IMPLAN

GLP-1 | IMPLAN ANALYSIS

The Multi-faceted Economic Impacts associated with the Surging Use of GLP-1 Medications

Introduction

A new class of obesity medications known as GLP-1s has taken the U.S. by storm, with 10 million Americans having already taken the medications and 5 million still currently taking them. Beyond the obvious impacts on physical health, the rising use of these medications in the U.S. will have varied implications for the U.S. economy – including Increased revenues for pharmaceutical companies, a reduction in obesity-related healthcare costs, shifts among the types of foods purchased, an overall decrease in food and alcohol consumption, and even a possible boost to worker productivity.

With the exception of the possible boost to worker productivity, each of the other changes will have ripple effects throughout the U.S. economy by way of changes in input purchase patterns, changes in employment and wages, and associated changes in household spending. Due to the mix of negative and positive impacts, the overall impact to the U.S. economy will be fairly minor (a roughly 1% drop in GDP), and there will be substantial variations among industries, with some experiencing net growth and other experiencing net decline, all else equal.

Quote from Jenny Thorvaldson, IMPLAN's chief economist and data officer: "This report was particularly nuanced because there are so many wide-reaching impacts of GLP1 use - both positive and negative. For example, it's positive that we're spending less on obesity-related healthcare services, but for some industries like dairy production for ice cream, they're going to see a negative outcome. It will be fascinating to see how the continued use of these medications will impact our economy."

Key Findings of Economic Impact Analysis

Changing Food Consumption Levels and Patterns

IMPLAN analysis reveals that the food production industry has an extensive supply chain. If all projected users of GLP-1s were to adopt the same changes in food expenditure behavior reflected in the Morgan Stanley survey, more than 50 industries would experience a net loss of revenue of greater than $5 million just in terms of indirect (supply-chain) impacts. These losses grow when including the

induced impacts (the additional changes in household spending due to loss of labor income) and the list of industries experiencing a net loss of revenue of greater than $5 million expands to include household expenditure categories like healthcare.

Top Indirect Revenue Losses from the Change in Food Expenditures

Industry	Indirect Output Change
Grain farming	($61,797,187)
Other real estate	($44,366,355)
Management of companies and enterprises	($41,135,723)
Wholesale - Grocery and related product wholesalers	($40,103,782)
Truck transportation	($31,250,453)
Dairy cattle and milk production	($29,158,505)
Wholesale - Other nondurable goods merchant wholesalers	($25,682,269)
Paperboard container manufacturing	($25,119,215)
Soybean and other oilseed processing	($24,143,436)
Flour milling	($21,002,159)
Monetary authorities and depository credit intermediation[1]	($20,064,996)
Wholesale - Machinery, equipment, and supplies	($19,716,873)
Wet corn milling	($19,608,336)
Plastics bottle manufacturing	($19,422,136)
Cheese manufacturing	($18,796,923)
Petroleum refineries	($18,606,089)
Electric power transmission and distribution	($18,341,236)
Flavoring syrup and concentrate manufacturing	($17,530,820)
Oilseed farming	($15,106,231)
Petrochemical manufacturing	($14,974,012)
Warehousing and storage	($14,021,411)
Metal cans manufacturing	($13,234,468)
Employment services	($13,149,210)
Wholesale - Other durable goods merchant wholesalers	($12,988,161)
Insurance agencies, brokerages, and related activities	($11,949,068)

