory of the whole national drug bill. (In 2025 the class contributed about $14 billion of $58 billion in net-spending growth — near 24% — as oncology and other classes reasserted; the honest reading is a share that was *dominant in 2024 and is now broadening*, not shrinking in absolute terms.) Grade: **ESTABLISHED**, measured.

The wealth created is visible at the level of whole companies. On November 21, 2025, **Eli Lilly became the first health-care company ever to reach a $1 trillion market capitalization** — more than twice the size of the next-largest US pharmaceutical company — having added roughly $700 billion in market value since the end of 2022 and roughly tripled its revenue in three years. The mirror image is **Novo Nordisk**, until recently the most valuable company in Europe, which shed on the order of $400 billion from its 2024 peak to under $200 billion as its US Wegovy franchise stumbled. A single therapeutic class made one company the most valuable in the industry and knocked the former leader down by the market value of a large multinational — the two-sided wealth story compressed into eighteen months. Grade: **ESTABLISHED** (market data).

The franchise numbers explain why. Lilly's tirzepatide products — Mounjaro (diabetes) and Zepbound (obesity) — combined for **$36.5 billion in FY2025** (Mounjaro up 99%, Zepbound up 175% year-over-year), making Lilly the number-one pharmaceutical company in the world by revenue; in the second quarter of 2026 alone the two brands booked **$14.9 billion** ($9.94B + $4.93B), an annualized run-rate near $60 billion from a single molecule. To put that in perspective, the tirzepatide franchise on its own now generates revenue on the scale of an entire large-cap pharmaceutical company. Novo's branded semaglutide franchise, Ozempic and Wegovy, ran near $26 billion in 2024 (about $29 billion counting the oral pill). These are the measured facts beneath every "economic force" headline — and they sit almost entirely inside the pharmacy, not the supermarket.

The comparison that inevitably attaches to numbers like these is the iPhone, and it is worth getting exactly right, because it is routinely mis-attributed to a Wall Street bank and it is not one — there is no published New York investment-bank note charting GLP-1 adoption head-to-head against the iPhone. The claim resolves into three sources of markedly different reliability. The *revenue* version — that the GLP-1 products could accumulate roughly $470 billion in US revenue in their first decade against the iPhone's $260 billion, "almost double" — comes not from a bank but from I-MAK, an access-to-medicines advocacy group, in an April 2025 report built to make a pricing argument; about $71 billion of that is measured revenue to date and the rest is I-MAK's own projection to 2030. The *adoption-speed* version — that awareness of these drugs grew "faster than the iPhone, Facebook, or Google" — is a conference assertion by a nutrition-technology executive, with no dataset behind it. The only genuine bank framing is

Morgan Stanley's, which models weight-loss-drug uptake as a smartphone-style technology S-curve reaching perhaps 13–21% of US adults within a decade — a qualitative analogy, not an iPhone chart. The honest statement, then, is that the launch is plausibly iPhone-scale in first-decade revenue by one advocacy group's projection and is bank-modeled to diffuse like a smartphone: both real framings, neither the crisp head-to-head chart the comparison is usually imagined to be.

Where the comparison actually holds is the one benchmark that is cleanly measured — drug-launch speed — and there it is close to unprecedented. Only about 7% of new drugs reach $100 million in cumulative sales in their first year; Mounjaro and Zepbound are, with the lone exception of the hepatitis-C drug Harvoni, *the only products in history to surpass $5 billion in sales in their first twelve months*, and at the one-year mark they had roughly four times the unique prescribers of the earlier Ozempic/Wegovy launches (IQVIA, 2025). The oral-semaglutide pill launch in early 2026 was characterized as adding on the order of 25,000 new patients a week. Against other blockbusters — Humira, Keytruda, even Viagra — the GLP-1 ramp is faster and larger. This, rather than the iPhone analogy, is the defensible "fastest in history" claim. Grade: **STRONGLY SUPPORTED**, measured. Only about 7% of new drugs reach $100 million in cumulative sales in their first year; Mounjaro and Zepbound are, with the lone exception of the hepatitis-C drug Harvoni, *the only products in history to surpass $5 billion in sales in their first twelve months*, and at the one-year mark they had roughly four times the unique prescribers of the earlier Ozempic/Wegovy launches (IQVIA, 2025). The oral-semaglutide pill launch in early 2026 was characterized as adding on the order of 25,000 new patients a week. Against other blockbusters — Humira, Keytruda, even Viagra — the GLP-1 ramp is faster and larger. This, rather than the iPhone analogy, is the defensible "fastest in history" claim. Grade: **STRONGLY SUPPORTED**, measured.

> THE PROFESSIONAL READ — SIZING THE PRIZE, AND ITS UNCERTAINTY
>
> The forward market estimates are a wide band, and the width is the point. For the global GLP-1/obesity market around 2030–2035, published projections run from Bloomberg's **~$120 billion by 2030** to J.P. Morgan's **~$200 billion by 2030** to Morgan Stanley's **~$190 billion by 2035**, with US obesity-drug spending alone modeled near **$60 billion by 2029** (IQVIA). A forecast range that spans nearly 2× is a confession that the outcome is undetermined — it hinges on the four hinges of Section 29 (persistence, price, coverage, next-gen efficacy), not on demand, which is not in doubt. Every figure here is a **projection**; only the ~$66 billion 2025 global market and the franchise revenues above are **measured**. A useful concrete anchor for the cost side: **Bank of America discloses spending over $250 million a year** covering GLP-1s for its own employees — one company, a quarter-billion dollars, "a good investment" per its CEO. Multiply that across the corporate economy and the "who pays" question of Sections 20–21 becomes the real governor on how large this force grows.

Those forward questions are harder than they look, for the three reasons that become this study's refrain. **The user base is large for a drug and small for a mass market:** ten to fifteen million active users is a landmark for a drug class and a rounding error against the US grocery industry's 330 million mouths. **The effect is leaky:** roughly half to two-thirds of weight-loss

starters stop within a year, and a behavior that reverses on discontinuation produces a weaker economic signal than the headlines imply. And **correlation is cheap:** alcohol sales were softening, the diet industry was already struggling, and retail was already weak before GLP-1s scaled. Hold those three cautions in mind and the "economic force" reframes itself — not a wrecking ball swung at consumer industries, but a documented, historic upheaval *inside pharma and medicine*, wrapped around a steadily growing, partially reversible change in the behavior of a specific and still-minority slice of consumers: enough to bend some markets at the margin, reshape a few directly in its path, and generate a great deal of speculation about the rest.

5 · What we mean by secondary and tertiary effects

The engine of this study is a simple chain of cause and effect, and being explicit about it is what lets a reader tell a real consequence from a coincidence. A **primary effect** is what the drug does inside the body — reduced appetite, weight loss, better metabolic markers. A **secondary effect** is a consequence of that primary effect out in a person's life: old clothes no longer fit; the grocery basket shrinks; easier movement invites more exercise. A **tertiary effect** is a consequence of the secondary one, usually at the level of a market or institution: wardrobes being replaced becomes a shift in apparel demand and a wave of resale supply; millions of lighter baskets becomes a reason for a food company to reformulate; more gym-goers becomes growth in fitness services and a new market for muscle-preserving nutrition.

```
GLP-1 use → reduced appetite → smaller grocery basket →
    food manufacturers change product strategy        (a tertiary effect)

GLP-1 use → weight loss → clothes no longer fit →
    wardrobe replacement + resale supply → apparel-demand shifts

weight loss → improved mobility → more physical activity →
    gym, recreation, and travel participation
```

The temptation this framing creates is to assume the whole chain fires every time. It does not — each arrow is a hypothesis, and each can break. So at every link we do two things: we refuse to infer cause from timing (a trend that appears after GLP-1 adoption is not thereby caused by it), and we grade the evidence. The distinction we hold onto throughout is between a **demonstrated causal effect** (a controlled study shows the drug produces the outcome), a **plausible mechanism** (a credible reason but no proof), a **temporal association** (two things moving together, which proves nothing alone), a **corporate attribution** (a company crediting or blaming GLP-1s — informative about management's thinking, not the world), a **consumer report** (people saying the drug changed their behavior), and a bare **hypothesis**.

6 · How many people actually use GLP-1 drugs?

Every downstream claim in this study is divided, implicitly, by this number, so it is worth being precise — and precise about why two reasonable-sounding figures differ threefold.

The survey view: one in eight adults. In KFF's repeated national poll, the share of US adults who say they are *currently* taking a GLP-1 rose from 6% in May 2024 to 12% by November 2025, with ever-use climbing from 12% to 18%. Use skews female (15% of women versus 9% of men) and concentrates at ages 50–64; among adults with diagnosed diabetes, the government's own survey put GLP-1 injectable use at 26.5% in 2024. These are among the most reliable numbers available — nationally representative and **ESTABLISHED**.

The claims view: about ten million active users. Pharmacy-claims analyses put the number of Americans *actively filling* a GLP-1 prescription near 10 million in 2025 — close to 4% of adults, not 12%. Both numbers are honest; they count different things. Self-report captures compounded, telehealth, cash-pay, and lapsed users a single insurer's claims never see, plus people who tried the drug once. The defensible working figures for this study are therefore **roughly 10–15 million current active users and up to about 30 million ever-exposed.**

The trajectory matters as much as the level, and it is steep. However one counts, the *rate of change* is what separates this from a plateaued drug class. Gallup's current-use figure roughly *tripled in two years* — from 3% of US adults in 2024 to 11% by mid-2026 (n=5,065) — while awareness saturated near 91%. The prescription data underneath show the same acceleration: GLP-1s made up **about 8 of every 100 US prescriptions filled in March 2026**, up from 6.5 in September 2025, and overall GLP-1 prescribing jumped roughly 15% in a single quarter (December 2025 to March 2026), the largest quarter-over-quarter rise since 2019. The composition is shifting decisively toward weight: first-time *anti-obesity* starts rose about 22% even as first-time *anti-diabetic* starts fell about 10%, and prescribing to non-diabetic overweight or obese adults rose roughly twenty-fold from 2019 to 2024 (FAIR Health). J.P. Morgan's active-user count traces the same arc — about 5 million US users in 2023, 6 million in 2024, ~10 million in 2025 — and projects 25–30 million by 2030. Grade: **ESTABLISHED** for the measured ramp; the 2030 figure is a **projection**. Section 29 turns that projected doubling into a full scenario analysis, because — as every sector below will show — the size of nearly every downstream effect is set by exactly this number.

One correlation is worth stating carefully. US adult obesity, on Gallup's measure, fell from a 39.9% peak in 2022 to 36.4% by 2026 — the first sustained national decline on record, moving inversely to GLP-1 uptake. That is a genuine and striking *temporal association*, and it is widely attributed to the drugs; it is not, on survey data alone, a demonstrated causal effect (obesity has many inputs, and the survey cannot isolate the drug's contribution). We report it as the most consequential correlation in the study, graded **PLAUSIBLE** as causation — a distinction Section 25 develops.

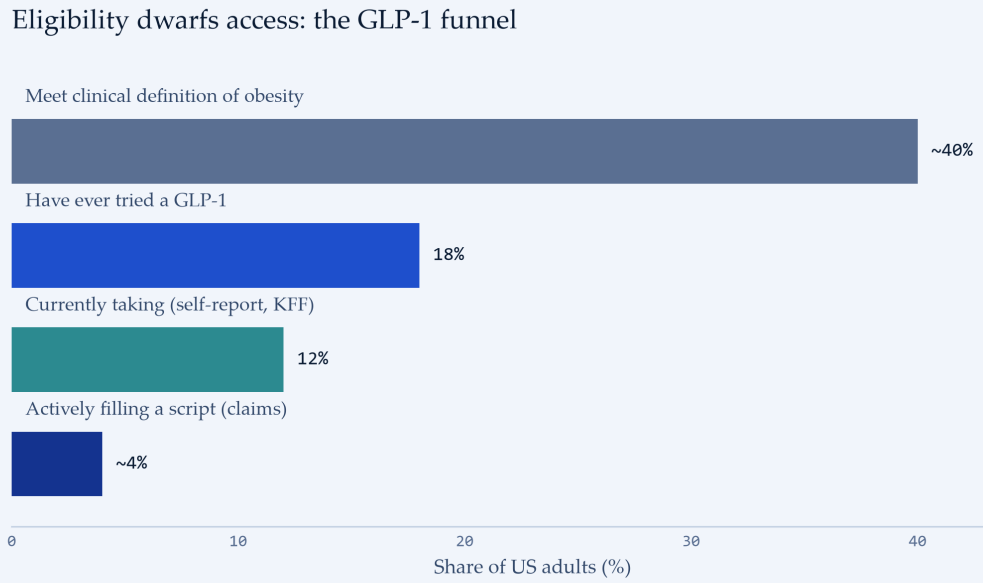

FIGURE · US ADULT PREVALENCE, 2025 (KFF SURVEY · J.P. MORGAN CLAIMS)

FIGURE 12 · Eligibility dwarfs access. More than 40% of US adults meet the clinical definition of obesity, but only about one in twenty-five is actively filling a GLP-1 prescription. The gap is not weak demand — it is cost and coverage (Sections 20–21). *This funnel is the single most important context in the study: it is why per-user effects, however real, stay small in aggregate.*

Two facts puncture any straight-line story, and both matter for every sector that follows. **Access is far below eligibility:** the "everyone will be on these" future is gated not by demand but by who pays — only 19% of large firms cover the drugs for weight loss, only about 13 state Medicaid programs do, and Medicare is barred by statute from covering them for weight loss alone. And **the signal is leaky:** in large pharmacy data, roughly two-thirds of people who started for obesity had stopped within a year, and only about one in twelve remained at three years. The crucial caveat is that this is improving — one-year persistence roughly doubled from about 40% of 2023 starters to 63% of early-2024 starters as shortages eased and coverage matured. What drove the improvement is mundane but decisive: as the acute shortages of 2023–24 resolved and more plans settled their coverage rules, fewer patients were pushed off the drug by supply gaps or abrupt denials, and the leading reason for stopping shifted away from unavailability toward cost. That distinction matters for every forecast in this study, because a signal that leaks for reasons of *price* can be plugged by the cheaper oral drugs and cash-pay channels now arriving (Sections 23–24), whereas one that leaked for reasons of *tolerability* could not. The single most consequential number to watch, then, is not how many people start these drugs but how many are still taking them a year later — the behavioral signal is real, leaky, and slowly getting less leaky.

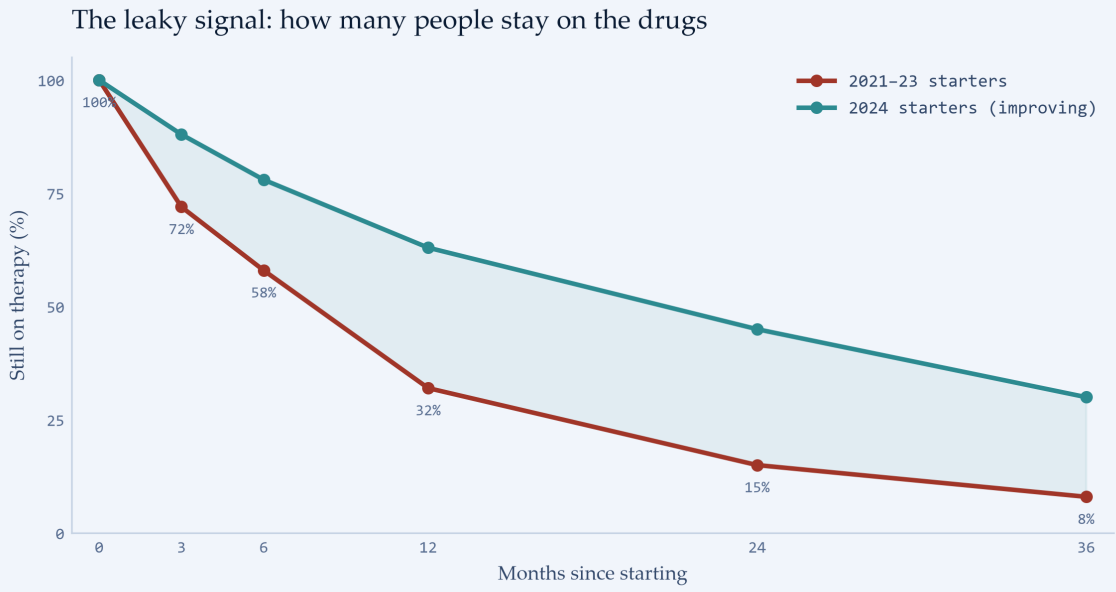

FIGURE · PERSISTENCE BY START COHORT (PRIME THERAPEUTICS CLAIMS)

FIGURE 13 · How long people stay on the drugs, by when they started. The historical picture (red) is stark — most weight-loss starters quit within a year. The newer picture (teal) is materially better as supply and coverage stabilized. Because the drugs' effects reverse on discontinuation, this single curve governs the durability of nearly every downstream effect in the study. Cost, not side effects, is the leading reason people quit (48% versus 15%).

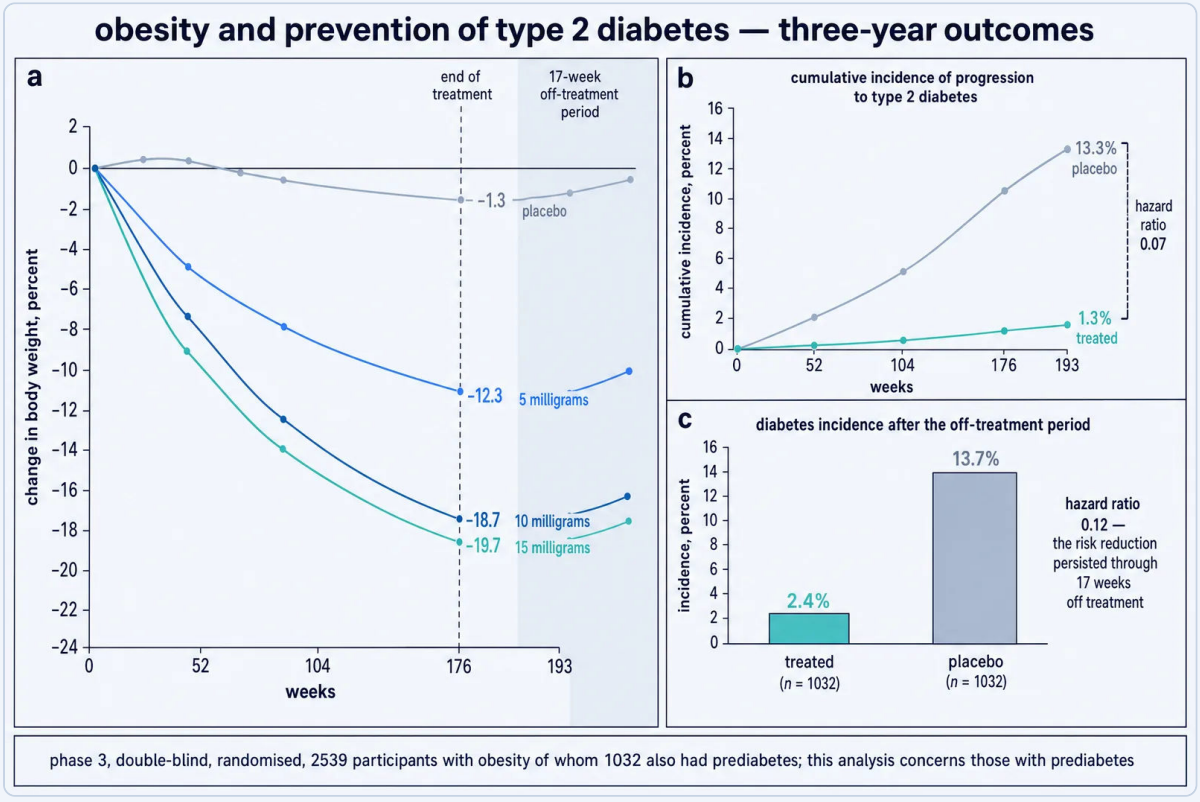

FIGURE 14 · Three years — and what happens the moment dosing stops (from the SBL tirzepatide monograph). In the SURMOUNT-1 three-year prevention study, tirzepatide drove weight to about 20% below baseline and cut progression to diabetes dramatically (1.3% versus

13.3% on placebo). But panel (a) shows the fact that governs this whole study: during a 17-week off-treatment window, **the weight curve turns upward the moment the drug is stopped.** Every value on this plate matches the trial report exactly. This is the clinical face of the "leaky signal" — the durability of almost every downstream effect in Sections 8–25 depends on people staying on the drug.

