



# GLP-1: Wonder drug and social disruptor?

How GLP-1 drugs could change your business



# Every so often, something comes along and completely reshapes society.

## Sounds like a fantasy? It's happened before.



In 1994, the IBM Simon was launched. Often hailed as the first smartphone, it could not only make a phone call, but also had a touchscreen, calendar and email functions, and the ability to send a fax. Expensive and bulky, it was judged a device only relevant to those in business.

**Boy, were the predictions wrong.** Your slim, lightweight smartphone is probably your personal assistant, your source of entertainment, and your constant companion. And you're not alone – nearly 60% of the global population uses a smartphone.

Smartphones have changed our lives in so many unexpected ways, and the social and psychological impacts have been profound. They facilitate the mundane – ordering meals and rides. They delight and entrance us with curated content and compulsive games. We share information about ourselves and about the world with people we know and people we don't. They even help us monitor our health, track the weather and plan our vacations.

But it's not all been positive. The unforeseen consequences of their wholesale adoption have been many and varied. Time spent on smartphones is time not spent elsewhere. Our relationships are increasingly supported virtually rather than in person. Even in-person time is often in the same space on separate devices – in restaurants, at work, and in our own living rooms. Handheld devices distract drivers, resulting in the deaths of thousands of US citizens each year. Excessive smartphone use by children alters their learning, motivations, and relationships, and may enable 24/7 bullying of others. And on it goes.

## Ozempic. Wegovy. Mounjaro. Semaglutide. Weight-loss drugs. The skinny jab. GLP-1 receptor agonists.

So many names. We'll talk about 'GLP-1 drugs' or 'Ozempic'. When we do, we're referring to all drugs that are active at the GLP-1 receptor.

Does the spectacular rise of GLP-1 drugs foretell social change on a smartphone scale? Initially marketed for treating Type 2 diabetes, they are now indicated for many conditions, with losing weight being the prime social driver of their use. Their ubiquity is affecting many different human behaviors – eating, drinking alcohol, and diminishing cravings of all kinds.



Currently, about 12% of US adults have tried GLP-1 drugs, and as more indications for use come in, this percentage will only increase. Beyond known side effects, we're already starting to hear reports of unintended consequences: more people in the emergency department with dehydration, more people at risk of inhaling stomach contents during surgery. People are finding that their compulsive or addictive behaviors no longer motivate them – sometimes to the extent that they no longer enjoy the food that they're eating.

GLP-1 drugs are likely to be prescribed for an increasing range of conditions, accelerating uptake, but the unintended consequences may reduce their desirability over time. These drugs are certainly here to stay at a population level, but their long-term use at an individual level is uncertain.

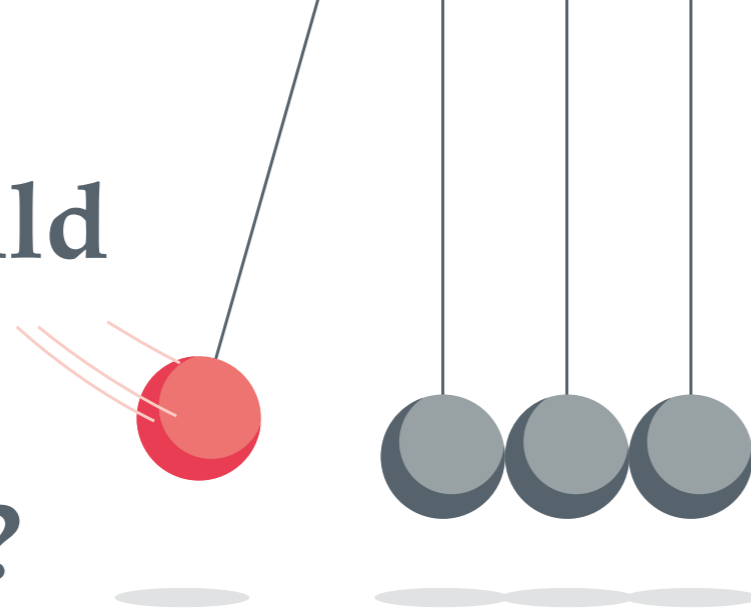
It's not an exaggeration to say that when so many people are using these drugs, almost every industry will be impacted. Think about what happens when the desire to consume is altered at a population level. What happens when many people's needs and desires suddenly change? How might different industries and sectors address these changes?