Other basic organic chemical manufacturing	($10,966,713)
Semiconductor and related device manufacturing	($10,805,092)
Rail transportation	($9,590,148)
Internet publishing and broadcasting and web search portals	($9,184,405)
Insurance carriers, except direct life	($8,915,820)
All other food manufacturing	($8,677,184)
Fats and oils refining and blending	($8,432,470)
Plastics material and resin manufacturing	($8,148,375)
Advertising, public relations, and related services	($7,936,684)
Data processing, hosting, and related services	($7,828,325)
Marketing research and all other miscellaneous professional, scientific, and technical services	($7,823,203)
Oil and gas extraction	($7,810,887)
Accounting, tax preparation, bookkeeping, and payroll services	($7,767,850)
Fruit farming	($7,063,075)
Legal services	($6,929,340)
Couriers and messengers	($6,895,870)
Plastics packaging materials and unlaminated film and sheet manufacturing	($6,803,150)
Glass container manufacturing	($6,754,887)
All other crop farming	($6,497,713)
Management consulting services	($6,398,428)
Services to buildings	($6,355,528)
Wholesale - Wholesale electronic markets and agents and brokers	($6,125,721)
Support activities for agriculture and forestry	($6,054,036)
Electric power generation - Fossil fuel	($6,021,669)
Other aluminum rolling, drawing and extruding	($5,920,536)
Maintenance and repair construction of nonresidential structures	($5,839,772)
Wholesale - Professional and commercial equipment and supplies	($5,429,024)
Natural gas distribution	($5,324,078)
Lessors of nonfinancial intangible assets	($5,235,342)

Radio and television broadcasting	($5,198,711)
Wholesale - Household appliances and electrical and electronic goods	($5,172,673)
Other plastics product manufacturing	($5,108,513)
Sugar cane mills and refining	($5,078,988)
Other local government enterprises	($5,067,517)

Ten industries are expected to experience net positive impacts (direct + indirect + induced) from increased interest in healthy foods. The net impacts across all industries associated with the changes in food expenditures is estimated at $2.69 billion in total output (value of production).

Industries Expected to Experience Net Positive Impacts

Industry	Total Output Impact
Poultry processing	$73,943,733
Poultry and egg production	$32,997,351
Vegetable and melon farming	$29,599,439
Frozen fruits, juices and vegetables manufacturing	$10,418,398
Seafood product preparation and packaging	$7,953,763
Fruit farming	$6,148,316
Other animal food manufacturing	$3,376,436
Commercial fishing	$360,330
Meat processed from carcasses	$81,679
Commercial hunting and trapping	$64,141

Increased Production in the Pharmaceutical Industry

IMPLAN analysis reveals that the increased production in the pharmaceutical manufacturing industry would boost output in a wide variety of industries, not only in the expected direct suppliers to the pharmaceutical industry, like medicinal and botanical manufacturing, biological product manufacturing, and chemical manufacturing, but also in a wide array of other industries along the entire supply chain, from wholesale and transportation to advertising and commercial real estate.

IMPLAN

IMPLAN estimates the total indirect and induced output across all industries associated with the boost to pharmaceutical production at $125 billion.

Top Industries Indirectly Impacted by Boost to Pharmaceutical Production

Industry	Indirect Output Change
Wholesale - Drugs and druggists sundries	$11,444,608,345
Medicinal and botanical manufacturing	$8,318,142,724
Management of companies and enterprises	$4,931,780,725
Biological product (except diagnostic) manufacturing	$3,199,068,045
Other basic organic chemical manufacturing	$2,491,235,709
Petrochemical manufacturing	$2,384,163,155
Other real estate	$1,698,350,728
Advertising, public relations, and related services	$1,531,664,086
Internet publishing and broadcasting and web search portals	$1,523,767,399
Wholesale - Other nondurable goods merchant wholesalers	$1,459,391,098
Truck transportation	$1,281,985,679
Petroleum refineries	$1,249,264,396

Reduced Obesity-Related Healthcare Costs

IMPLAN analysis reveals that the reduction in healthcare spending would reduce output in industries ranging from real estate to insurance, legal services, medical laboratories, wholesaling, accounting services, and more. IMPLAN estimates the total indirect and induced losses across all industries associated with the reduction in healthcare spending at $420 billion.