7 · The clinical floor: what is proven beyond doubt

Before any secondary effect, there is the primary one — and it is worth establishing just how solid the floor is, because it is what separates this phenomenon from every diet fad and anchors the "downstream medical savings" argument that runs through Sections 16–21. Five large randomized trials, all in the *New England Journal of Medicine*, each met its primary endpoint:

THE FIVE PILLARS — ALL GRADE ESTABLISHED

TRIAL	DRUG · CONDITION	SIZE	HEADLINE RESULT
SELECT	Semaglutide · heart disease + obesity	17,604	20% fewer major cardiovascular events
FLOW	Semaglutide · chronic kidney disease	3,533	24% slower kidney-disease progression
SUMMIT	Tirzepatide · heart failure (HFpEF)	731	38% fewer cardiovascular-death/worsening-HF events
SURMOUNT-OSA	Tirzepatide · sleep apnea	~469	Up to ~50% met apnea-resolution criteria
ESSENCE	Semaglutide · fatty-liver disease (MASH)	~800	Disease resolved in 63% vs 34% on placebo

To these, 2025 added more: STEP-HFpEF and SUMMIT on heart failure, STRIDE on peripheral artery disease (13% farther walking), and STEP 9 on knee osteoarthritis pain. One prominent *negative* result also landed — the EVOKE trial found **no benefit in Alzheimer's disease** (November 2025), a useful reminder that the drugs are not a panacea.

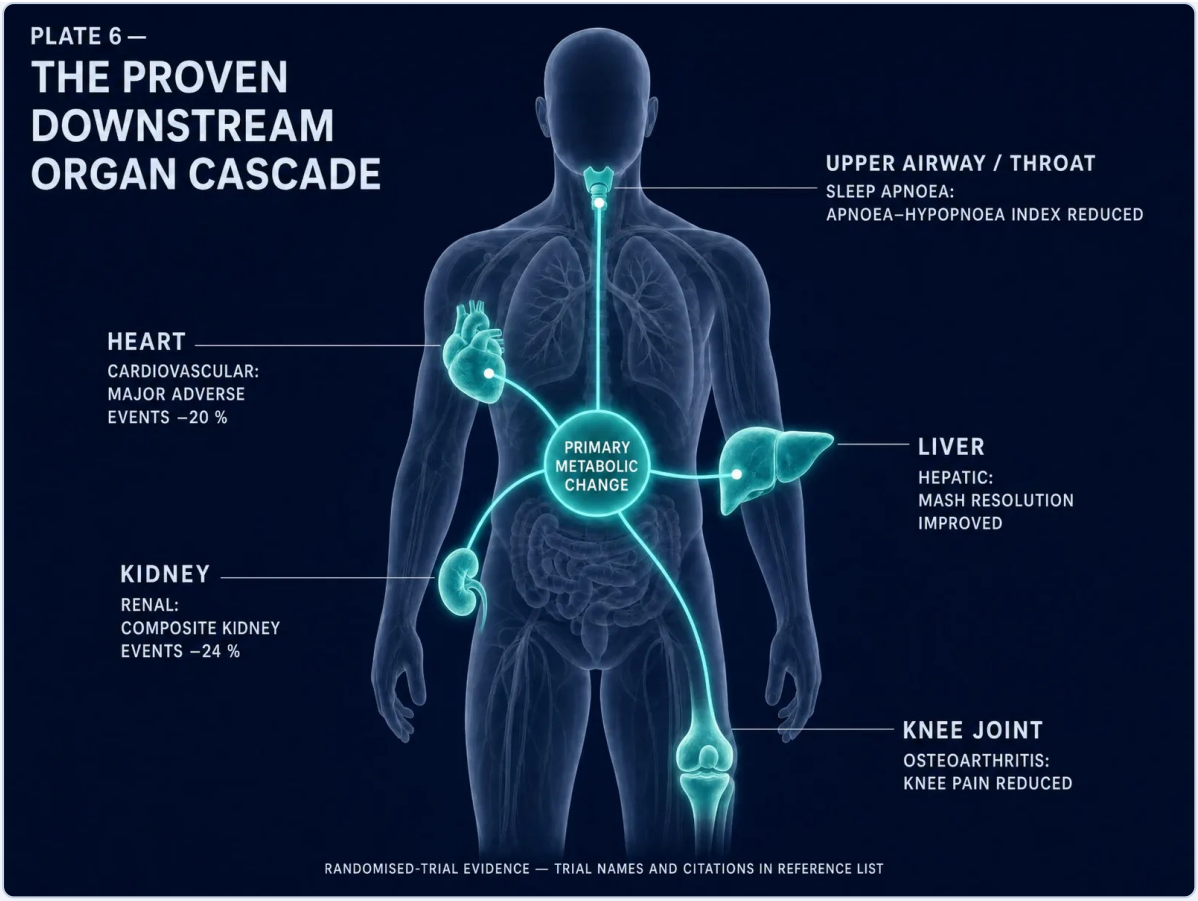

FIGURE 15 · The proven downstream organ cascade (commissioned plate). From a single primary metabolic change radiate the five downstream *disease* benefits established in randomized trials: fewer major cardiovascular events (–20%, SELECT), slower kidney-disease progression (–24%, FLOW), improved fatty-liver disease (ESSENCE), reduced sleep-apnea severity (SURMOUNT-OSA), and less knee-osteoarthritis pain (STEP 9). *These are demonstrated disease effects, not demonstrated system-wide cost savings — a distinction Section 16 develops.* Trial names, sizes, and citations are in the reference list.

This is the floor beneath the whole phenomenon: whatever happens in the supermarket or the clothing rack, these are drugs with proven, hard clinical benefits. It is also the fact that makes the healthcare and insurance chapters genuinely difficult — because a drug this effective is also, at $1,000-plus a month before rebates, this expensive, and the tension between the two runs through the rest of the study.

COMPANION MONOGRAPHS – THE DEEP-SCIENCE VOLUMES

This is the market-and-society volume of the **South Beach Longevity Scientific Monograph & Study Series**. Readers who want the underlying pharmacology in full — receptor structure and signalling, the complete trial record, and verified molecular detail drug by drug — will find it in the series' compound monographs, including **Semaglutide, Tirzepatide, Retatrutide, Cagrilintide, and Orforglipron**. The commissioned scientific plates in Part I of this study are drawn from those monographs; every value printed on them was checked against the monograph's own literature corpus, and any figure a source declined to certify is flagged as such in its caption here.

Part II · Consumer life and everyday behavior

The corpus behind this study tagged 8,414 full-text articles into twelve downstream-effect sectors. The map of where journalists looked is itself a finding — and a warning.

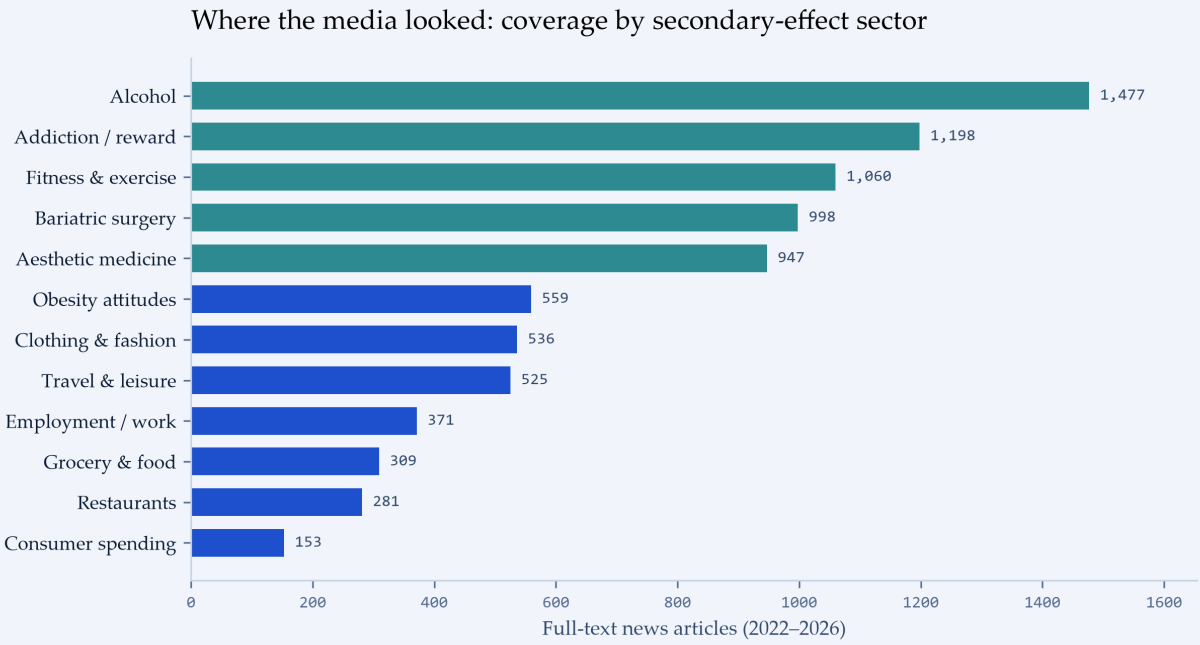

FIGURE 1 · 8,414 SECTOR-TAGGED ARTICLES, CORPUS COLLECTED 2026

FIGURE 16 · Where the media looked. Alcohol, addiction, fitness, bariatric surgery, and aesthetic medicine drew the most coverage. Read alongside the evidence map at the end of Part V, this chart reveals the study's central tension: *the loudest sectors rest on some of the thinnest evidence, and the best-evidenced effect — the decline of bariatric surgery — drew less than a third of alcohol's coverage.* Coverage is a map of the conversation, never of the economy.

8 · Food and groceries

The chain: GLP-1 use → reduced appetite → a smaller, differently-composed grocery basket → food manufacturers change what they make and how they package it.

This is the most intuitive chain in the study and the one with the best hard evidence at the household level — and the clearest gap between that evidence and the headlines.

What is measured. The anchor is a peer-reviewed study by Cornell researchers with the consumer-data firm Numerator, published in the *Journal of Marketing Research* in December 2025, using the actual purchase records of about 150,000 households. When a household started a GLP-1, grocery spending fell **5.3% within six months** — and **8.2%** among higher-income households, who can most afford to stay on the drugs. Crucially, the drug does not just shrink

the basket; it *reshapes* it. Numerator's category data show the cuts concentrated exactly where the appetite mechanism predicts — **chips −11.5%, sweet baked goods −8.5%, sugary soda −6.8%, candy −3.5%** — while **fresh produce (+1.5%), yogurt (+2.5%), nutrition bars, and fresh protein** actually rose, with protein and seafood out-indexing non-user households by 10–20 points. This is grade **STRONGLY SUPPORTED**, and it is the rare downstream claim resting on transactional data — real receipts, not surveys.

The aggregate fact that deflates the panic. Here is the number that anchors the whole sector: even as per-user savory-snack *spending* fell about 11.5%, total US savory-snack category sales were roughly *flat* through early 2026. A large per-user cut, spread across a minority of households, is a low-single-digit dent in a category — not a collapse. Americans spent about **$2.5 trillion** on food in 2025 ($1.1T grocery, $1.4T restaurants); the most cited forward estimate, J.P. Morgan's, projects GLP-1s could reduce US food-and-beverage revenue by **$30–55 billion a year by 2030–2034** — a real number, and also just **1–2% of the food system**, and a *projection*, not a measured effect.

Where the headlines go wrong. Two figures circulate widely and are routinely mangled. Morgan Stanley's survey that many users cut daily calories 20–30% is real; the category forecasts built on top of it (ice cream −5%, snacks −4%, by *2035*) are projections. And the striking line that "GLP-1 households will be 35% of food and beverage sales by 2030" belongs to the research firm **Circana**, not Morgan Stanley — and describes *units bought by a demographic that skews higher-income and larger*, not demand created by the drug. GLP-1 households buy a big share of all groceries *even as each of them eats less*. It is a fact about who takes these drugs, not evidence that the drugs grow the food market.

The most important 2026 finding reframes the whole sector: the drugs *relocate* food demand, they do not destroy it. Circana's November 2025 receipt panel, tracking GLP-1 users one year after they start against matched non-users, found the household's packaged-food spending down 1.6% and its alcohol purchases cut hardest of all — *but its restaurant spending actually rose 0.9%, with casual-dining outlays up 4.1%.* The money leaves the grocery center-store and the liquor aisle; a good deal of it reappears at restaurants and in different grocery categories (protein, produce, fiber). This is the honest shape of the food effect, now measured two independent ways: **concentrated per-user pain in indulgence groceries and alcohol, backfilled by protein and by non-users, with demand migrating toward foodservice** — a reshaping, not a collapse. Grade: **STRONGLY SUPPORTED**, measured (vendor panel).

The industry is no longer waiting to find out — the "GLP-1-friendly" product wave is now concrete and named. In January 2025 **Conagra (CAG)** became the first major food company to put a "GLP-1-friendly" badge directly on packaging, across 26 Healthy Choice items chosen for smaller portions, higher protein, and fiber; **General Mills (GIS)** is shipping Honey Nut Cheerios Protein and a Ghost cereal collaboration aimed at the same protein-seeking shopper; **Danone** launched a high-protein Oikos drinkable yogurt positioned for muscle retention during weight loss; and **Nestlé's** Vital Pursuit frozen line targets the same buyer. Industry trackers report a broad rise in products carrying "GLP-1-friendly" claims. The strategic logic is sound, but a caution from the measured data belongs here: Nestlé's own Vital Pursuit sales ran about 77% to

non-GLP-1 shoppers — these products sell mainly to the broad weight-management market, not a captured GLP-1 channel. Grade: **strategic/observed**, not yet demonstrated GLP-1-driven demand.

The most under-covered link runs all the way to the farm gate. Follow the calories far enough downstream and they reach agriculture, where the farmer is the price-taker. If GLP-1 users eat an estimated 720–990 fewer calories a day (a measured per-user figure), and if the composition shifts away from refined carbohydrates and fatty meat toward lean protein and produce, the eventual pressure lands on specific commodities. The clearest listed signal so far is Lamb Weston, the largest frozen-fry maker, which guided fiscal 2027 to roughly flat sales amid soft fry demand and potato surpluses — though, importantly, its own management has at times attributed the softness to traffic and value-seeking rather than GLP-1s, and has elsewhere reported fry *attachment rates rising*, a caution against reading the whole slowdown as an Ozempic effect. Agricultural economists at Farm Credit, Michigan State, and Purdue name corn, soybeans, sugar, and potatoes — the feed-grain and refined-carbohydrate chain — plus mainstream beef, pork, and dairy as most exposed, with lean protein, fruit, and leafy greens favored. The honest caveat, which those same economists foreground, is that the effect is real in direction but unquantified in magnitude and lagged: meat-demand data are mixed and not statistically clean, and no source offers a reliable per-commodity elasticity. Grade: **PLAUSIBLE**, mostly projected — the farm-gate effect is coming, slowly, and cannot yet be sized.

The mirror image of the cuts is a genuine growth pool: protein, fiber, and functional nutrition. The dollars leaving chips, soda, and alcohol partly reappear as protein and supplements. Market sizings (projected) put GLP-1-companion supplements near $2.0 billion in 2025 rising toward $5.5 billion by 2034 (~12% CAGR) and the creatine market roughly quadrupling to 2030; a measured signal underneath is DoorDash's protein-shake orders up 93% year-over-year. EY-Parthenon separately estimates diet changes could cost the *snack* category up to $12 billion over a decade — a category-specific projection distinct from J.P. Morgan's whole-food-system $30–55 billion. The through-line: the food effect is a **mix shift**, and the winners (protein, produce, foodservice) are as measurable as the losers (indulgence center-store, alcohol).

THE PROFESSIONAL READ — PACKAGED FOOD, GROCERY, AND THE PREMIUMIZATION COUNTER-CURRENT

The bear thesis (snacking and confection are structurally impaired) is contradicted by both issuer commentary and a genuine counter-current. **PepsiCo (PEP)** attributes soft snacks to affordability, not GLP-1s, and is pivoting to portion packs and protein; **Mondelez (MDLZ)** models only a **1–1.5% volume drag over a decade**; **Kraft Heinz (KHC)** announced a company split in September 2025 then *paused* it in February 2026. The counter-current is **premiumization**: at **Hershey (HSY)**, GLP-1 households are ~15% of households but ~17.5% of chocolate sales, and premium chocolate purchases among users rose ~17% — "less, but better." **Coca-Cola (KO)** is arguably a net beneficiary via mini-cans and the +30%-capacity Fairlife protein-milk line. Grocers **WMT/KR/COST** are two-sided — a modeled multi-billion-dollar basket drag offset by their own booming direct-to-consumer GLP-1 dispensing; Kroger's CEO called the grocery margin hit

"narrow." *Key variable:* whether persistence rises enough to move category volumes before reformulation and protein/portfolio shifts absorb the effect. On current data the food-industry hit is **real, concentrated in indulgence categories, and years from mattering at the top line.**

Verdict. Household-basket reshaping: **STRONGLY SUPPORTED**, measured. Whole-market disruption of the food industry: **not supported** — modest, concentrated, and slow.