In this report, we bring together perspectives from different fields, including biology, behavioral science, chemistry, and manufacturing engineering, to look at how these drugs will affect us.

Will GLP-1 drugs have as big an impact on us humans – biologically, socially, and psychologically – as the smartphone?



# What could it mean for your business?



The potential impacts of GLP-1 drugs may be far-reaching. If your industry is on the list, how are you thinking about your business resilience? If not, might you still be affected? How should you respond?



**The food sector** is on the front line. Walmart is already seeing the effects. On any given day, one in three US adults eats fast food, and half of calories consumed in the US come from so-called ultra-processed food. But GLP-1 drugs seem to change food preferences. What does this mean for portion sizes? Taste profiles? Food subsidies and farming? Where's all the corn syrup going to go?

But we don't just eat at home. **The hospitality sector** is wondering how it might tempt people when food and drink are less alluring. Should it too be reducing portion sizes? Creating new, less food-centric experiences to entice people out? What happens to car and gas usage if people are staying home more?



Changing appearance and expectation of appearance could affect both the apparel sector and the beauty sector. **The apparel sector** anticipates more demand for clothing in smaller sizes. Will fast fashion increase to cater for people who are rapidly changing shape?

**The beauty sector** is thinking about the needs of people with 'Ozempic face' – the effect of rapid weight loss on the face. Perhaps this will drive increased interest in skin-tightening treatments, skin hydration, or even cosmetic surgery.

We may find that people are exercising more – either because they're told to do so by their doctor, or because they feel more confident about going to the gym. Or perhaps people may exercise less – they may 'outsource' their health management to the drug or may find that their motivation to exercise is reduced. Either way, **the sport and exercise industry** is likely to see change.

Changes in pain and gastrointestinal symptoms will affect **consumer health companies**. How might altered dietary patterns affect vitamin and mineral requirements?

Major changes in the prevalence of certain diseases, or the age that people are when they develop them, will certainly have effects on **pharma and MedTech companies**. We're already seeing changes in bariatric surgery volumes, but what procedures are going to become more relevant? Similarly, which drugs will be needed more and which drugs less?

It doesn't matter what industry you're in. You don't want to be caught by surprise. Do people buy your products? What could a reduction in impulsive and compulsive shopping mean for **fast-moving consumer goods**? For **luxury goods**? How does that affect industries in their supply chains? What do changes in the food industry mean for **agriculture**?

Let's understand how people are changing and why.



# Who's taking Ozempic?

## What might it mean for them?



### Meet Brandon, Yasmin, Lara, and Jake.



Brandon's been prescribed it to treat his diabetes.

**How has it affected his life?**



Yasmin is buying it to help her lose weight.

**What's her long-term plan?**



Lara's son Carlos has been prescribed it.

**Why does she feel so conflicted?**



Most of Jake's friends are using it.

**How's it affecting him?**

**Brandon, Yasmin, Lara, and Jake will help us think about the biological, social, and psychological effects of GLP-1 drugs.**





## Brandon takes it for his health.

*“I’ve heard horror stories about insurance no longer covering Ozempic once your blood sugars are controlled. I’m so worried what I’ll do without it.”*

Brandon lives with his wife and dog in Arizona. The 52-year-old construction worker lives with Type 2 diabetes. Over the years, he’s been prescribed various medications to try to keep it in check.

Daily insulin injections were the worst, and his weight soared. His endocrinologist then suggested GLP-1 drugs to help him control his blood sugar and lose weight. She said that the latest research shows that the drug will improve his kidney, liver, and cardiovascular health and may even reduce his chances of dementia.

Since starting on Ozempic six months ago, Brandon’s sugars are much better controlled, and he has lost ten pounds. Weekly injections are so much more convenient than daily ones, and he’s enjoying the compliments he’s been getting.

He’s always been a strong guy, but he feels less muscular than he used to. He plans on getting a gym membership in the next couple of months. Trouble is, he often feels so sick in the evenings that he can’t stomach the idea of dragging himself to exercise.

He wonders what will happen with his prescription when his blood sugars are better controlled. Will his insurance continue to pay out in the long term?