9 · Restaurants

The chain: reduced appetite → fewer or smaller restaurant orders → changes to menus, portions, and traffic.

The fear was vivid — if a tenth of the country stops feeling hungry, who fills the tables? The measured answer, so far, is that they mostly still come and order differently. Circana's receipt data (January 2026) found GLP-1 users cut **items per visit by only ~1%**, with visit frequency essentially flat; what changes is the composition — more toward a main dish, away from sides, appetizers, and sugary drinks. Bernstein's much-quoted scenario that dining-out frequency "could fall up to 45%" is an upper-bound projection contradicted by the measured, near-flat frequency. Grade: **EMERGING**, real but small.

The best measured traffic figure, and what it implies at scale. The single cleanest number comes from RRD, which works with more than 200 restaurant brands: among *regular* GLP-1 users, dinner traffic is down about 6% — which, because those users are still a small slice of all diners, translates to roughly a **0.4% drag on total restaurant dinner-hour sales.** That is the shape of the whole effect: a real per-user pullback concentrated at dinner and in fast food, diluted to a rounding error across the customer base. And the same Circana November 2025 panel that reshaped the grocery story (Section 8) points the same way here: one year in, GLP-1 users' restaurant spend was *up* 0.9%, with casual dining up 4.1% — the strongest single refutation of the dining-collapse thesis yet. The forward view is bounded on the low side too: William Blair's proprietary survey concludes that even a *doubling* of GLP-1 usage over five years would cut industry sales growth by less than 1% and traffic by about 5% — "much more muted" than its own 2024 estimate. The honest divergence to flag is survey-versus-transaction: self-report studies (Technomic: 35% say they dine out less) run more negative than the measured spend data, the same gap that recurs across this study.

THE PROFESSIONAL READ — RESTAURANTS

Measured dinner traffic among *heavy* GLP-1 users is down ~6%, which blends to roughly **0.4% across the total customer base** — a rounding error, not a demand shock — and the macro traffic environment through 2025–26 was actually *recovering* (Revenue Management Solutions: full-service visits +5%, fast-casual +3% YoY), with Placer.ai attributing what softness exists to low-income affordability pullback, not GLP-1s. The format split matters more than the average: protein-forward, portion-customizable fast-casual (**Chipotle CMG, Shake Shack SHAK, Cava CAVA, Sweetgreen SG, Wingstop WING, Texas Roadhouse TXRH**) is advantaged and in some data sees GLP-1 households spend *more*; sweet-beverage and indulgence occasions (**Starbucks SBUX**

sugary drinks, dessert- and snack-led stops) are structurally the more exposed, because the drag concentrates in add-on sweet and fried items rather than the protein core. The one hard chain metric: 6% of Smoothie King customers bought from its GLP-1 menu, skewing female and under-44. **McDonald's (MCD)** and **Domino's (DPZ)** cite no material impact ("dinner is a sharing occasion," per Domino's); the sector response — 106-gram-protein bowls at Sweetgreen, half-portion "Lighter" menus at Panera and Olive Garden, protein menus at El Pollo Loco, and GLP-1 named as a 10-K risk factor by **Restaurant Brands (QSR)** — is adaptation, not retreat. Delivery is an honest null: DoorDash protein-shake orders are up 93% but the platform explicitly declines to attribute that to GLP-1s. *Key variable:* menu-mix margin, not traffic.

Verdict. Menu and portion shifts: **EMERGING**, worth planning around. Restaurant-traffic collapse: **not supported** — the one measured figure is a ~0.4% category drag, and users' restaurant spend has if anything risen.

10 · Alcohol

The chain: GLP-1 use → reduced craving and reward response → less drinking → pressure on the alcohol industry.

Alcohol was the single most-covered downstream effect in the entire corpus — 1,477 articles, more than any medical use — and also one of the least settled. This is where the gap between assertion and evidence is widest, so it deserves care.

What the clinical evidence actually shows — and how it strengthened in 2026. The randomized trial is the only design that can prove causation, and the tally has grown. Among the principal published randomized trials of a GLP-1 for alcohol use disorder, the balance has tipped positive. The *oldest*, of the older drug exenatide (2022), was **negative** on its main measure — the single most under-reported fact in this sector, and still worth remembering. A *small* semaglutide trial (2025, 48 people) was positive on some measures (less lab drinking, lower craving) but not others (no effect on drinking days). The *strongest*, in *The Lancet* in 2026 (108 people), found semaglutide cut heavy-drinking days significantly more than placebo — a fall of roughly 41 percentage points versus 26 on placebo — but the participants all had obesity as well, so it cannot yet be assumed to work in people who are not overweight. And a further 2026 trial (Schacht), the first to test *oral* semaglutide, cut alcohol consumption and cannabis use on its secondary measures, though it *missed* its primary craving endpoint — a genuinely mixed result that its own authors read as encouraging rather than confirmatory. That is a promising but still-thin base — several small trials leaning positive, one clear null, several requiring comorbid obesity — backed by large database studies (in Sweden, in US records) that point the same way but cannot rule out that the people prescribed these drugs simply differ. Honest grade: **EMERGING**, and firming. No GLP-1 is yet approved for alcohol use disorder; the dedicated pipeline that could change that is detailed in Section 11.

What is measured in the market is real, small, and confounded. On the demand side, the Circana panel (Section 8) found alcohol the single hardest-cut category in a GLP-1 household's basket, and among users who cut back the reductions run **wine −52%, beer −43%, spirits**

−40%. But the crucial sizing comes from the consultancy OC&C Strategy Consultants, in the cleanest published attempt to isolate the drug's *own* contribution: GLP-1s are estimated to subtract about **0.2 percentage points a year** from US food-and-beverage volume through 2031 — a *minority* of the roughly 5% US alcohol-volume decline in 2025, most of which is affordability and older-cohort moderation. The pattern separately described by EY is that users are "anti-excess, not anti-alcohol" — cutting quantity and occasion rather than abstaining. The measured national spend context (US adults spent about $228 billion on alcohol in 2024; drinking participation fell from 62% to 54% in two years) is real, but it predates and outscales the drugs. Grade for a measured GLP-1 dent in *national sales*: still **not isolable at more than ~0.2%/yr**.

THE CONFOUND — AND WHY EVEN THE GENERATIONAL STORY JUST CHANGED

US alcohol volumes are falling (down ~5% in 2025) and the share of adults who drink slid from 62% to 54% in two years. It is tempting to credit GLP-1s, but the decline is decades old — and in a notable 2026 twist, the industry data firm IWSR declared the popular "Gen-Z drinks less" story *overstated*, reporting Gen-Z drinking participation actually rose to ~74% as that cohort aged into legal drinking. The alcohol decline appears led by older cohorts and affordability, which *weakens both* the generational story and the GLP-1 story. With only ~4–6% of adults actively on the drugs, they cannot arithmetically account for most of the drop. A GLP-1 contribution to alcohol's decline is **SPECULATIVE**.

THE PROFESSIONAL READ — ALCOHOL

Producer commentary is the corrective to the "GLP-1 kills alcohol" narrative. **Diageo (DEO)** attributes softness to affordability; **Constellation (STZ)** is silent and premium-insulated; **Anheuser-Busch InBev (BUD)** shows no material pivot. **Boston Beer (SAM)** posted 2025 depletions down ~4% and guided FY2026 flat-to-down mid-single-digit, but framed the cause as broad moderation and value pressure — not GLP-1 — while hedging into the non-alcoholic adjacency with its General Admission zero-proof line. The exceptions that *do* name the drug: **Brown-Forman (BF.B)** now lists GLP-1s among its "big three" structural risks, and **Molson Coors (TAP)** — the most exposed to mainstream beer — guided profit down 11–15%. Barclays cut both STZ and TAP partly on GLP-1 risk. The recapture story matters too: the "anti-excess" pattern (alternating alcoholic and non-alcoholic drinks, premium single-serves over bulk) pushes volume into NA beer and functional drinks *inside the same beverage majors* (KO, BUD's Corona Cero, SAM) — mix shift, not simple loss. *Key variable:* whether the drugs' reward-pathway effect proves real at population scale — the clinical evidence is firming but not yet established — versus alcohol's own well-documented, GLP-1-independent secular decline, which EY sizes as by far the larger force. The loudest "alcohol is doomed" voices are investors and analysts, not the operating companies watching their own volumes.

Verdict. A real, improving clinical signal for *individual* drinking: **EMERGING**. A measured GLP-1 dent in national alcohol *sales*: **not demonstrated**, and badly confounded.

11 · Addiction and reward behaviors

The chain: GLP-1s act on the brain's reward circuitry → reduced craving generalizes beyond food → less smoking, drug use, gambling, compulsive shopping.

This is the most scientifically immature — and most over-promised — sector. The mechanism is real and interesting: GLP-1 receptors sit in the reward pathway (VTA, nucleus accumbens, prefrontal cortex), and in animals these drugs blunt the dopamine surge from alcohol, nicotine, and palatable food *without* flattening normal motivation. But mechanism-plausible is not proven, and the leap from a rat study to "Ozempic cures addiction" is enormous. The field's own director-level voices (NIDA's Nora Volkow) call the potential real but demanding "fast and rigorous testing"; the best human systematic review (2025) found effects on psychiatric and substance endpoints "mixed and inconclusive," with only 3 of 9 randomized trials meeting their primary endpoint.

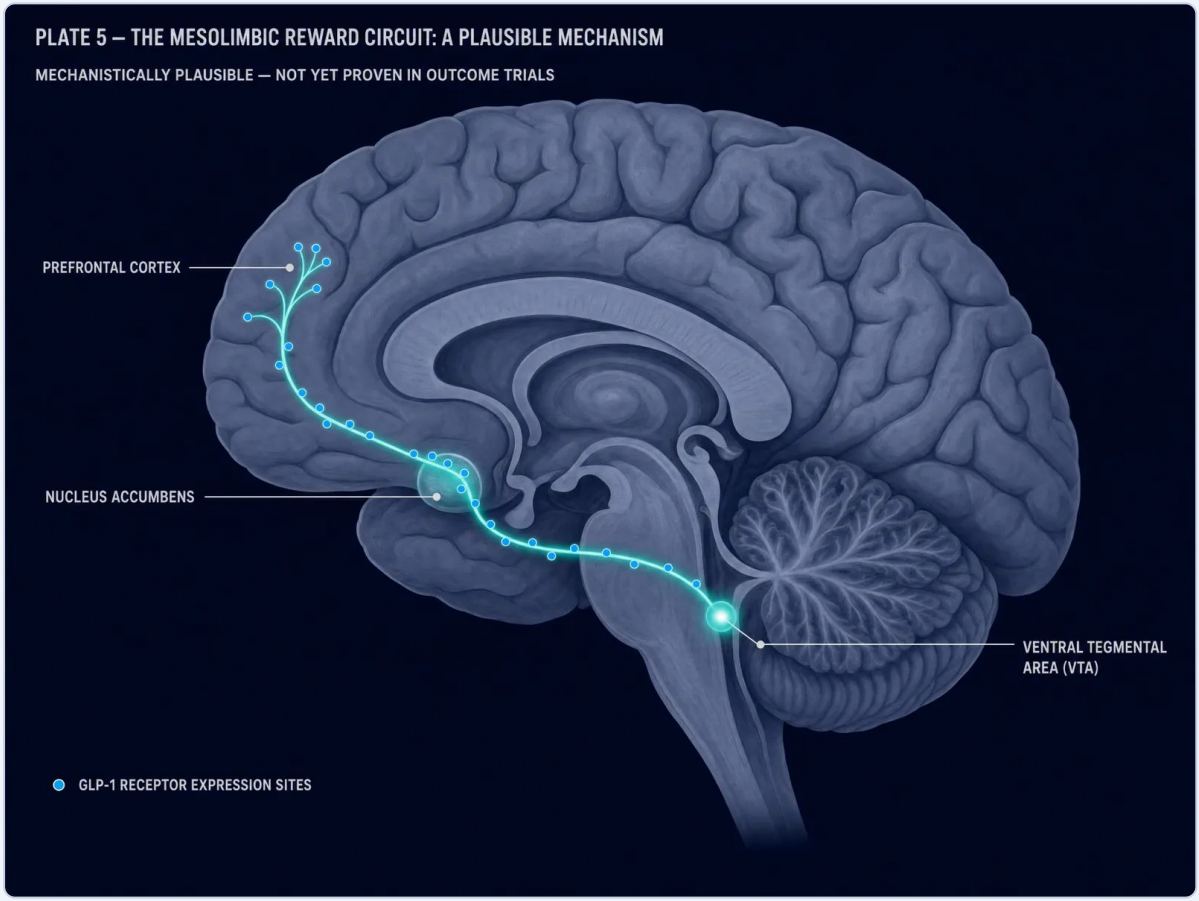

FIGURE 17 · The mesolimbic reward circuit (commissioned plate). GLP-1 receptors are expressed along the brain's reward pathway — the ventral tegmental area, the nucleus accumbens, and the prefrontal cortex — where the drugs modulate dopamine signalling. This is the mechanistic basis for the alcohol- and addiction-reduction hypothesis of this section and Section 10. *The plate carries its own essential caveat: the mechanism is plausible and demonstrated in animals, but not yet proven in human outcome trials.*

What changed in 2026 is not proof but infrastructure — the field went from "trials are needed" to roughly fifty trials underway. A structured search of the clinical-trials registry returns about 50 registered interventional studies pairing a GLP-1 with a substance-use or impulse-control condition, across six drug classes. This is the concrete answer to the "someone should test this" refrain, and its shape is telling: it is dominated by academic and government sponsors (NIDA, NIAAA, the VA), not the drugmakers, and it is still mostly early-phase.

The shape of that pipeline matters as much as its size. Alcohol is the deepest and the first to reach Phase 3: the Department of Veterans Affairs' CRAVE trial — semaglutide against placebo in 622 veterans with alcohol use disorder across 19 sites, reading out in 2029 — is the first Phase-3 efficacy test in this entire area, the study that could move alcohol from "emerging" toward "established," and behind it sit NIDA's STAR trial and several tirzepatide and combination studies (which is why Section 10 grades the alcohol signal as firming rather than static). Opioids have their own flagship: NIDA's CTN-0152 tests tirzepatide added to buprenorphine in 310 patients, the trial designed to test causation behind the striking register data below. For nicotine, cannabis, cocaine, and methamphetamine, multiple Phase-2 programs now exist — including a 300-patient tirzepatide smoking trial and dedicated cannabis and stimulant studies — where two years ago there were essentially none; but almost all are pilots under 100 patients, and efficacy for every non-alcohol substance is unproven pending readouts through 2026–2030. The honest read is that a broad, legitimate, publicly-funded pipeline is a genuine milestone, but a pipeline is a set of questions, not a set of answers: the grade for the generalized "anti-addiction" claim stays **EMERGING** for alcohol and opioids and **SPECULATIVE** for the rest.

For **opioids**, the observational signal actually *widened* in 2026 and is the most consistent of the non-alcohol effects: an Epic Research analysis of more than **683,000 US adults treated for an overdose** found that starting a GLP-1 afterward was associated with a **39% lower risk of a repeat overdose** within three years — and even those who started and then stopped kept roughly a 20% lower risk. It joins earlier large cohorts (222,942 people for smoking; 503,747 for opioid overdose) all pointing the same direction. This convergence across multiple large datasets is genuinely notable — but every entry is observational and vulnerable to "healthy-adherer" bias (people who fill and keep taking a drug differ from those who don't), which is exactly what the CTN-0152 trial exists to settle. Grade: **EMERGING**. For **gambling and compulsive shopping**, there is still essentially no trial evidence — grade **SPECULATIVE** — and here the reward effect appears to run *both ways*. Pharmacovigilance analyses and published case reports have flagged that GLP-1s may, in some patients, *trigger* rather than quiet impulse-control problems (pathological gambling, compulsive shopping, hypersexuality); it is a genuine safety signal discussed in the 2024 literature, but — an important correction to how it is often reported — no drug regulator has issued a formal impulse-control finding or advisory on it as of this writing, and the case-level pattern (onset during dose escalation, resolution on stopping) comes from clinician commentary, not a regulatory review. The opposite, "GLP-1 quiets compulsion" side rests on even thinner evidence — self-reported social-media posts, in which about a fifth of behavior-specific comments mentioned interrupted compulsive shopping. A caution on the eye-popping numbers: a 2026 analysis claiming 68–75% reductions across alcohol, opioids, nicotine, and cocaine *all at once* is a statistical red flag for confounding, not a clean drug effect, and even its authors call for trials.

ONE PIECE OF GOOD NEWS THAT SURVIVED SCRUTINY

Early fears that these drugs *cause* depression or suicidality have, so far, not held up: a 240,000-person study found *lower* suicidal-ideation risk on semaglutide, an FDA/FAERS review found a disproportionate *reporting* signal but no causal link, and the European Medicines Agency's 2024 review concluded no causal association — leading the FDA to remove a suicidality warning in January 2026. Methodologists keep the question formally open (the pooled data are highly heterogeneous), but the current weight of evidence is reassuring, not alarming.

Verdict. Smoking and opioids: **EMERGING**, worth serious study. Gambling and shopping: **SPECULATIVE**, possibly bidirectional. This is the sector where public understanding has run furthest ahead of the evidence.

12 · Apparel and fashion

The chain: substantial weight loss → old clothes no longer fit → new wardrobes bought and old ones resold → shifts in apparel demand, sizing, and the secondhand market.

One of the cleaner secondary effects, because it follows almost mechanically from weight loss. The retail research firm Coresight found roughly **72% of GLP-1 users had dropped at least one clothing size**, creating obvious new demand; surveys (Tinuiti, PwC) find users planning to spend ~10% more on apparel, and Circana (January 2026) reports that about **80% of users anticipate needing new clothing and 55% have already bought some.** The supply side is measured too: resale platform **ThredUp** logged plus-size purchases up ~6% year-over-year while smaller sizes fell, and **Poshmark** saw plus-size listings double. Because resale data is transactional, the re-wardrobing signal is **STRONGLY SUPPORTED**.

The size curve itself has now been measured — and it is shifting. The clearest new evidence comes from point-of-sale and returns data (Impact Analytics, 2025): in women's tops, demand for XS/S rose from 35% to 37% of units while L-and-up fell from 33% to 31%; in women's bottoms, the smallest sizes rose from 19% to 22%; men's shifted the same way. Fit-related returns of women's bottoms climbed from 12% to 15% of units, and apparel exchanges in which the shopper *sized down* reached 14.6% in 2025, up three years running. The firm warns that retailers who do not re-plan their size curves face roughly **$5 billion in margin risk and about 400 million misaligned units by 2027** — the first hard, if projected, dollar figure on the operational cost of getting the buy wrong. A parallel measured sub-signal shows up in intimates, where one retailer reported a ~3% downward swing in the bra-band and underwear sizes selling. Grade: **STRONGLY SUPPORTED** for the size migration, measured; the 2027 inventory figures are **projected**.

What defuses the "plus-size apocalypse" is that the story is deferral, not collapse — and two named first-party voices, sitting on opposite sides, together make the point. Torrid, the women's plus-size chain, says it sees no appreciable shift in its size-selling data and traces its store closures to an omnichannel shift toward online — closures that also follow years of general plus-size retail contraction (Lane Bryant, Avenue) that predate GLP-1 scale. Destination XL, the

men's big-and-tall retailer, says the opposite: its chief executive estimates that as many as a quarter of DXL's customers are on a GLP-1, "actively losing weight and delaying purchases" until they reach a goal. Both can be true, and together they define the effect precisely — not a permanent sizing-out of plus retail but a demand-timing problem, a J-curve in which users pause buying mid-journey and then re-wardrobe at goal weight. The apparel effect is a flow, front-loaded and partly deferred, rather than a one-time step-down in the plus-size market; and, once again, its durability depends on persistence, because a wardrobe is replaced once per size and whether the buying recurs depends on whether people keep losing weight — or, on stopping, regain it.

THE PROFESSIONAL READ — APPAREL AND RESALE

The missing dollar figure: Bernstein estimates re-wardrobing at **$3–13 billion a year** in added US apparel spend, with enlarged per-user baskets lasting one to three years, and Morgan Stanley frames it as a "food-budget surplus" redirected to clothing — read-through to off-price (**TJX, ROST**), mass (**WMT, TGT**), athletic (**Lululemon LULU**), and rental/subscription (**Stitch Fix SFIX, Rent the Runway RENT**). The cautionary counter-case is **Lululemon**, repeatedly named as a beneficiary yet guiding 2026 revenue and profit *below* consensus on company-specific problems — a clean reminder that GLP-1 "optionality" is easily swamped by fundamentals, and that no apparel retailer has yet booked a GLP-1-attributed comp. Resale financials look supportive (**ThredUp TDUP** revenue +15% with plus-size supply up ~6%, **The RealReal REAL** GMV at a record ~$617M, +22%) — *but neither company attributes its growth to GLP-1s in its filings*, so treat the linkage as an analyst overlay, not confirmed demand; there is no first-party GLP-1 transaction data at Vinted or Depop at all. The cleanest disproof of the "plus-size collapse" thesis remains that **Torrid (CURV)** stock rose sharply *while* closing stores — the market pricing a margin/omnichannel turnaround, not a GLP-1 death spiral. A genuine, if unquantified, upside narrative sits at the top end: affluent users have both the size-change trigger and the budget to "re-wardrobe up," a plausible support for luxury and tailoring — though the only *measured* luxury-linked datapoint is resale GMV, not primary-market sales. *Key variable:* whether the re-wardrobing pulse is one-time or recurring — which depends, again, on persistence.

Verdict. New-wardrobe demand, a measured size-curve migration, and a resale supply surge: **STRONGLY SUPPORTED**. Drugs collapsing plus-size retail: **not supported** — the evidence points to purchase *deferral*, not a permanent size-out. One clean cultural side-effect worth noting: the fast, month-by-month change in fit is pulling some shopping *back into physical stores*, where try-on de-risks a moving target — a small reversal of the e-commerce tide.

13 · Fitness, muscle, and protein

The chain: weight loss and renewed mobility → more exercise; *and* a specific side effect — muscle loss — → new markets for strength training, protein, and muscle-preserving products.

Two opposite fears collided here, and the evidence rebuts both. **Gyms are not emptying:** independent surveys (TD Cowen, William Blair, Deutsche Bank) and operators converge on GLP-1s being **neutral-to-positive** for fitness — users often want to exercise *more*, to keep weight off and protect muscle — and there is a specific new demand driver in the drugs' own weakness: because roughly 60% of lost weight returns within a year of stopping, and because muscle is lost during the on-drug phase, discontinuation and regain are precisely what seed durable demand for resistance training and protein. The **muscle problem is real and is spawning an industry:** roughly 20–30% of the weight lost on these drugs is lean tissue, not fat. The reassuring nuance is that fat is lost faster than muscle (body composition improves on average) and some studies show grip strength *rising* despite lean-mass loss; the concerning nuance is that absolute muscle loss matters for older and frailer patients — and it has opened a well-funded pharmaceutical race to preserve muscle during weight loss. And **protein and its adjacencies are the measured winners:** high-protein product sales grew ~57% in value over two years (Circana), creatine has surged into the mainstream, and GLP-1-companion supplements are one of the sector's fastest-growing pools — though the category leader BellRing's guidance to only flat-to-low-single-digit growth is the "not a supercycle" tell that keeps this at **STRONGLY SUPPORTED**, not established boom.

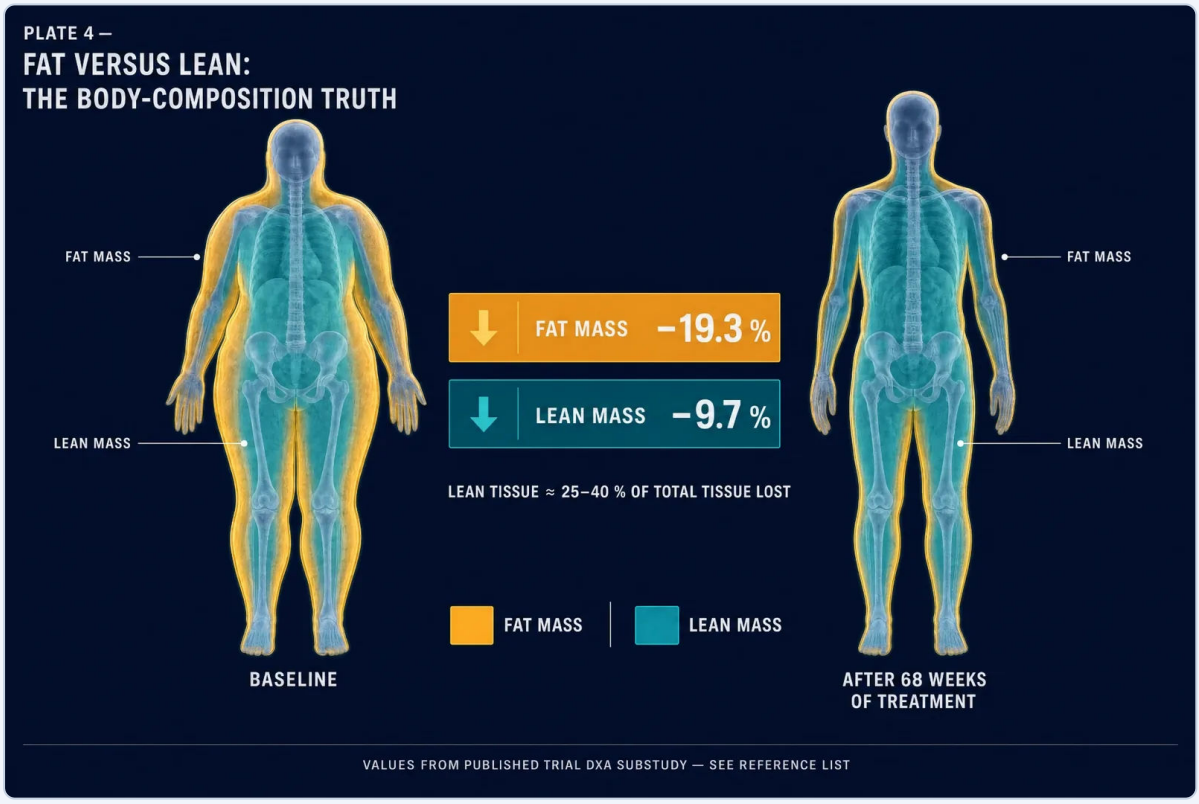

FIGURE 18 · Fat versus lean: the body-composition truth (commissioned plate). In the STEP-1 DXA substudy of semaglutide, fat mass fell 19.3% and lean (largely muscle) mass fell 9.7% over 68 weeks — so fat is lost preferentially and body composition improves on average, yet lean tissue still makes up roughly a quarter to two-fifths of the weight lost. That lean-mass loss is the mechanism behind the protein and muscle-preservation markets discussed here. *Values are from the published STEP-1 DXA body-composition substudy (see the reference list); the silhouettes are illustrative, not patient scans.*

THE PROFESSIONAL READ — FITNESS, PROTEIN, AND THE MUSCLE-DRUG RACE

Gyms: the feared-substitute narrative is not showing up in fundamentals — **Planet Fitness (PLNT)** grew revenue ~22% (though the stock fell ~52% year-to-date on unrelated fears, a telling fear-versus-fundamentals gap); **Life Time (LTH)** is monetizing the trend directly with GLP-1-dispensing medical spas; **Peloton (PTON)** turned its first profit even as subscribers fell ~9%. **Protein** is the cleaner trade — a ~$32B market growing ~9% (**BellRing BRBR, Simply Good Foods SMPL**), though BellRing's own guide-down is the "not a supercycle" tell.
Muscle-preservation drugs are a real but pre-approval field: **Scholar Rock (SRRK)** (~$5.7B cap, flagged as stretched), **Veru (VERU)** (binary micro-cap), **Regeneron (REGN)** and **Lilly** (which paid ~$650M for Juvena); **BioAge** terminated its lead program on a safety signal. *Key variable:* whether muscle loss proves to cause real functional harm — if it does, the preservation-drug market is large; if it doesn't, it's a niche.

Verdict. Muscle loss as a clinical fact: **ESTABLISHED**. Protein growth: **STRONGLY SUPPORTED**. Muscle-preservation drugs: **EMERGING** but real. Gyms collapsing: **refuted**.

14 · Beauty and aesthetic medicine

The chain: rapid, large weight loss → loss of facial and body fat, sagging skin, hair shedding → demand for dermatology, fillers, skin-tightening, body contouring, and hair treatments.

Start with the vocabulary: **"Ozempic face" and "Ozempic butt" are media labels, not clinical diagnoses.** The mechanism is real — fast weight loss depletes fat everywhere, including the face and buttocks, and stretched skin does not always recoil — but it is a consequence of *rapid weight loss by any means*, not a special drug effect. The first hard measurement of the facial effect (a 2025 imaging study) found a median ~9% loss of mid-face volume. The "boom," however, is smaller than advertised, and the shape of it is measured: plastic surgeons reported over **837,000 GLP-1 patients seeking aesthetic care in 2024** (ASPS), and a December 2025 facial-surgery survey found about two-thirds of members seeing more patients for rapid-weight-loss aesthetic changes — a 45% jump versus 2024 — with roughly one in ten now personally prescribing GLP-1s. Yet *actual procedure counts* rose only **1–3%**. The reconciliation is the finding: GLP-1s are dramatically expanding the *pool of people asking questions* (about 63% of these aesthetic patients had never used cosmetic medicine before) far more than they are driving a surge in surgeries. Two genuine measured signals cut against the glamour: a Duke cohort found faster pre-op weight loss associated with *higher* body-contouring complication rates, and a large health-records study found a 37–68% higher relative risk of (temporary, reversible) hair loss.

THE PROFESSIONAL READ — AESTHETICS SPLITS IN TWO

The sector divides cleanly. **Injectables win: Galderma (GALD)** grew ~25% at constant currency, **AbbVie's (ABBV)** Botox is resilient (its Juvéderm filler softer), medspa demand is compounding (~16% market CAGR), and GLP-1 provisioning has itself become a substantial clinic revenue line,

with a majority of GLP-1 aesthetic patients new to cosmetic medicine. **Energy devices lose: InMode (INMD)** guided revenue down and explicitly acknowledged GLP-1s *diverting* discretionary aesthetic spend toward the drugs. **Hims & Hers (HIMS)** grew revenue ~38% but watched gross margin fall from 76% to 64% as lower-margin GLP-1 revenue mixed in — a reminder that GLP-1 revenue is often *margin-dilutive*. *Key variable:* discretionary-income cyclicality plus whether "maintenance aesthetics after weight loss" becomes a durable recurring category.

Verdict. A large new aesthetic-patient cohort: **STRONGLY SUPPORTED**. "Ozempic face" as a real mechanism: **EMERGING**. A measured surge in procedures: **not yet**.

15 · Travel, recreation, and mobility

The chain: weight loss and easier movement → more travel and physical recreation; and, at population scale, lighter travelers → marginal transport effects.

This sector is mostly qualitative and contains the study's best example of an entertaining number that should not be taken seriously. A Jefferies analyst estimated that a ten-pound drop in average passenger weight could save United ~$80 million a year in fuel, and the four largest US carriers ~$580 million combined. The arithmetic is fine and the conclusion nearly meaningless: US airlines burn well over $40 billion in fuel a year, so even the full modeled figure is ~1% of fuel spend, and only *if* the entire population's average weight fell ~10% and airlines didn't simply refill freed capacity with cargo or passengers (which economists note they would). No airline has ever booked a GLP-1 fuel saving. Grade: **SPECULATIVE**, included mainly as a caution against mistaking a clever calculation for a consequence. What little is measured in travel points back to food and drink — surveys report GLP-1 users spending ~9–11% less on food and beverages while traveling, and hotels and cruise lines describe adjusting menus and minibars — a real if modest hospitality effect, grade **EMERGING**. The oft-cited ~$1-trillion "wellness tourism" market has no clean GLP-1 pure-play.

Verdict. Modest hospitality food-and-drink effects: **EMERGING**. Airline fuel and other novelty-physics stories: **SPECULATIVE** — real arithmetic, negligible and unrealized impact.

Part III · Medicine and the body

If the consumer sectors are where narrative outruns evidence, medicine is the reverse — this is where the second-order effects are largest, best-measured, and most consequential, and where the professional stakes are highest.

16 · Healthcare utilization

The chain: the drugs treat obesity and its complications → less downstream disease → fewer procedures, admissions, and prescriptions → lower medical spending.

Here the primary effect is strongest and the secondary effect is most *assumed*, so the two must be separated with care. **What is demonstrated (ESTABLISHED):** the clinical benefits reviewed in Section 7 are downstream *disease* effects proven at the highest level — 20% fewer cardiovascular events (SELECT), 24% slower kidney decline (FLOW), 38% fewer worsening-heart-failure events and 46% fewer heart-failure hospitalizations (SUMMIT), sleep-apnea resolution in up to half of patients (SURMOUNT-OSA, which won tirzepatide the first drug approval for that condition), fatty-liver resolution in 63% versus 34% (ESSENCE), 13% farther walking in peripheral artery disease (STRIDE), and reduced knee-osteoarthritis pain (STEP 9). Each is a real reduction in a specific disease burden.

What is not yet measured (SPECULATIVE-to-PLAUSIBLE): the leap from "fewer heart attacks in a trial" to "the health system spends less" is exactly that — a leap. The claims infrastructure exists to eventually measure it (Komodo, Epic Cosmos, Truveta), and it shows rising use and, in some records, falling population obesity. But the *net savings* figures that circulate are overwhelmingly modeled, and they disagree wildly.

THE SAVINGS DEBATE AT THREE POLES — READ THIS BEFORE BELIEVING ANY "GLP-1S SAVE BILLIONS" HEADLINE

- **The optimistic model:** a USC Schaeffer Center analysis projects **+$176–245 billion** in social value / long-run savings from broad obesity treatment. *Modeled, decade-plus horizon.*
- **The fiscal referee:** the Congressional Budget Office scored broad Medicare obesity coverage at **+$35 billion net *cost* over 2026–2034**, with barely **$3 billion** in offsetting health savings. *This is the official, non-partisan verdict, and it points the opposite way from the optimistic models.*
- **The measured reality:** the pharmacy-benefit manager Prime Therapeutics, looking at real claims, found non-diabetic obesity patients cost **$4,206 more in year two** with **no measured reduction in medical events**, and 85% had stopped the drug by then.

The gap between these three is the whole story. In the near term, payers spend *more*, because the drug lists at $1,000-plus a month and the disease-prevention payoff, if it comes, comes years later. And every savings model quietly assumes people keep taking the drug — which most do not (Sections 6, 20). Grade for system-wide savings: **SPECULATIVE→PLAUSIBLE**, modeled, delayed, and undercut by real-world discontinuation.

Verdict. Downstream *disease* reduction: **ESTABLISHED**. Downstream *cost* savings for the system: **not yet demonstrated**.

17 · Bariatric surgery and adjacent medicine

The chain: an injection or pill delivers much of what weight-loss surgery delivered → fewer people choose surgery.

This is the exception to the whole study: the decline of bariatric surgery is the single **best-evidenced** downstream effect of the GLP-1 era, measured two independent ways. A 2026 analysis in *JAMA Surgery*, tracking 11.7 million insured Americans, found that as GLP-1 use rose ~140% between 2022 and 2024, weight-loss surgery volumes fell by about a third; separately, the American Society for Metabolic and Bariatric Surgery estimated US procedures fell below 200,000 in 2024 for the first time since 2020, a drop of more than 20% in a single year. Two methods, one conclusion: patients who a few years ago would have had surgery are now reaching for a drug. Grade: **STRONGLY SUPPORTED**, verging on **ESTABLISHED**.

The honest caveat is that displacement is not equivalence. Surgery still produces more weight loss (~30–35% of body weight versus 15–22% for approved drugs) and, in at least one analysis of older patients, better long-term cardiovascular outcomes; only the still-experimental triple-hormone drug retatrutide approaches surgical territory on weight. So the switch is driven by access, tolerability, and preference — a pill is easier to accept than an operation — not by proof the drugs are medically as good. And the drugs are creating *new* surgical-adjacent markets: pharmacotherapy for post-surgical weight regain (measurably effective — tirzepatide −13.6%, semaglutide −11.0% in the regain population), and endoscopic revision procedures paired with GLP-1s.

18 · The device disruption: sleep apnea, diabetes tech, and dialysis

This chapter has no consumer analogue and is where the GLP-1 shock is reshaping medical-device markets in real time — a pure professional read, but one general readers will find clarifying, because it shows how a drug can quietly redraw an industry.

THE PROFESSIONAL READ – MEDICAL DEVICES, WINNERS AND LOSERS

Sleep apnea — the sharpest split. When tirzepatide won an OSA indication, **Inspire Medical (INSP)**, maker of an implanted apnea device, fell ~40% in five days and cut guidance — the market pricing GLP-1s as a substitute. Yet the CPAP incumbent **ResMed (RMD)** reframed the same drug as a *tailwind*: in a 1.7-million-patient analysis, GLP-1 users showed *higher* CPAP resupply and initiation (weight loss brings undiagnosed apneics into treatment rather than out of it), and management called it a "once-in-a-generation" opportunity — though at least one analyst downgraded on the thesis. The lesson: the same drug is a substitute for one device and a funnel for another.