*GLP-1 drugs were originally developed to treat diabetes, so Brandon has been correctly prescribed the drug. Today over 10% of the US population has diabetes. Eighty percent of people in the US with diabetes are eligible to take a GLP-1 drug.*

*They are effective drugs but there are noticeable side effects, as Brandon has found. Twenty percent of people taking them report nausea and vomiting. Diarrhea, constipation, skin reactions, headaches and dizziness are also reported. Most of these side effects occur regardless of why people are taking a GLP-1 drug.*

### **One in three people eventually stop taking them. Why?**

- 1. Side effects. These can affect quality of life to the extent that they outweigh the health benefits.*
- 2. Cost. The current cost of GLP-1 drugs can be prohibitive. It currently costs about \$25/month for those with insurance, but can be \$1000/month for those without. Four in five companies in the US will not provide coverage for GLP-1 drugs, and some insurers are increasing premiums because of their use.*

*When these drugs come off-patent the costs may come down, but this will not be for some time: the core semaglutide patents (Ozempic and Wegovy) expire in 2032 in the USA. The patent for Mounjaro expires in 2036. However, patents can always be extended by developing new formulations.*

*The race is currently on to create an effective oral version. So, will prices come down or will there be a race to patent for use in other health conditions and next-generation versions of these drugs?*





## Yasmin takes it for her weight.

*“I feel I’d be judged if people knew I take Ozempic, given my weight isn’t that high, but it’s changed my life. My food obsession has lifted – I can’t remember the last time I craved anything!”*

Twenty-six-year-old marketing executive Yasmin lives with friends in Seattle. She had a tough time last year with problems in her relationship and job. As a result, she put on 20 lb and went up four dress sizes. Appearance matters in her office, and she felt isolated and out of place. She tried every diet under the sun, but the weight wouldn’t budge!

With her best friend’s wedding coming up this summer, she’s desperate to fit into her bridesmaid dress and look great in the photos.

When she first heard about Ozempic, she knew she had to try it. Her insurance wouldn’t pay for it though, so she went online to find the cheapest private deal: \$100 monthly from a compounding pharmacy. She lied about her BMI to obtain the private prescription and has kept it secret from most people. It’s now been five months, and she’s down 10 lb. With only a few months to go, she feels her weight loss has stalled. Maybe it’s worth taking a bit more?

\$100 a month is worth it for the summer, but she can’t afford it long term. She’s dreading losing control of her appetite once she stops the drug, and so she’s been making plans for afterwards. She’s got a new diet plan, and she’s ordered berberine supplements and green-tea extracts, which claim to offer similar effects for lower cost.



*GLP-1 drugs are effective weight loss drugs for people living with overweight and obesity, with over half of people taking semaglutide losing over 15% of their body weight.*

*Most weight loss data comes from people whose BMI is 27 or more. But there’s not much on people with lower BMI. They may lose a lower percentage of their starting weight, and, regardless, the weight loss effect doesn’t continue forever. Yasmin may not achieve her desired weight loss in time for the wedding.*

*Higher doses, and drugs that work on both the GLP-1 receptor and on receptors for other hormones like GIP, may effect even more weight loss. There is a risk that people like Yasmin may end up taking higher doses of the drug without medical supervision.*

*People lose fat, muscle, and bone mass when they take the drugs. This is not surprising – you need less bone and less muscle when you are lighter. Additionally, healthier muscles are more efficient, so don’t need to be as big. Strength training can boost muscle size, and there is commercial interest in muscle retention – drug companies are investigating solutions for this, such as myostatin inhibitors.*

*As Yasmin highlights, people’s eating behaviors change on the drug. The evidence is limited, but studies suggest that people taking GLP-1 drugs may consume less sugar, fat, and protein compared to non-users. So, Yasmin might need to think beyond supplements to ensure her diet is giving her what she needs for long-term health.*





## Lara's son is taking it for his future.

*"I know I should cook more for Carlos, but fresh produce is so expensive. At least his Ozempic might be paid for by my insurance."*

At Carlos's recent pediatrician appointment, Lara was shocked to be told that Carlos had obesity. She knew he was heavy, but he seems healthy and enjoys playing football. The pediatrician recommended trying Ozempic to improve Carlos's future health. Unprompted, Carlos told the pediatrician about how he's been bullied at school about his weight – another shock for Lara. Why had he not told her?

Carlos's pediatrician said it would be better to cook fresh food for him. But Lara doesn't really enjoy cooking, doesn't have much time to cook, and it costs too much, especially if Carlos won't eat the meals she makes for him.