Diabetes technology: a mild tailwind for **Dexcom (DXCM)** continuous glucose monitors (more engaged metabolic patients). **Bariatric surgical robotics:** at **Intuitive Surgical (ISRG)**, bariatric is now under 3% of the da Vinci procedure mix with high-single-digit declines for six straight quarters — real but immaterial to the ISRG thesis; **Medtronic (MDT)** exposure is similar and unquantified. **Dialysis: DaVita (DVA)** and Fresenius face a sub-1%-a-year headwind as FLOW-type

kidney protection delays dialysis onset by an estimated 2.5 years — partly offset by ~9% fewer hospitalizations among their existing patients. *Key variable across devices:* whether GLP-1s pull patients *out* of a device market (Inspire) or pull *more* patients *into* an adjacent one (ResMed, Dexcom).

19 · Relationships, confidence, sexuality, and fertility

The chain: weight loss and renewed confidence → changes in dating, sex, and relationships; and a surprising medical wrinkle → fertility.

This is the most human sector and one of the thinnest in hard data, so it demands restraint. Much of it — the "Ozempic divorce" storyline especially — is anecdote and law-firm content marketing, with no divorce-registry or cohort study behind it; we report it as narrative, not finding. The best *survey* anchor is a Kinsey Institute survey of 2,000 single adults (155 GLP-1 users), in which a majority reported some effect on dating or sex — but the effects split *both* ways (about as many reported higher libido as lower), and a second survey disagreed with it on the *direction* of the gender skew (Kinsey found men more likely to report a confidence boost; a telehealth vendor's survey found women more likely) — a tell that these are noisy self-reports, not platform truth. No dating-app company (Match, Bumble, Hinge) has published any GLP-1 behavioral data at all. Notably, a quarter of all respondents said they *would not date* someone on a weight-loss drug — a stigma signal echoed by a randomized experiment (Section 25) in which GLP-1 users were judged *more* harshly than dieters. Grade for the survey layer: **EMERGING**, mixed, self-reported.

The one genuinely rigorous new result changes the register of this section. In 2026 an economist published the first quasi-experiment in this domain (Diamond, NBER working paper w35387), using a nationally representative panel to compare women who *started* a GLP-1 against closely matched women who wanted the drug but had not yet begun. The findings are striking and specific: among previously *non-employed* women, employment rose about **27 percentage points** after six or more quarters; among previously *single* women, marriage or cohabitation rose about **29 percentage points.** Crucially, the effect sat entirely at *new-match formation* — the dating market and the hiring market — and **not** inside existing arrangements: already-partnered women showed *zero* change in dissolution, and already-employed women got no measurable raise or promotion bump. A second, independent NBER team (Daysal and colleagues) reported a labor-market signal in the same direction. This is the first evidence that moves "GLP-1s change your economic and relationship standing" from anecdote toward a causal estimate. The caveats are real and must travel with the number: it is a non-peer-reviewed working paper, the treated group is small (242 initiators), the longer-horizon magnitudes partly extrapolate beyond the observed window, and — the master caveat of this whole study — the effect depends on people staying on the drug, since regain on stopping would presumably unwind it. Grade: **EMERGING**, verging on STRONGLY SUPPORTED for the near-term observed window — the best causal identification the domain has.

The Diamond result is startling only if you forget what it is reversing. The pre-GLP-1 fact, measured across decades of labor economics, is that obesity carries a real economic penalty that falls hardest on women: a large weight increase is associated with roughly 9% lower wages for white women (Cawley, using the heritable component of weight to isolate cause), women with obesity are measurably less likely to be employed than similar healthy-weight women while the male gap is near zero, and about one in four HR professionals admits perceiving employees with obesity as less motivated. Against that baseline, a drug that reliably reduces weight is also, mechanically, a drug that can reduce a measured, gendered labor-market penalty — and the Diamond data suggest it does so chiefly at the point of hiring and new relationships rather than by lifting incumbents. The unsettling implication, which the working paper states rather than resolves, is that part of the measured "benefit" is society's bias becoming, for the treated, avoidable; and because most US states have no weight-discrimination protection, it operates in a largely unregulated space.

Two further areas deserve more precision than the headlines give them.

TWO PLACES WHERE THE DRUG DIFFERENCE ACTUALLY MATTERS

Fertility and contraception — this is tirzepatide-specific, not "Ozempic," and the exposure gap is now measured and large. Tirzepatide (Mounjaro/Zepbound) measurably *reduces the absorption of oral contraceptives* — in its own pharmacokinetic study, peak levels of the pill's hormones fell 55–66% and total exposure ~20%, largest after the first dose and each dose increase — which is why its FDA label instructs users to add a barrier method for four weeks after starting and after each escalation. **Semaglutide (Ozempic/Wegovy) showed *no* clinically meaningful contraceptive interaction** in two dedicated trials. So the "Ozempic babies" shorthand blurs a real drug distinction. The scale of the safety gap is now quantified: in a retrospective cohort of 1.6 million Australian women of reproductive age, of the ~18,000 first prescribed a GLP-1, only about **21% had recorded contraception — roughly four in five were not on effective birth control** at prescription, despite the drugs' pregnancy contraindication, and most prescriptions now go to women *without* diabetes. Separately, weight loss itself can restore ovulation — prescribing to women with PCOS rose from about 2.4% to 17.6% between 2021 and 2025, and a pilot trial found markedly higher pregnancy rates on a GLP-1. So two things are true at once: the *risk mechanism and exposure gap are measured and large*, while the population-level "Ozempic baby boom" remains *uncounted* — no study yet reports an actual change in pregnancy rates. Grade: **STRONGLY SUPPORTED** for the mechanism and the exposure gap; the "boom" itself is **anecdotal**.

Sexual function — the measured signal is *improvement for men*, and a genuine data void for women. A meta-analysis of seven studies (680 men) found GLP-1s raised testosterone and improved erectile function, an effect that scaled with weight loss — i.e. weight-loss-mediated, not a direct drug action. For women, the honest status is different and routinely flattened in coverage: *no* randomized trial has ever used a validated female sexual-function instrument as an endpoint for any GLP-1, and the only mechanistic signals that exist point the *other* way — a clinical review argues desire reduction may be real and under-detected, supported by a documented dechallenge/rechallenge case (symptoms resolving off-drug, recurring on restarting). So the popular unisex "these drugs improve your sex life" claim is supported **only for men, via weight loss**, and is **unestablished-to-adverse for women.** Grade: **EMERGING**, favorable for men, a genuine null (leaning adverse) for women.

Pregnancy safety: early-pregnancy exposure has not shown a major malformation signal (a JAMA Internal Medicine cohort found relative risk 0.95), though a 2025 JAMA study flagged rebound risks (more gestational weight gain, preterm delivery) *after stopping*. The drugs are contraindicated in pregnancy; the semaglutide label advises stopping two months before a planned pregnancy. Manufacturer pregnancy registries exist but have **no outcome data yet** (Lilly's final report is planned for 2036).

Verdict. Economic and relationship *standing* (employment, new-match formation): **EMERGING**, now with real quasi-experimental support concentrated at hiring and dating rather than inside existing arrangements. Confidence and dating effects (survey layer): **EMERGING**, mixed. Fertility/contraception (tirzepatide) and the measured contraception gap: **STRONGLY SUPPORTED**. Sexual function: **EMERGING**, favorable for men, a null-to-adverse gap for women. "Ozempic divorce": **SPECULATIVE** narrative — and now mildly *disconfirmed*, since the one quasi-experiment found existing partnerships intact.

Part IV · Money and institutions

This is where the largest dollars sit and the sharpest tension lives: the cost of these drugs is immediate and measured, while the savings are delayed, modeled, and — so far — not appearing on schedule.

20 · Insurance and employer economics

The chain: employers and insurers pay for the drugs now → hoped-for medical savings later.

For readers new to how US drug coverage works: most large employers "self-fund" their health plans (they pay claims directly and hire an insurer only to administer them), and a **pharmacy-benefit manager (PBM)** negotiates drug prices and decides which drugs the plan covers (the "formulary"). GLP-1s have detonated inside this system, because they are both wildly popular and, at list price, ruinously expensive at scale.

The central fact is an asymmetry. The pharmacy-benefit manager Prime Therapeutics, analyzing 16.5 million members, found that covering a GLP-1 for obesity added about **$4,200 in the second year** for non-diabetic patients — roughly **$11,200 more over two years — with no measured reduction in medical events**, even as about 85% of those patients had stopped the drug by then. Every "GLP-1s pay for themselves" figure has typically been a *model*; the most conservative large real-world dataset shows a net cost at two years.

But in 2026 the measured record split, and honesty requires presenting the conflict rather than resolving it. The benefits consultancy Aon, analyzing claims for more than **192,000 GLP-1 users** among some 50 million commercially insured lives, reported the *opposite* of Prime: 6–9%

lower total cost of care at 30 months for the diabetes indication, 3–7% lower within 18 months for weight loss, and large reductions in cardiovascular hospitalizations. This is now the strongest measured signal pointing *toward* savings — and it cannot be reconciled with Prime at face value. Three things explain the divergence, and the reader should hold all three: Aon *sells* GLP-1 benefits management, a direct commercial incentive to show a return; Aon's headline leans on the *diabetes* cohort, where cardiometabolic offsets are strongest, while Prime isolated *non-diabetic* obesity starters; and the two used different matching and time windows. Independent reads point the same way. The Peterson Health Technology Institute concludes that *every* study it reviewed finds GLP-1s raise total near-term spending at current prices, and a separate simulation by the Employee Benefit Research Institute estimates that expanding coverage lifts employer premiums by roughly 6% to nearly 14% a year. The honest state of the evidence: **measured results conflict, the independent modeled results point to near-term net cost, and the savings case rests heaviest on the sponsor with the most to gain from it.**

THE PARADOX, AND THE 2025–2027 RETREAT

High discontinuation is currently *protecting* payers — people quit before the lifetime drug bill accrues — which creates a genuinely strange incentive: because roughly 85% of obesity starters are off the drug within two years, plans never reach the far larger cumulative cost that sustained adherence would bring. *Better adherence makes the near-term economics worse.* This is why coverage, after years of expansion, is now retreating at the margin: only about **18% of firms with 200+ workers** cover GLP-1s for weight loss (KFF), and about **one in ten covering employers expects to drop** obesity coverage in 2027 (Business Group on Health); Mercer finds large-employer obesity coverage only modestly higher year-over-year (roughly **44% to 49%**) even as the 2026 health-benefit cost trend hits **+6.7%, the largest jump in fifteen years, near $18,500 per employee.** The retreat is no longer abstract — it is named and dollar-quantified.

The 2026 evidence turned that trend into a set of named case studies with dollars attached. The Massachusetts Group Insurance Commission, the state-employee plan covering more than 460,000 lives, voted ten to seven in February 2026 to end obesity-only GLP-1 coverage — roughly 22,000 members were on the drugs at a cost near $46 million — and replaced it with a lifestyle-vendor program projected to save $30 million a year. Blue Cross Blue Shield of Massachusetts booked operating losses of about $400 million in 2024 and $380 million in 2025, with five GLP-1s consuming roughly a fifth of its pharmacy spend, then dropped weight-loss coverage; Blue Cross Blue Shield of Michigan watched GLP-1 spend climb from $8 million to about $300 million in three years before ending coverage in fully-insured large-group plans; and the Catholic health system Ascension dropped weight-loss coverage outright. Across the commercial market, weight-loss GLP-1 enrollment fell from about 3.6 million covered lives in 2024 to about 2.8 million in 2026 — a measured contraction of roughly a fifth, even as the drugs' clinical reputation rose — and four state Medicaid programs (California, New Hampshire, Pennsylvania, South Carolina) eliminated obesity coverage over the same window. Grade: **ESTABLISHED**, measured. This retreat is the single most important brake on the "everyone will be covered" future.

THE PROFESSIONAL READ — PBMS, INSURERS, AND THE GROSS-TO-NET ILLUSION

GLP-1s pressure managed-care medical-loss ratios and are named in the earnings commentary of **Cigna/Evernorth (CI)** and **CVS/Caremark (CVS)**; 2025 MLRs ran elevated across **UnitedHealth (UNH, 88.9%)**, **Elevance (ELV, 90.0%)**, and **CVS/Aetna (87.4%)**. Formulary power is now openly wielded: **CVS Caremark dropped Zepbound in July 2025** (affecting ~200,000 patients, drawing an ERISA suit) then **re-added it in October 2026** — a demonstration that the PBMs, not the manufacturers, increasingly set access. The subtle trap for employers is the **gross-to-net illusion**: Novo's announced 50% *list*-price cut is expected to be offset by compressed rebates, so the employer's *net* cost may not fall at all — net prices already fell ~34% in nine months of 2025. Meanwhile **stop-loss carriers** are carving out or "lasering" GLP-1s, pushing the tail risk back onto self-funded employers. *Key variable:* whether oral competition and the 2027 IRA price (Section 21) finally break net prices, or whether rebate mechanics keep employer economics roughly flat.

21 · Public payers and policy

The public-program story moved fast in 2026 and is the single most important policy variable for the drugs' reach. Three developments:

- **The Medicare "GLP-1 Bridge."** A CMS demonstration operating July 1, 2026 through December 2027 lets Medicare enrollees access GLP-1s for obesity at a **$50/month copay** against a **$245 net price**, with manufacturers owing CMS the difference from list — a workaround that sidesteps the statutory bar on covering weight-loss drugs. The permanent pathway (the "BALANCE" Part D model) was *indefinitely delayed* in April 2026 after plans failed to hit participation thresholds.
- **The IRA price cliff.** Under Inflation Reduction Act negotiation, Medicare's negotiated **semaglutide** prices take effect January 1, 2027 — roughly **$274/month for Ozempic and ~$385 for high-dose Wegovy, about 71% off list** — a landmark that reprices the whole market and would have saved Medicare an estimated $12 billion in 2024 alone.
- **The fiscal verdict.** The Congressional Budget Office scored broad Medicare obesity coverage at **+$38 billion in drug spending against only ~$3 billion in offsetting savings** over a decade — the authoritative rebuttal to the "these drugs bend the cost curve" claim, independently echoed by a peer-reviewed model finding a multi-tens-of-billions net cost. Cost-effectiveness reviewers (ICER) find the drugs *clinically* cost-effective per QALY yet still warn that covering even a fraction of eligible patients would blow through affordability thresholds.
- **The political price deals.** In November 2025 the administration announced pricing agreements with Lilly and Novo Nordisk that cut across the whole picture: upcoming oral obesity drugs priced at **$149/month** through Medicare, Medicaid, or a new direct-to-consumer channel; injectable GLP-1s starting near **$350/month** direct-to-consumer and committed to fall toward ~$250 over two years; and — the landmark — **Medicare covering obesity drugs for some patients for the first time**

starting mid-2026, with a $50 monthly copay for eligible enrollees. This is a political reframing of the same affordability problem, pushing price down rather than expanding open-ended coverage. Grade: **ESTABLISHED** (announced policy), measured.

Seen globally, coverage is now a rationing problem rather than a science problem, and different systems are rationing the same drug in opposite directions. In the United States, the Medicare Bridge steps in while state Medicaid steps out — obesity coverage fell from sixteen states to thirteen in a single year. The United Kingdom rations by explicit design: NICE recommended tirzepatide for obesity, but the NHS plans for only about 220,000 people on it by 2028 out of roughly 3.4 million eligible — about 6% — over a phased rollout stretching some twelve years, with Wegovy confined to specialist services. France became the first EU country to grant permanent statutory reimbursement of anti-obesity GLP-1s, from June 2026 on narrow criteria, reversing its own 2024 refusal; Germany, Europe's largest economy, refuses outright, classifying the drugs as excluded "lifestyle" medicines but for narrow cardiovascular exceptions. The investment implication is precise, and the uncapped total-addressable-market forecasts rarely price it in: those models assume demand is the constraint, but in the largest public systems the binding constraint is a deliberate volume cap set by budgets — a measured ceiling, not a demand curve.

The throughline: the drugs are individually worth it and collectively unaffordable at current prices — which is precisely why the pricing collapse now underway (Sections 23, 29), and the political deals accelerating it, matter more than any single coverage decision.

22 · Employment and productivity

The chain: healthier employees → less absence, higher productivity → lower employer costs.

Approach this sector with folded arms, because most of its evidence is produced by parties with an interest in the answer — the flagship US workplace study is drug-maker-co-sponsored and not yet reporting. The one methodologically credible result is Danish: an analysis of national registers found GLP-1 treatment associated with a **~17% reduction in long-term sickness absence** (worth roughly 1.3–1.5% of annual labor income) — but, importantly, the *same* study found **no significant effect on income, employment, or labor-force participation** over four years. So the honest reading is narrow: a real reduction in sick days in one national system, not a demonstrated productivity or workforce transformation. (This is the *same* Danish register work — and the same research team — behind the labor-market signal in Section 19; note that the sick-day result and the "no earnings effect" result come from one study and must travel together.)

What circulates as the US "productivity case" is a modeled, sponsored bull case, and should be labeled as one. The per-employee figures decks quote — roughly $1,514 in added medical cost, $664 in disability, $1,755 in absenteeism, and $2,427 in lost productivity for each employee with obesity versus without — are *avoided-cost estimates from industry-sponsored material.* They quantify the cost of obesity and then *assume* the drug reverses it, which is exactly the adherence-dependent leap the Prime and ICER data undercut. Employers are building the right measurement scaffolding (tracking absenteeism, presenteeism, workers'-comp, and disability),

but their own guidance concedes that robust *presenteeism* evidence "does not yet exist for decision-makers." A second, softer effect *is* real: benefits coverage has become a *recruiting* variable, with roughly half of workers (and more of the youngest) saying it would sway a job choice. Grade for productivity gains: **EMERGING at best** — the citation volume has grown, the independent evidence has not, and every US dollar figure in circulation is sponsored and modeled.

23 · The pharmaceutical industry

The chain: two companies built the drugs → became among the most valuable on earth → reshaping pharma strategy, pricing, and competition.

This is the primary economic effect, and it is enormous, well-documented, and no longer a two-horse race.

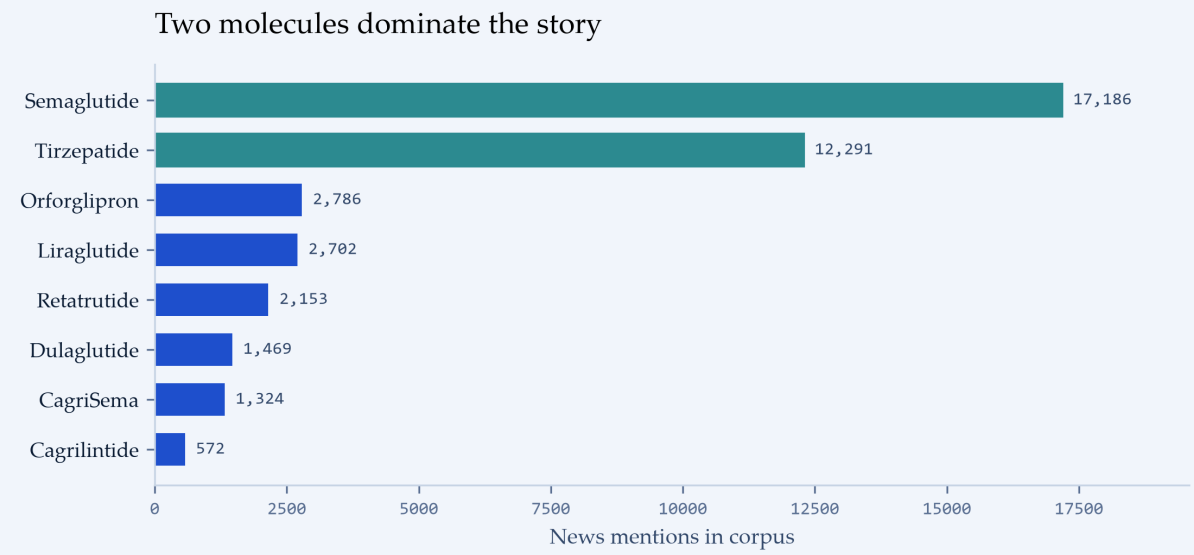

FIGURE 2 · GLP-1 COMPOUND SHARE OF VOICE (NEWS MENTIONS)

FIGURE 19 · Two molecules — semaglutide and tirzepatide — still dominate the entire GLP-1 conversation, mirroring the market. But the pipeline names beneath them (orforglipron, retatrutide, CagriSema, and a wave of challengers) are where the next competitive round, and the price war, will be fought.

The incumbents have diverged sharply. Eli Lilly (LLY) reported about **$23 billion in a single quarter** of 2026, up ~48% year-over-year (Mounjaro ~$9.9B, Zepbound ~$4.9B), at ~86% gross margin, and became a **~$1.08 trillion** company — while committing over $50 billion in manufacturing capex since 2020. **Novo Nordisk (NVO)**, once Europe's most valuable company, stumbled hard: its CEO was ousted, Wegovy US sales fell ~22%, full-year guidance turned to a *decline*, it announced 9,000 layoffs, and its market value fell to ~$211 billion — leaving Lilly worth more than five times Novo. Grade: **ESTABLISHED** (company filings).

THE PROFESSIONAL READ — THE PIPELINE AND THE PRICE WAR

Three forces define the round. **The pill:** Lilly's oral **orforglipron (Foundayo)**, FDA-approved April 2026, trades potency (~12% weight loss) for manufacturing scale and no food/water restriction — the structural edge in a price war, because a small molecule bypasses the injectable fill-finish bottleneck. **The challengers:** at least ten programs are advancing — retatrutide (~30% weight loss, the new ceiling), Amgen's **MariTide (AMGN)** reading out early 2027, Roche's CT-388 (from its $2.7B Carmot deal), **Viking (VKTX)** in phase 3, **Structure (GPCR)**, and China's mazdutide — while Pfizer paid ~$10 billion for Metsera to re-enter. **The price collapse:** cash-pay channels (LillyDirect ~$299–449, NovoCare oral from ~$149) plus the 2027 IRA semaglutide price are pulling the net-price curve *down*, not up. *Key contrarian facts:* Novo's guidance is falling, CagriSema failed a head-to-head against tirzepatide, several challenger readouts disappointed (pemvidutide ~7.5%, **Altimmune ALT** −23%), and analyst market-size forecasts for 2030 span **$77–200 billion** — a range so wide it is a confession that no one knows. Every such figure is a *projection*.

24 · Telehealth, compounding, and the weight-loss industry

The chain: explosive demand plus shortages → a boom in telehealth prescribing and cheap "compounded" copies → then a regulatory reckoning as shortages ended.

For two years, a shortage of the branded drugs created a legal opening: pharmacies could make "compounded" copies, and telehealth companies built fast-growing businesses selling them. That window has largely closed, and the closing is now on a definite legal timeline. The FDA declared the shortages resolved (tirzepatide December 2024, semaglutide February 2025) and set wind-down deadlines that courts upheld — a federal court denied the compounders' injunction in March 2025 — and in April 2026 the agency proposed to **permanently exclude semaglutide, tirzepatide, and liraglutide from the list of drugs eligible for large-scale compounding**, finding "no clinical need"; the comment period closed in June 2026 and a final rule is expected in the third quarter, closing the last pathway for mass-compounded GLP-1s. The fallout was specific: **Novo Nordisk terminated a partnership with Hims & Hers (HIMS)** in mid-2025, accusing it of "illegal mass compounding," and Hims's stock fell ~30% in a day; **WeightWatchers** filed for bankruptcy in May 2025, shed ~$1.15 billion of debt, and re-emerged weeks later as a telehealth-GLP-1 business. The larger point cuts against a favorite headline: the "death of the diet industry" has *not* happened — the industry is **converting, not dying**, repositioning as the delivery and support layer around the drugs.

The most important 2026 shift ties this chapter back to Section 20: as employers and public payers retreat, the spending does not vanish, it *migrates* to a cash-pay, direct-to-consumer channel — by analyst estimates already a third or more of GLP-1 demand — and the new winners are the low-cost distributors. Costco, through a telehealth partner, offers self-pay Wegovy around $349 a month; Sam's Club and Hy-Vee entered the cash channel; and Amazon Pharmacy launched a GLP-1 program in April 2026 pricing oral options from $149 a month with same-day delivery across thousands of cities. Combined with the manufacturers' own direct channels (LillyDirect, NovoCare) and the administration's ~$149-to-$350 pricing deals, this puts the new

cash floor somewhere around $149 to $349 a month — a structural blow to compounders' price advantage and a structural win for high-volume retail (Amazon, Costco, Walmart). The scorecard writes itself: the winners are the retail and direct distributors and the telehealth platforms that pivoted early to branded supply; the casualties are small-scale compounders, sub-scale telehealth (LifeMD cut its guidance), and any model still betting on cheap compounded copies. Grade: **ESTABLISHED** for the dated pricing and launches; the channel's ultimate size is a **projection**.

> THE PROFESSIONAL READ — TELEHEALTH ECONOMICS ARE UGLIER THAN THE GROWTH
>
> The revenue is real but the margins are not. **Hims & Hers (HIMS)** grew Q2 2026 revenue ~38% to ~$753 million yet swung to an ~$86 million net *loss* as low-margin GLP-1 revenue mixed in; **LifeMD (LFMD)** *cut* guidance; **WeightWatchers (WW)** runs a shrunken ~$620–635 million base though its clinical segment grew ~32%; **Ro** and **Noom** remain private. The pattern is that GLP-1 revenue is often margin-dilutive and legally exposed, and the compounding-era business model — cheap copies — is being regulated out. *Key variable:* whether these platforms can convert a shortage-era customer base into durable, higher-margin branded-drug and adjacent-care subscriptions before the compounding revenue disappears.

Part V · Society, risk, and the future

25 · How GLP-1s are changing the culture of obesity

Of all the effects in this study, the one that may matter most in the long run is also the hardest to measure: a shift in how a society understands body weight itself. For decades the dominant folk model of obesity was moral — a matter of willpower and discipline. GLP-1 drugs are dissolving that model, because they work on biology, not character.

The scientific reframing has a twelve-year arc, and the drugs are its hinge. In 2013 the American Medical Association declared obesity a disease — over the objection of its *own* science council, which argued that the standard yardstick, BMI, was too crude to diagnose one. That tension festered until the AMA formally *demoted* BMI in 2023 (citing its origins in a 19th-century population formula validated on white European men, and its blindness to muscle, fat distribution, and ethnicity), and until a 2025 *Lancet* Commission of 58 experts resolved it — splitting "clinical obesity" (excess fat *causing* organ dysfunction, a disease in itself) from "preclinical obesity" (a risk state), and requiring confirmation of excess adiposity beyond BMI alone. The World Health Organization codes obesity as a chronic disease (ICD-11) and issued its first global guideline on GLP-1s for obesity in December 2025. Underneath all of it sits the science of Section 2: since a 2017 Endocrine Society statement, the mainstream view has been that the body *defends* its fat stores through the brain's energy-homeostasis system — which is

why the "Biggest Loser" contestants carried a ~500-calorie-a-day suppressed metabolism six years later, and why 13 of 14 regained weight. The drugs are persuasive precisely because they act on that system. Grade for the framework: **ESTABLISHED**.

Public attitudes are following — measurably, but incompletely. In Pew's large survey (over 10,000 adults), 65% now say willpower alone is usually not enough to lose weight and keep it off. AP-NORC finds 54% call the drugs a good thing for people with obesity. Awareness has saturated: KFF's "heard a lot" rose from 19% to 32% in a year, and Gallup's awareness hit 91%. Whether the drugs *caused* the attitude shift or merely accompanied it is **PLAUSIBLE**, not proven — but the correlation is strong and the direction is one way.

The deepest cultural finding, though, is a divergence — the reframing is winning in institutions and losing on the ground. Three measured tensions run in opposite directions at once, and holding them together is the honest picture. *First,* institutional disease-framing is advancing (the AMA, the Lancet Commission, the WHO) even as *public payer and employer coverage contracts* (Section 20–21: Medicaid 16→13 states, TRICARE tightening, employer coverage flat-to-retreating). *Second,* the biology narrative dominates elite and clinical discourse, yet *lay belief in willpower persists*: controlled experiments in 2025–26 found participants still "overwhelmingly" regard obesity as willpower-controllable and drug-assisted loss as an "easy way out." *Third,* the language has been culturally canonized — the American Name Society voted **"Ozempic" its Name of the Year for 2024** — even as most users *conceal* their use (a national survey found only about a third of current or former users likely to admit it). The culture is not settling into a new consensus; it is arguing loudly about one. Grade for the institutional reframing: **ESTABLISHED**; for a completed *popular* attitude shift: **PLAUSIBLE at best, and partly contradicted.**

Two cultural markers are worth naming precisely. The first is language: "Ozempic" became the American Name Society's Name of the Year for 2024, cited for its sheer generativity ("Ozempic face," "Ozempic economy," an "Ozempic ___" template). The most consequential coinage, "food noise" — the intrusive background chatter about food that users say the drugs quiet — moved from patient slang into the medical literature, acquiring a peer-reviewed clinical definition and a validated questionnaire (*Nutrition & Diabetes*, 2025); it is the linguistic carrier of the biology-not-willpower reframing. One honest limit belongs here: despite the ubiquity, no major dictionary named any Ozempic term its Word of the Year, so the defensible lexical claim is "food noise" entering the medical literature, not a word-of-the-year crown. The second marker is celebrity disclosure, which flipped from denial to confession: the hinge event was Oprah Winfrey's March 2024 primetime special, in which she disclosed her own use and said she "released my own shame," followed by a wave of on-record disclosures. But disclosure and stigma now coexist — the same period saw stars accuse peers of "lying" about use, and surveys show most ordinary users still hide it. The confession norm is real at the top and thin in the middle.

The reframing is also not a global consensus; it tracks who pays as much as who believes. Global awareness of GLP-1s averages only about 36% across 30 countries (Ipsos) — from roughly 74% in the United States down to 9% in Colombia — and the disease-versus-self-blame contradiction is measured cross-nationally: majorities call obesity "a medical condition requiring ongoing management" while *also* believing it is "preventable through personal choices," and about seven

in ten people with obesity blame themselves. National adoption follows access, not attitude — the UK's private market ran ahead of a deliberately rationed NHS, France is regularizing reimbursement, and Germany treats the drugs as self-funded lifestyle medicines (Section 21). The cultural shift this study documents is, for now, substantially an American one.

THE COUNTERINTUITIVE FINDING — THE DRUGS CARRY THEIR OWN NEW STIGMA

The reframing is not a clean victory over shame. In a randomized experiment (Georgetown, published in *Stigma & Health* in 2026, 402 women), people who lost weight with a GLP-1 were judged *more* harshly than those who dieted — more fat-phobia, more blame, more desire for social distance — and the mediating belief was that the drug is a "shortcut." A second experiment found the stigma also attaches to *regaining* weight after stopping. This is why a large share of users conceal their use, and why a quarter of single adults say they would not date someone on the drugs (Section 19). The culture is not settling into a new consensus so much as arguing loudly about one — a fight visible in the 2026 political flap over leaders calling them "fat drugs," and in fashion's measurable retreat from size inclusivity (runway data show plus-size looks falling to 0.3% and straight sizes 0–4 rising to ~98% of looks by 2025, which the trade press ties explicitly to the "Ozempic era").

Three harder edges deserve naming. First, **youth**: the American Academy of Pediatrics' 2023 guideline endorses offering these drugs to adolescents 12 and older with obesity, and prescribing has climbed steeply off a low base — among adolescents with obesity, prevalent GLP-1 prescribing rose from about 0.12% to 1.38% between late 2022 and mid-2025, with semaglutide dispensing per 100,000 teens roughly doubling — a real, and contested, expansion into younger bodies, shadowed by rising poison-control exposures (over 8,000 GLP-1 calls by 2024, many dosing errors on compounded versions). Second, **eating disorders and cosmetic creep**: eating-disorder organizations warn (from position statements, and now some data) that the drugs could worsen restrictive behavior in vulnerable people — one self-report study found about a third of patients with eating disorders had used a weight-loss injection and more than 10% had misused it — even as GLP-1s are simultaneously being *studied* to reduce binge-eating episodes; TikTok's June 2025 ban of the #SkinnyTok tag (after regulatory pressure, redirecting searches to eating-disorder resources) is the platform-level face of the same tension. And a survey of aesthetic-medicine providers found most of their *own* GLP-1 use was cosmetic, in patients whose BMI was overweight — not obese. The same drugs that treat a disease also feed a thinness ideal, and both things are true at once. Third, **the fashion signal**: runway data show plus-size looks falling to about 0.3% of looks and straight sizes rising toward 98% by 2025–26, and measured plus-size retail visibility contracting (one large retailer cut women's size options ~37% in a year) — which the trade press ties explicitly to the "Ozempic era," though, as Section 12 argues, the retail contraction is over-attributed to the drugs alone.

And it became political. By 2026 the drugs were a subject of open political contest: the administration's leaders alternately disparaged them as "fat drugs" and struck the pricing deals of Section 21; the health secretary reversed from arguing that good food could "solve obesity" toward conceding GLP-1s "have a place"; and polling found the public roughly divided, with about half of adults favoring Medicare coverage of the drugs and support skewing Democratic.

The deeper argument underneath is "Big Food versus Big Pharma": if a drug that curbs cravings for ultra-processed food can treat obesity, is obesity a personal failing or a product of the food environment? That question, more than any earnings line, is what the reframing has reopened.

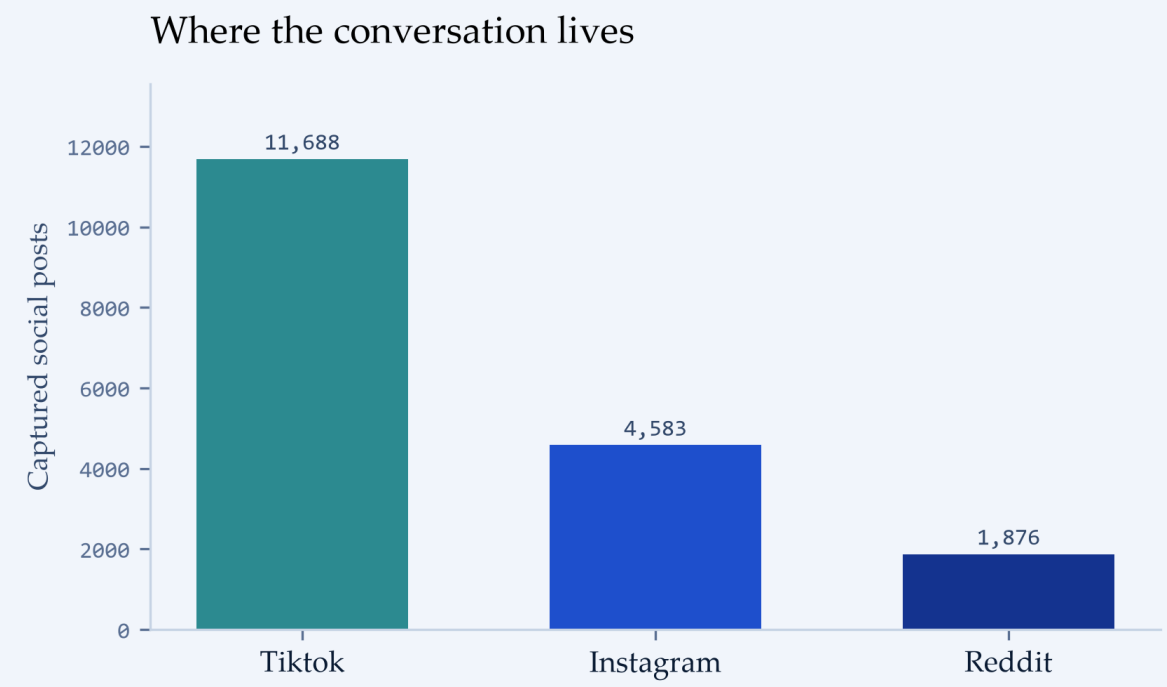

FIGURE 3 · SOCIAL POSTS CAPTURED (n=18,147)

FIGURE 20 · Of 18,147 captured social-media posts about these drugs, the large majority are on TikTok and Instagram — visual, testimonial platforms. This shapes the discourse: the public experience of GLP-1s is narrated largely through before-and-after images and personal disclosure, which amplifies the vivid anecdote over the population statistic — the exact bias this study is built to counteract.

A METHODOLOGICAL WARNING, STATED AS A FINDING

Our own corpus is the clearest evidence for this section's central caution. GLP-1 drugs generated tens of thousands of news articles and a torrent of social posts — yet only about one in eight adults has ever taken one, and about one in twenty-five is on one now. **Attention outran prevalence by a wide margin.** Much of the "GLP-1 is transforming everything" genre is the sound of a story that is culturally enormous and, so far, economically contained. Both are true; confusing them is the most common error in this field.

26 · Winners, losers, and the market map

It is tempting to turn a study like this into a stock-tip sheet, and we resist that: naming winners requires a financial analysis this document does not perform, and the honest state of most consumer-sector evidence is "wait." What we can offer, grounded in the evidence grades above, is a structured exposure map — who is plausibly affected, in which direction, and how confidently we can say so. It should be read as a research synthesis, not a recommendation.