She really wants Carlos to be happy, so she usually gives him what he wants. Her own mom bought ready meals all the time and Lara figured that what was OK for her would be OK for Carlos.

Lara's torn. She wants her bright, beautiful son to feel happy and confident, but she's worried about her insurance coverage and the ongoing costs of medication. And she feels horrified about how weekly injections and long-term medication will affect her child. He's not even reached puberty.

What will taking a drug long-term do to his mental and physical health?



*One in six children live with obesity. Carlos's situation raises an ethical issue. Should children be given a drug that they may have to stay on for the rest of their lives?*

*In 2020, the FDA approved the first GLP-1 for adolescents with obesity. The American Academy of Pediatrics guidelines say that physicians should offer GLP-1 drugs to children from the age of 12 with obesity.*

*However, staying on the drugs for long periods may have unintended consequences because children's bodies are still growing. Altering brain function and nutrient availability may have long-term effects on the adult body, such as by affecting bone or muscle development or by altering reward mechanisms during puberty.*

*And risks are not only physical. During adolescence, young people are particularly self-conscious about their appearance. Some may feel pressurized into using the drug to fit in with their friends.*

*These, and other, issues raise many questions for children like Carlos. How long should they take the drug for to get the most benefit for the least harm? How do we help people coming off the drug to avoid rebound weight gain? Ongoing research is looking into the possibility of 'tapering off' GLP-1 drugs to achieve this. Nevertheless, lifestyle changes are likely to be required to support the weight loss in the long term.*

*If GLP-1 drugs are going to be used for diabetes control and weight loss, future research may consider alternative dosage regimens. Could we see a return to cheaper (but less potent) versions of the drug, like exenatide?*





## Jake's friends are taking it.

*“Life was a lot more fun before all my friends starting on the skinny jab. Maybe I’ll find new hobbies I can do on my own.”*



**Kate**

last seen today at 11:02am

Hey! How's things?

OK but still waiting for my Ozempic to come through. My pharmacy's out of stock!

That's because you and all your friends are on it. No wonder they're out!

Haha very funny. It's actually so good. Zoe's lost tons of weight and feels like a whole new person. Mike too but he's feeling sick all the time. I think he saw a TikTok about microdosing. I kind of feel sorry for Marsha too because her insurance won't cover it, but she says she's trying to get it some other way 🤔

You guys are way less fun than you used to be!

Last week I watched you all pushing lettuce leaves round your plates! Mike even quit drinking. What am I going to do? 🤔

We can still go out and have fun!

Only if you guys have the energy! Might have to start buying you guys protein shakes or something

Don't be a buzzkill - we can still have a good time 🤔

I think it's cheating. I'm sticking to exercise and eating more fruit and veg



*The growth rate for GLP-1 drugs has been spectacular. Between 2015 and 2020, the annual growth rate for prescriptions was 25%. Future growth will be driven not only by increased market penetration but also by potential new markets – alcohol addiction, pain management, and even treatment for Alzheimer's disease.*

*Oral versions are also anticipated to grow rapidly from 2025 to 2030 (CAGR of 16.7%). Novo Nordisk's 'Rybelsus' tablet is on the market and other companies are developing oral forms. The global GLP-1 market size has been predicted to reach \$157.5 billion in 2035. For contrast, that's bigger than the current market for watches.*

*No wonder Kate's finding that availability is limited. In a 2024 US consumer survey, 28% reported that lack of supply was the main reason for not yet starting GLP-1 drugs.*

*Manufacturing capacity is growing in response to the surge in demand. For instance, Eli Lilly has invested more than \$18 billion in manufacturing, and Novo Nordisk recently bought three aseptic fill-and-finish manufacturing sites.*

*More people are buying GLP-1 drugs on the illegal market and taking them without supervision. Counterfeit GLP-1 drugs, though cheaper, may be ineffective, unpredictable, or harmful.*

*Anecdotally, the medical side effects are just the tip of the iceberg. People talk about the 'Ozempic personality' as the drug works to reduce cravings in more than just food. Jake is finding that his friends aren't as much fun as they used to be. The link between GLP-1 drugs and mental health problems is controversial, but do they make it harder for people to find pleasure in different parts of their lives?*

*And what about the moral divide? Jake thinks his friends are cheating by using GLP-1 drugs. Could this be part of a new culture war?*



# How do GLP-1 drugs drive all these effects? It's not just about the gut.

The drug is absorbed from injection or tablet

How do GLP-1 drugs affect how a person feels?