SECTOR EXPOSURE MAP — DIRECTION AND CONFIDENCE (NOT INVESTMENT ADVICE)

EXPOSURE	REPRESENTATIVE NAMES	DIRECTION	CONFIDENCE
Primary beneficiaries	Eli Lilly (LLY); GLP-1 pipeline (VKTX, AMGN, ROG)	Structural winner	High
Diverging incumbent	Novo Nordisk (NVO) — winner turned laggard	Mixed / negative	High
Clearly displaced	Bariatric surgery; Inspire (INSP, sleep-apnea device); compounding-era telehealth model	Negative	High
Adjacent winners	ResMed (RMD, CPAP funnel); protein (BRBR, SMPL); injectable aesthetics (GALD, ABBV); resale (TDUP, REAL); medspa/GLP-1 provisioning (LTH, HIMS)	Positive	Moderate
Pressured at the margin	Indulgence food (HSY, MDLZ, PEP); mainstream alcohol (TAP, BF.B); energy-device aesthetics (INMD)	Mildly negative	Low–moderate; concentrated, not existential
Paying now, hoping later	Employers & public payers; PBMs (CVS, CI, UNH)	Cost now, savings unproven	High on cost; low on payoff
Two-sided	Grocers (WMT, KR, COST) — basket drag vs GLP-1 dispensing	Ambiguous	Genuinely mixed
Too uncertain to classify	Restaurants, airlines, plus-size retail, gyms, dating, muscle-drug developers	Unresolved	Do not classify

The pattern is worth stating plainly: **the confident entries are in medicine and pharma; the speculative entries are in consumer life.** That is the inverse of where the media attention goes — and, for a professional reader, the single most useful takeaway in the study.

Beneath that direction map sit a handful of specific dollar estimates worth collecting in one place, each read for how solid it is. Re-wardrobing is put at up to $13 billion a year of incremental US apparel spend (Bernstein, modeled). The food-and-beverage hit is modeled at $30–55 billion a year by the early 2030s (J.P. Morgan), against a $2.5-trillion base, with a narrower $32-to-$44 billion estimate of packaged-goods revenue impact. New aesthetic demand

shows up as a roughly $2 billion body-contouring opportunity plus a substantial, if unquantified, GLP-1 provisioning line at clinics, and functional "GLP-1 drinks" are pegged as a ~$3.5 billion growth lane — all modeled. And the drug franchises themselves are the largest number of all: tirzepatide at $36.5 billion in fiscal 2025 (measured), the whole obesity market modeled at $120–200 billion by 2030–2035, while Novo Nordisk's revenues have run near a tenth of Danish GDP (Section 30). The tell is that the largest, most confident figures are the drug revenues and the Danish production effect — the primary economic event — while every downstream consumer number is a wide-dispersion model: the money that is *measured* sits in the drug and its maker, and the money that is *modeled* is everywhere the drug is supposed to ripple.

27 · The bear case and the risks

A study that only catalogued upside would be a brochure. Here is the disciplined case for why the GLP-1 phenomenon could underdeliver against its most excited forecasts, organized as a risk register.

- **Durability is the master hinge.** The drugs' effects — medical and behavioral — largely reverse on discontinuation, with roughly two-thirds of lost weight regained within a year of stopping. Every downstream projection that assumes permanent population weight loss is undercut if people keep quitting. Persistence is improving, but it is the variable on which everything else rests.
- **Eligibility vastly exceeds access, and coverage is now *bifurcating*, not simply retreating.** Only ~4% of adults are actively treated against ~40% eligible; the constraint is cost and coverage. But the 2026 picture is a genuine cross-current, and the bear case must hold both halves: on the *retreat* side, roughly one in ten covering employers plans to drop obesity coverage in 2027, Medicaid fell from 16 to 13 states, and named plans booked hundreds of millions in GLP-1 losses before dropping the benefit (Section 20); on the *re-expansion* side, a major PBM's reported return of Zepbound to standard formularies, the CMS BALANCE Medicaid model, and the new Medicare pathway push the other way. Coverage is splitting — public and Medicaid retreating while parts of the commercial and PBM system re-expand — and the truly large, high-penetration future still requires a Medicare obesity unlock that remains statutorily blocked for weight loss alone.
- **Price collapse compresses the pharma prize — three vectors at once.** The revenue risk is not demand but price, pushed down simultaneously by (1) *oral competition* (orforglipron and a Wegovy pill bypassing the injectable bottleneck), (2) the *2027 IRA* negotiated semaglutide price plus manufacturers' own pre-announced list cuts of roughly 35–50%, and (3) the *ex-US generic cliff* already live in 2026 (generics near ~$13/month in some markets). Cash-pay channels have pulled the floor to roughly $149–$349 a month. The $77–200 billion market forecasts assume a pricing power that is eroding on all three fronts at once — bullish for *volume*, bearish for *revenue per unit*.
- **Safety questions remain formally open**, even where the current evidence is reassuring:

THE SAFETY LEDGER AS A RISK REGISTER

SIGNAL	CURRENT STATUS
Suicidality / depression	**De-escalated** — EMA and large cohorts found no causal link; FDA removed a warning in January 2026. Not closed (data heterogeneous), but reassuring.
Muscle / lean-mass loss	**The substantive one** — ~20–30% of weight lost is lean mass; functional harm debated; drives the preservation-drug field.
NAION ("eye stroke")	**Unresolved** — a single-center signal, not consistently replicated; absolute risk small.
Gallbladder disease	**Real, dose-related** (relative risk ~1.37).
Pancreatitis	**Labeled caution, not a demonstrated population risk** (pooled data null).
Thyroid C-cell tumors	**Boxed warning, rodent-derived**; human relevance undetermined.
Perioperative aspiration	Real mechanism; guidance softened in 2024; event-rate evidence thin.
Pregnancy	Contraindicated; no major malformation signal, but rebound risks after stopping.

- **The measurement trap.** News attention is not prevalence; a large per-user effect in a small user base is a small aggregate effect; and nearly every "GLP-1 killed X" story overlays a drug narrative onto a trend that predates the drugs. This trap is itself the most reliable source of over-claiming in the field.

28 · Effects that sound plausible but are not yet proven

This is the study's honesty check, and the owner's instinct — that some of these have *more* evidence than the "it's all hype" framing credits — turns out to be correct for a few and wrong for others. So rather than a list of dismissals, each claim below gets the specific evidence *for* it, the evidence *against* it, and an honest verdict. Read together, they sort into three groups: claims that are *partly proven* (plus-size decline, alcohol decline, addiction causality), claims that are *true at the company level but false at the market level* (snack collapse, the death of dieting), and claims with *essentially no support at any scale* (airline fuel, near-term system savings, Ozempic divorce).

"GLP-1s cure addiction" — the claim that gained the most ground. *For:* this is where the owner's instinct is most vindicated. Beyond the small 2025 trial, a randomized, placebo-controlled *Lancet* trial in 2026 found semaglutide cut heavy-drinking days far more than placebo (a treatment difference of about 14 percentage points, statistically strong), a further 2026 trial using the *oral* drug cut drinking and cannabis use on secondary measures (though it missed its primary craving endpoint), opioid-overdose register data across hundreds of thousands of people point the same way, and a Phase-3 trial in 622 veterans is now enrolling

(Section 11). *Against:* the trials remain small and short, several required participants to also have obesity, no GLP-1 is approved for any addiction indication, and for gambling, shopping, cocaine, and methamphetamine the human evidence is still near zero — indeed the *bidirectional* pharmacovigilance signal runs the other way, that the drugs may *trigger* impulse problems in some patients. *Verdict:* **EMERGING, and the strongest of the "unproven" claims for alcohol and opioids** — no longer hype, not yet established; **SPECULATIVE** for everything else.

"Plus-size retail is collapsing" — real, but running ahead of the demographics. *For:* this is the most *measured* consumer-loser signal in the study — panel data show the GLP-1 shopper's share of clothing purchases falling and the size curve migrating smaller (Section 12), and several retailers have visibly cut plus-size assortments. *Against:* more than a third of US adults still have obesity, so the plus-size *population* is shrinking far more slowly than retailers are cutting shelves; some of the pullback is a merchandising choice, not measured demand destruction; and the clearest first-party read (Destination XL) frames it as customers *deferring* purchases mid-weight-loss, not disappearing. *Verdict:* **partially proven** — direction real, magnitude overshooting the underlying demographic; the honest word is *deferral*, not *apocalypse*.

"GLP-1s are collapsing the alcohol industry" — a real decline, a disputed share. *For:* US spirits and wine volumes are genuinely weak (wine near a multi-decade low), among users who cut back the reductions are steep, and Section 10's clinical trials now supply a *plausible mechanism*. *Against:* the decline plainly *predates* GLP-1 scale — participation was falling for years before the drugs — and EY's attempt to isolate the drug's own contribution sizes it at only about 0.2 percentage points a year, a *minority* of the total drop, with affordability and generational change doing most of the work. *Verdict:* **real decline, EMERGING GLP-1 share** — the drugs plausibly *accelerate* a trend they did not create.

"Snacking and packaged food will collapse" — a two-tier truth. *For:* the per-user, per-household cuts are measured and real — savory snacks, soda, and sweets fall double digits inside a user's basket, and credible projections put the category impact in the tens of billions of dollars a year by the early 2030s. *Against:* the issuers themselves report almost none of it at the top line — PepsiCo attributes softness to affordability, Mondelez models a ~1–1.5% volume drag *over a decade* — because a large per-user cut, spread across a still-minority of households, is a fraction of a percent of a $2.5-trillion food economy. *Verdict:* **true within user baskets, false at the market level.** The gap between those two is the whole story of this study.

"The diet industry will die" — refuted; it converted. *For:* WeightWatchers did file for bankruptcy in 2025, and the classic points-and-meetings model is genuinely impaired. *Against:* WeightWatchers re-emerged in six weeks as a telehealth-GLP-1 business, Noom launched a medical arm, and the whole sector repositioned as the delivery-and-support layer around the drugs — a *growth* lane, not an extinction. *Verdict:* **overstated** — a repositioning, not a death.

"Sweeping healthcare savings, now" — modeled, and contradicted by the only real-world data. *For:* optimistic models (USC Schaeffer) project hundreds of billions in long-run value, and the disease-specific trials behind them are real (Section 7). *Against:* the Congressional Budget Office scores broad Medicare obesity coverage as a *net cost* of about $35 billion over a decade, and the only large real-world claims analysis pointing this way (Prime Therapeutics) found non-diabetic users cost about $4,200 *more* in year two with no measured event reduction — while discontinuation quietly destroys the modeled savings. (Note the honest tension of Section

20: a sponsor-conflicted study, Aon, found the opposite; the independent evidence still points to near-term cost.) *Verdict:* **not proven near-term** — a bet with a decade-plus horizon, not a realized line item.

"GLP-1s will cut airline fuel costs" — the poster child of over-extrapolation. *For:* the arithmetic is clean — a ten-pound drop in average passenger weight would trim aircraft weight and could save the big US carriers a few hundred million dollars a year in fuel. *Against:* the ten-pound *population-average* input is aggressive when only a few percent of adults are on the drug and fewer fly, a realistic figure roughly halves it, airlines would refill freed capacity, and *no carrier has ever booked such a saving*. *Verdict:* **SPECULATIVE**, arithmetic-capped at well under 1% of fuel spend — real math, negligible and unrealized effect.

"A supercharged love life and an epidemic of Ozempic divorces" — a discourse with no population signal. *For:* survey respondents report real effects on dating and confidence, and the Diamond quasi-experiment (Section 19) does find genuine gains in new-relationship formation. *Against:* the "divorce" storyline is sourced overwhelmingly to law-firm content marketing and lifestyle essays, no registry or cohort isolates a GLP-1 effect, the survey data split both ways on direction, and the one quasi-experiment actually found *existing partnerships intact* — mild disconfirmation. *Verdict:* the *positive* dating/economic-standing effect is **EMERGING** with real support; the "divorce epidemic" is a **SPECULATIVE** narrative with, if anything, disconfirming evidence.

The common thread across the misses is a failure to respect *scale*, *confounding*, or *durability*. Any future GLP-1 claim should be run through those three filters first — but the honest update, following the data, is that the addiction and relationship-standing stories have crossed from "hype" into "emerging evidence," even as the airline, snack-collapse, and divorce stories have not.

29 · Scenario analysis: what if usage doubles or triples?

Everything in this study is a snapshot of a world where about one adult in twenty-five is actively treated. What changes as that grows? The effects scale **unevenly and non-linearly**, governed by four hinges: **persistence** (do people stay on?), **price and the oral shift** (does it get cheap and easy?), **coverage** (does someone else pay?), and **next-generation efficacy** (do the drugs get materially better?). Three scenarios bound the range.

THREE SCENARIOS TO 2030

STALL (persistence stays low, coverage keeps retreating). Active users plateau near today's ~10–15M. Consumer effects stay "detectable at the margin"; the medical and surgery-displacement effects persist because they don't need mass penetration; the pharma prize is capped by price competition. Most consumer-doom theses simply never arrive.

BASE (usage roughly doubles to ~20–30M as orals and cash-pay widen access). The already-clear effects deepen — surgery displacement, protein demand, the aesthetic cohort, medical-cost pressure. Diffuse consumer effects (grocery, restaurants, alcohol) grow from

"detectable" toward "material" but remain a minority of any mass market. Obesity-as-disease becomes the default public understanding.

HIGH (usage triples+, ~50–70M, on cheap orals and better drugs). Only here do the macro effects — GDP and productivity uplift, a real test of health-system savings, pharma-margin compression from price wars, and measurable commodity/agriculture effects — scale non-linearly. Even then, the novelty effects (airline fuel) stay negligible, and the consumer-category effects saturate rather than compound, because a person can only shrink their basket once.

The taxonomy: effects that scale *non-linearly* (fiscal, GDP, pharma margins, commodity demand) appear only in BASE→HIGH; effects that *saturate* (grocery, apparel, restaurants) grow then flatten; effects that stay *negligible* (airline fuel, theme parks) never matter. The most consequential doubling is again medical, fiscal, and cultural, not consumer.

The reason to run this exercise is that the effects an investor or policymaker actually cares about — fiscal cost, macro labor supply, pharma margins, commodity demand, and the alcohol share — are precisely the ones that are near-zero today and turn material only as use scales. Federal fiscal cost is superlinear in coverage: the CBO's ~$35 billion net figure is scored *without* a full Medicare obesity unlock, so a real unlock is multiples higher. Macro GDP needs tens of millions of *durable* users to move at all (Section 30). Pharma margins compress non-linearly once cheap orals and generics reach scale; commodity demand shows threshold effects only at sustained high penetration; and the GLP-1-attributable share of the alcohol decline could move from "accelerant" toward "material driver" if penetration doubles among heavier drinkers. By contrast, the loud consumer stories — grocery, snacks, restaurants, apparel — *saturate*: they are concentrated in higher-income early adopters and largely front-loaded (a person shrinks their basket once, replaces a wardrobe once), so extending the drug to more users adds less per user, and the aggregate stays low-single-digit even in the base case.

The crucial, and perhaps counterintuitive, conclusion is that the doubling to roughly 20–30 million active users is a realistic 2028–2030 base case, reachable on the access-and-price engine already turning on — oral drugs, the 2027 IRA price, PBM formulary re-expansion, and the new Medicare copay pathway — *without* needing the full statutory Medicare obesity unlock the high scenario would require. And that base-case doubling is exactly what flips the fiscal, macro, pharma-margin, commodity, and alcohol effects from negligible to material, while the consumer-collapse headlines stay bounded in every scenario. The asymmetry is the finding.

30 · Macro and global: GDP, the food system, and the world beyond America

The GDP story is a model resting on one big assumption. At the macro scale the estimates are all *modeled* and should be read as scenarios, not forecasts. Goldman Sachs's headline — a US GDP uplift of about 0.4% in a base case and over 1% in a high-penetration case — is worth unpacking, because its mechanism is fully specified and its load-bearing assumption is exactly the one this study keeps flagging. The model starts from academic estimates that obesity

reduces per-capita output by roughly 3% (about 1.2 points through lower labor-force participation and 1.9 through lower productivity), then multiplies that by projected users (30 million in the base case, up to 60 million) times effectiveness (70–90%). Every term after "reduces output by 3%" is a *projection*, and the whole result is a one-time level shift contingent on tens of millions of *durable* users — a condition today's persistence and access do not yet meet, and which Goldman itself has repeatedly revised. Grade: **PLAUSIBLE** as a model, unrealized as a fact.

Against that optimism sit the measured anchors — and they are humbler. The Congressional Budget Office's fiscal score is the authoritative counterweight: covering anti-obesity drugs in Medicare *raises* net federal spending by about $35 billion over 2026–2034, with health savings under 3% of the drug cost inside the window — the official scorekeeper modeling the cost curve bending the *wrong* way. The one rigorous *labor* result remains the Danish register study's ~17% cut in long-term sickness absence, paired with its finding of *no* effect on income, employment, or participation — fewer sick days, not more workers or higher pay. The first large *randomized* productivity read outside Denmark, a UK pragmatic trial (SURMOUNT-REAL) measuring work productivity and employment alongside clinical outcomes, only began enrolling in late 2025 and will not report for years; the US flagship is manufacturer-sponsored and not yet reporting. Until those land, the productivity dividend is projection; the sick-day reduction is the measured ceiling.

The clearest measured macro effect, tellingly, is not the one the models talk about — it is Denmark. There is one place where a GLP-1 macro effect is unambiguously *measured*, and it is a production story, not a population-health one. Novo Nordisk's revenues have run near a tenth of Danish GDP, and for stretches of 2023–24 the company was worth more than Denmark's entire annual output. The dependence is measurable in both directions: Danish GDP rose about 3.6% since late 2021, but growth would have been near *zero* without pharmaceutical-manufacturing output, and when Novo stumbled in 2025 the country's growth forecast was cut from 3% to 1.4% before recovering. The instructive contrast for this whole study is that the biggest *realized* GLP-1 macro effect on Earth is a drug-*production* and *export* boom concentrated in one small economy — highly measurable — while the population-health productivity dividend that dominates the bullish macro case remains almost entirely *modeled*. The supply side is real and countable; the demand side is a forecast.

The global and equity dimension is where the story is most one-sided — and about to bifurcate sharply. The United States is in a league of its own — roughly 12% of adults versus about 2% in Europe and a rounding error elsewhere, gated by public budgets rather than demand. That is now changing fast at the low end: **semaglutide's patents began expiring outside the US and EU in 2026** — Canada in January (the first G7 market), India in March, with China, Brazil, Mexico, Türkiye, Saudi Arabia, and South Africa in the same wave, together covering something like 40% of the world's adults with obesity — while US and EU protection runs to about 2031. Indian generics launched at up to ~92% below the branded price. The access implication is striking: a *Lancet* analysis estimates generic injectable semaglutide could eventually be produced for as little as **~$28 per person-year** and reach roughly 160 countries covering about **84% of the global obesity burden** by the end of 2026. Yet the WHO's 2025 essential-medicines listing covers GLP-1s for *diabetes*, not obesity — so the near-term global equity story is a diabetes-access story first, with obesity access still gated. The likeliest global

future is therefore a bifurcated one: branded, expensive, and insurance-gated in the US to about 2031; increasingly generic, cheap, and public-health-driven elsewhere from 2026 — an upside to global *access* that is simultaneously a downside to global *branded revenue* (Section 23). And the food-system macro effect, often invoked, stays real but small in every version: the commodity exposure sits well under 2% of a $2.5-trillion US food base and is swamped at the farm gate by weather, trade, and biofuel policy.