### Food

- Reduced appetite and cravings
- Higher levels of satiety
- Lower energy intake
- Altered dietary preferences

### Other

- Reduced cravings
- Reduction in impulsive and compulsive behaviors
- Reduction in addictive behaviors

The drug reduces the **activity of dopamine neurons** in parts of the brain that drive motivation, reward, and decision-making.

This affects reward processing in the **orbitofrontal cortex**.

This affects appetite regulation in the **hypothalamus**.

This affects emotion and memory processing in the **amygdala**.

This affects sensory processing in the **insula**.

The drug alters secretion of pancreatic hormones, including insulin.

**The drug slows stomach emptying**  
This can result in nausea, burping, and even vomiting.

**The drug alters how the gut moves**  
This can result in diarrhea and constipation.

How do GLP-1 drugs affect the brain?

How do GLP-1 drugs affect the gut?

# What might happen?

The future is never certain.



Currently, roughly one in ten US adults has taken GLP-1 drugs.

## What could the future look like?

Widespread use is likely.



High usage could be driven by more reasons to take GLP-1 drugs, greater access, and easier ways to take them.

Might everyone be on the drugs? Unlikely, but many could be. Not only people living with Type 2 diabetes or obesity, but probably also people with diseases of the heart, kidney, and brain. Oral formats will be easier to take than injections. Current growth is restricted by cost and insurance coverage, but both will change over time. Semaglutide patent protection in different regions will expire over the next seven years.

But it's not a given.



However, known side effects or media scares could limit the numbers taking the drugs.

One in three people stop taking GLP-1 drugs – side effects and cost are important reasons. This means that for many people the downsides outweigh the benefits, and this could curb use at a population level. Some people may prefer alternative 'natural' solutions over pharmacological ones. Over time, the manufacturers may find ways to reduce the side effects through formulation, behavior change, or different dosage schedules. But, even if addressed, both rumored and real downsides could limit uptake.



Rare or long-term side effects may take time to emerge and could limit the numbers taking the drugs.

It's also possible that certain side effects of GLP-1 drugs will only become apparent after prolonged use – as with the proton-pump inhibitors used for heartburn. In this case the drugs would still be used, but for a shorter period of time or only in a more specific group of people.



# Where to start?

The soaring use of GLP-1 drugs could result in the same sort of social, psychological, and economic disruption as the uptake of the smartphone: a major benefit but with unexpected consequences.

This magnitude of change can be threatening, but along with threats there are always opportunities.

**Where do you start? Is this issue even on your radar?**

## When people come to us, we say:

First, take the time to **understand** how the widespread use of GLP-1 drugs could impact your business.

- Will it impact all or only some of your consumer base? Will they behave differently? And if so, how?
- Could your market shrink?

Second, **explore** the wide range of solutions you could develop to address the new needs of your consumers who take GLP-1 drugs.

- Which needs should you address?
- What is the range of solutions you can provide?

Finally, **decide** which solutions you should offer.

- Is the market big enough to be worth developing the new product or service for the new needs of people taking GLP-1 drugs?
- Or can you modify or enhance-an existing product or service?

The Innovia team thinks about this a lot. Our experts understand how these drugs work, how people work, and how innovation works. We help people in many different industries with their innovation challenges.

**Can we help you? Let's talk!**

Start the conversation here: [glp1@innoviatech.com](mailto:glp1@innoviatech.com)



# New to Innovia?

We help our clients to outperform their competitors and change the world for good through breakthrough innovation. We want to be your best innovation partner. We've been making this happen for 25 years, working for the world's biggest companies on their most demanding challenges. Clients tell us that we have a unique view of the challenges and opportunities developments such as GLP-1 drugs bring.

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## What makes us unique?

**We call it holistic innovation.** We bring together different perspectives from the start, and throughout, to ensure the best chance of success.





# Contributors.

This has been a joint effort by a group of people at the front line of Innovia's innovation efforts, directed at Innovia's own transformation and also for current clients.



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Innovia Technology works with the best companies in the world on their most demanding innovation challenges. We specialize in breakthrough innovation, working holistically to bring together multidisciplinary teams spanning life sciences, behavioral science, business strategy, engineering, chemistry, physics, and design. We work across a wide range of sectors, including FMCG, pharmaceuticals, industrial biotechnology, medical, food, energy and transport, and apparel.



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