31 · Conclusions

GLP-1 drugs changed appetite and body weight first. This study set out to ask what those changes are doing to everything else, and to grade each answer honestly rather than dramatically. Seven conclusions hold up across the expanded evidence.

1. The primary economic event is already historic — and it lives inside pharma, not the supermarket. Before any downstream sector bends, the drug market itself has produced one of the largest wealth transfers in the history of consumer medicine: the GLP-1 class accounted for roughly a *quarter to a third* of all US drug-spending growth in 2024, Eli Lilly became the first health-care company ever worth a trillion dollars while Novo Nordisk shed some $400 billion, and a single molecule now generates revenue on the scale of an entire large-cap company. That is measured, and it is the real "economic force." The comparisons to the iPhone are, on inspection, an advocacy-group revenue benchmark and a bank's smartphone-style S-curve — powerful framings, but the rigorously measured claim is simpler: this is close to the fastest, largest drug launch in history.

2. The medical downstream is proven and large; the consumer downstream is real but small — and, importantly, it *relocates* more than it *destroys*. The trials are not in doubt, and neither is the displacement of roughly a third of bariatric surgeries. The supermarket, the bar, and the clothing rack have bent, not broken — and the sharpest 2026 finding is that demand *moves* (out of center-store groceries and alcohol, into restaurants, protein, and new-size wardrobes) rather than vanishing.

3. Attention has badly outrun impact — but the evidence is catching up in two places. The sectors with the most coverage still rest on some of the weakest evidence. Yet following the data honestly means updating: the *addiction* story (now four positive alcohol trials, a ~50-trial pipeline, and a Phase-3 readout pending) and the *relationship-and-economic-standing* story (now a genuine quasi-experiment) have crossed from hype into emerging evidence — even as the airline-fuel, snack-collapse, and "Ozempic divorce" stories have not.

4. Three filters still explain the over-claiming. Scale, confounding, and durability account for nearly every remaining gap between narrative and evidence — the small-user-base arithmetic, the pre-existing trends in alcohol and retail, and the roughly half of users who stop within a year.

5. For the professional, the confident signal is in medicine, pharma, and policy — and the map is mostly two-sided. Lilly's ascent, Novo's stumble, the surgery decline, the device split (Inspire down, ResMed up), the measured apparel size-curve, and above all the payer story — a

bifurcating coverage landscape and a three-front price collapse — are documented. "Which snack stock is doomed" remains, on current evidence, premature; the durable winners are the makers, aesthetics, off-price and fast-casual, and the low-cost cash-distribution channel, while the clearest losers are plus-size retail and one sleep-apnea device.

6. The next chapter turns on a doubling that is realistically reachable — and that is what makes the macro effects matter. A doubling of US use to ~20–30 million people by 2028–2030 is a plausible base case on the access-and-price engine now switching on (oral drugs, the 2027 IRA price, PBM re-expansion, a new Medicare copay pathway) — *without* the full Medicare obesity unlock that a tripling would need. And it is precisely that base-case doubling that flips the effects a policymaker cares about — fiscal cost, labor supply, pharma margins, commodity demand, the alcohol share — from negligible to material, while the consumer-collapse headlines stay bounded. The largest *measured* macro effect so far, tellingly, is not a health dividend at all but Denmark's drug-production boom.

7. The deepest change may not be economic at all — and it is contested, not settled. For the first time, medicine can treat obesity as a disease of biology rather than a failure of will. But the reframing is winning in institutions while lagging on the ground: disease-framing advances even as public coverage retreats, the biology narrative dominates clinicians even as lay belief in willpower persists, and "Ozempic" enters the dictionary shortlist even as most users hide their use. That unresolved argument, still early, may outlast every quarterly earnings effect in this study.

These began as medicines, and their effects did not stop at the pharmacy counter. Traced carefully, the ripples are so far narrower, slower, and more uncertain than the wave of coverage suggests — but they are widening, and the honest forecast is not "nothing happened" but "the measured effects are concentrated in medicine and pharma today, and are one realistic doubling away from becoming macro." That gap — between a story that is already culturally enormous and consequences that are, for now, mostly contained but no longer static — is itself the most important finding.

Part VI · Apparatus

The single figure that best summarizes this study places every major proposed effect on the evidence scale. Read left to right, it is a ranking of what to believe.

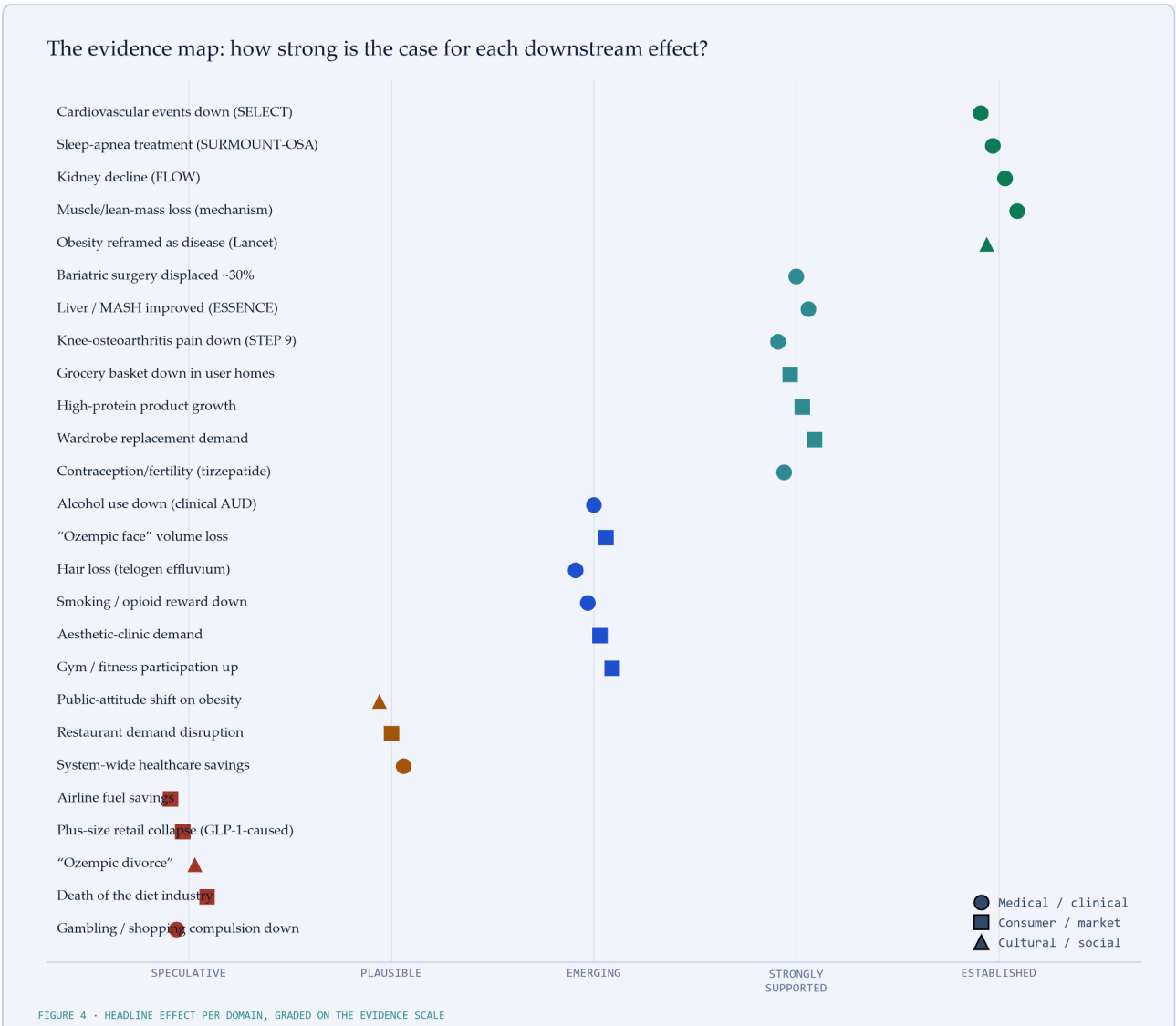

FIGURE 4 · HEADLINE EFFECT PER DOMAIN, GRADED ON THE EVIDENCE SCALE

FIGURE 21 · The evidence map. Every headline downstream effect, graded on the five-step scale and colored by strength, shaped by domain (medical, consumer, cultural). Effects on the right are backed by clinical trials or hard administrative data; effects on the left are hypotheses the data do not yet support. Note the geography: the *established* cluster is medical; the *speculative* cluster is consumer and cultural — the inverse of where public attention concentrates.

32 · Methodology

This study was produced by a **compile → analyze → synthesize → write → verify** pipeline over an existing research corpus, not from scratch.

The corpus. The evidence base is the `peptide_news_07` PostgreSQL corpus, a therapeutic-peptide journalism database of **32,659 news articles** (26,866 full-text) and **18,147 social-media posts**, together with its analytical layer built specifically to study GLP-1 secondary and tertiary effects. Within it, **8,414 full-text articles** are deterministically tagged into twelve downstream-effect sectors. All figures describing "coverage," "attention," or article counts are our own measurements of this corpus.

How the corpus was used — and not used. The corpus is a **discovery layer**, not a citation layer. Its sector tags reveal where coverage concentrated and which figures and named primary sources are circulating; but it is composed of media claims, and many immediate outlets are low-reliability aggregators. We therefore did **not** cite the corpus's news outlets as authorities. Instead, every quantitative claim used in the study was traced to and verified against its **primary source** — a clinical trial, government survey, regulatory filing, company disclosure, medical-society dataset, or named academic/analyst study — captured with a URL and date.

External verification, in two waves. A first wave of seven research passes established the baseline sector evidence; a second, deeper wave of eight passes added investor- and clinician-grade depth (company financials and tickers, additional trials, sub-sector granularity, international data, macro models, and the scenario analysis). All fifteen sourced evidence packets are retained alongside this study (Appendix C). Several corpus-circulating claims were **corrected** in the process — most notably the widely repeated "35% of food and beverage by 2030" figure (Circana, about units via demographics, not Morgan Stanley demand) and the attribution of specific alcohol-trial results.

Evidence grading. Every major effect carries one of five grades (ESTABLISHED, STRONGLY SUPPORTED, EMERGING, PLAUSIBLE, SPECULATIVE), and each figure is labeled *measured* or *projected*. Grades reflect the *kind* of evidence: a randomized trial or comprehensive claims dataset can reach ESTABLISHED; a single survey or an earnings-call attribution cannot rise above EMERGING; an analyst extrapolation with no realized data is SPECULATIVE regardless of how precise the number looks.

Charts. The figures are drawn from the corpus (attention, share of voice, social platforms), from verified primary data (the prevalence funnel, the persistence curve), and from the study's own evidence grades (the evidence map), rendered in the South Beach Longevity palette. All corpus charts are cross-sectional, for the reason given under Limitations.

33 · Limitations

- **The corpus is recency-weighted and cannot show trends over time.** It was collected in 2026; more than half its dated articles were published in 2025–2026, and about 9,500 carry no publication date. We therefore deliberately do **not** present any "attention over time" chart — a monthly volume curve would reflect when we *collected* articles, not when the world paid attention. All corpus figures are cross-sectional.
- **Coverage is not impact.** Article counts measure where journalists looked, a poor proxy for where behavior changed.
- **Most consumer-behavior evidence is survey- or attribution-based, not transactional.** Where hard transactional data exist (the Cornell/Numerator grocery study; resale-platform inventory; Circana receipts) we lean on them; where they do not, we say so and grade accordingly.
- **Financial and market figures are point-in-time.** Company financials, valuations, coverage decisions, pricing, and regulatory actions were current as of August 2026 and will date quickly. Tickers and exposures are identified for analysis, not recommended.

- **Some anchors rest on secondary reporting.** A few figures (e.g. the Coresight clothing-size statistic; several 403-gated primary pages such as the CBO and Goldman documents) were verified through reputable secondary citation; these are flagged in the evidence packets.
- **This is a US-centric study.** Prevalence, coverage, and most behavioral data are American; the strongest productivity result is Danish.
- **Not advice.** This is a research and market-intelligence document. It is not medical, investment, or financial advice, recommends no drug or security, and makes no personalized recommendation.

34 · Coverage and provenance statement

This study synthesizes a corpus of **32,659 news articles and 18,147 social posts** on GLP-1 and related drugs, of which **8,414 full-text articles** are sector-tagged as describing a downstream effect; the corpus was collected in 2026 and is recency-weighted, so it represents a large recent sample of coverage rather than a complete or longitudinal census. Corpus outlets skew toward wire, trade, and aggregator sources and were used only as leads; **every quantitative claim carried into the study was verified against a named primary source with a URL and date.** Highest-confidence anchors are peer-reviewed randomized trials (SELECT, FLOW, SUMMIT, SURMOUNT-OSA, ESSENCE, STEP, SURMOUNT, SURPASS, REDEFINE, ATTAIN, TRIUMPH, and the alcohol-use-disorder trials), federal and nationally representative surveys (CDC/NCHS, KFF, Pew, AP-NORC, Gallup), regulatory records (FDA, EMA, WHO, CMS, CBO), large administrative-claims analyses (Prime Therapeutics, IQVIA, Komodo, Truveta, JAMA Surgery, ASMBS), and company disclosures. Known gaps are stated in Section 33. This document contains **no confidential cost or margin data** and is classified shareable. It is a research-only synthesis; causal claims about secondary and tertiary effects are graded, and the many that remain unproven are labeled as such.

35 · Glossary

For the general reader; specialists may skip.

- **GLP-1 (glucagon-like peptide-1):** a gut hormone released after eating that curbs appetite, slows the stomach, and prompts insulin. The drugs are long-lasting copies of it.
- **GIP:** a second gut hormone; tirzepatide targets both GIP and GLP-1 ("dual agonist"), retatrutide adds a third (glucagon; "triple").
- **Incretin:** the family of gut hormones (GLP-1, GIP) that amplify insulin after a meal. "Incretin drugs" is a synonym for this class.
- **Semaglutide / tirzepatide:** the two dominant molecules — semaglutide is Ozempic (diabetes) and Wegovy (weight); tirzepatide is Mounjaro (diabetes) and Zepbound (weight).
- **Compounded drug:** a pharmacy-made copy, permitted during shortages, now largely wound down.

- **MACE:** "major adverse cardiovascular events" — the heart-attack/stroke/cardiovascular-death bundle used in trials like SELECT.
- **MASH:** metabolic dysfunction–associated steatohepatitis — the serious form of fatty-liver disease (the ESSENCE trial's target).
- **Persistence / discontinuation:** whether patients stay on (persist) or stop (discontinue) the drug — the study's "durability" variable.
- **Scanner / panel data:** purchase records from real shoppers (e.g. Numerator, Circana), the strongest evidence for consumer-behavior questions.
- **PBM (pharmacy-benefit manager):** the intermediary (CVS Caremark, Express Scripts, OptumRx) that negotiates drug prices and sets which drugs a health plan covers.
- **Formulary:** a health plan's list of covered drugs; being dropped from it cuts access.
- **Self-funded employer / stop-loss:** large employers who pay their own claims and buy "stop-loss" insurance against catastrophic costs; GLP-1s are straining both.
- **Gross-to-net:** the gap between a drug's list price and what payers actually pay after rebates; list-price cuts can be offset by smaller rebates, leaving net cost unchanged.
- **QALY:** "quality-adjusted life year," the unit health economists use to judge whether a treatment is worth its cost.
- **Estimand:** the precise definition of what a trial measured (e.g. effect assuming full adherence versus real-world); it explains why the same trial is quoted at slightly different numbers.
- **TAM:** "total addressable market," an estimate of a market's maximum size — here, almost always a projection.
- **IRA:** the 2022 Inflation Reduction Act, under which Medicare negotiates certain drug prices (semaglutide's take effect January 2027).

36 · References

Citation method (per the SBL Scientific Monograph Series adaptation of the Radix Peptides Monograph House Style): in-prose citation is author–year or trial-name; the reference list below is numbered and sorted by first-author surname or, for institutional sources, by organization name. Load-bearing primary sources are listed; the **complete** provenance trail — every figure and quantitative claim with its URL, date, evidence tier, and *measured/projected* label — is in the fifteen evidence packets (Appendix C). Peer-reviewed entries carry a linked identifier (PMID or DOI); institutional, regulatory, and company sources carry a title and year with a linked document. For clarity in a study that spans social, market, and clinical evidence, the list is presented in two alphabetical parts: **A**, the society/market/policy sources, and **B**, the science and clinical-foundation sources.

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Company financial and market-structure figures (Sections 8–24) are drawn from the named companies' quarterly investor releases and SEC filings, and from the analyst notes cited in prose; each is documented with its date and source in evidence packets 09–13 (Appendix C). Two device/pharma figures (per-quarter ISRG/MDT bariatric mix; exact Lilly Q2 capex line) are flagged in those packets for confirmation against the source-of-record filing.

37 · Appendices

- **Appendix A — Evidence base (machine-readable).** `evidence/` holds the corpus extractions behind every figure and count: `corpus_overview.json`, `sector_summary.json`, `sector_monthly.csv`, `news_monthly.csv`, `glp1_compound_share_of_voice.csv`, `social_summary.json`, `claims_ledger.json`, `named_source_frequency.json`, `sector_claims.json`.

- **Appendix B — Figures and plates.** The study carries **21 figures in one continuous series**: six authored data exhibits (`figures/`, light and dark editions), seven commissioned scientific plates original to this study (`plates/plate*.png`), and eight scientific plates/charts drawn from the SBL compound monographs (`plates/m_*.png`, Figures 1, 4–10, 14 — the tirzepatide, orforglipron, and retatrutide monographs; Figure 1 is a faithful raster of an authored monograph timeline). Every numeric value printed on a plate was checked against the study's or the source monograph's evidence base; schematic, not-to-scale, and any source-flagged-unverified elements are named in each caption. Monograph plates are SBL-owned original commissioned work reused within the series; no third-party published figure is reproduced anywhere in this study.
- **Appendix C — Verified evidence packets.** `evidence/research/01–15*.md` are the fifteen primary-source verification packets (seven baseline, eight deep) — figures, primary URLs, dates, evidence tiers, and null findings — the full provenance trail behind this study.
- **Appendix D — Reproducibility.** `build_evidence_base.py`, `build_claims_ledger.py`, `build_charts.py`, `build_charts2.py`, `build_evidence_map.py`, `render_editions.py`, and `stamp_running_furniture.py` regenerate the entire evidence base, all figures, and both editions from the corpus. They read the database read-only and never modify it.