Top Industries Indirectly Impacted by Reduction in Healthcare Spending

Industry	Indirect Output Change
Other real estate	($15,029,787,685)
Employment services	($9,390,836,891)
Insurance carriers, except direct life	($7,932,051,337)

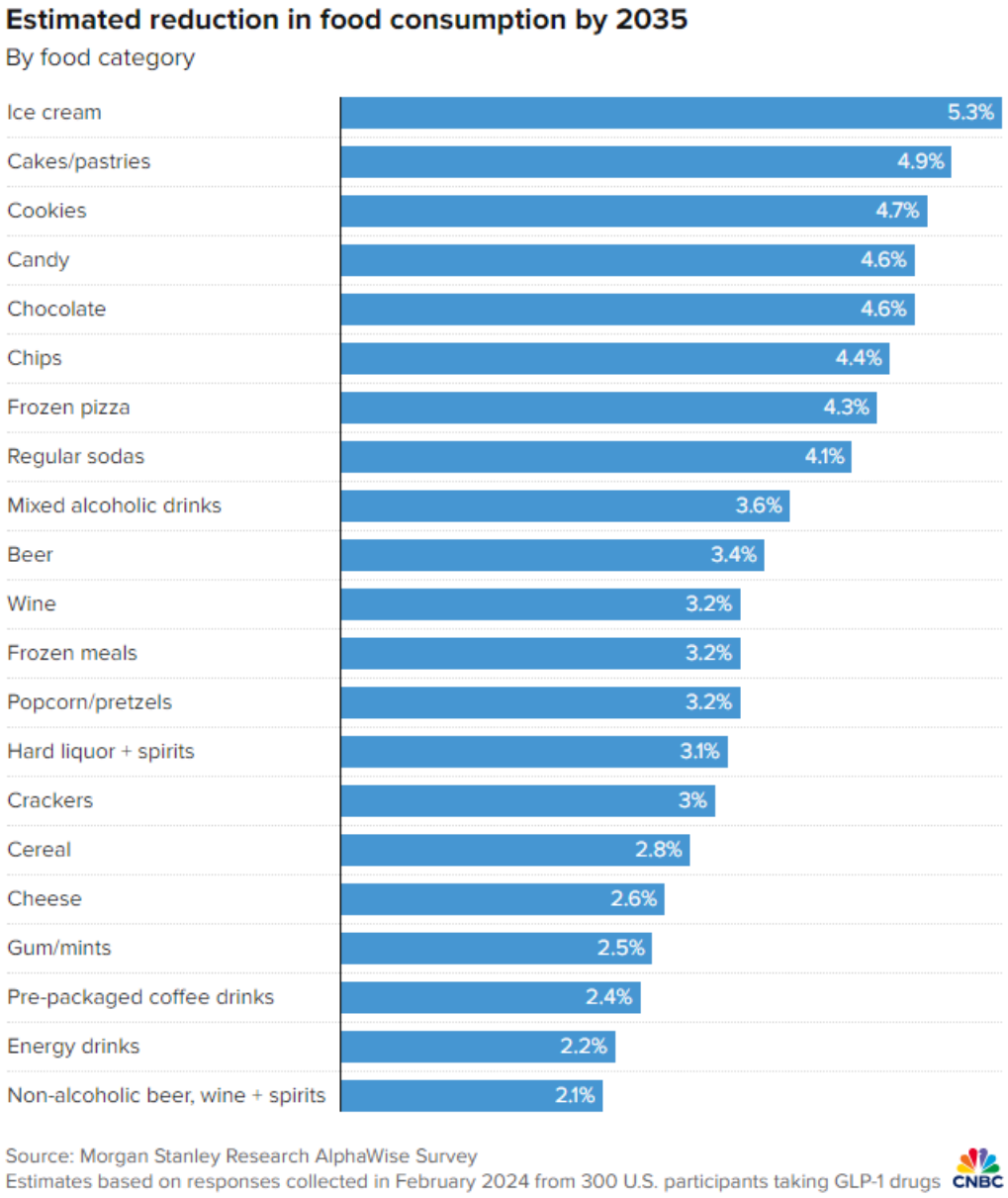
Management of companies and enterprises	($6,174,034,782)
Management consulting services	($4,631,642,339)
Insurance agencies, brokerages, and related activities	($4,296,341,875)
Monetary authorities and depository credit intermediation	($4,075,661,275)
Legal services	($3,495,210,602)
Wholesale - Professional and commercial equipment and supplies	($3,112,796,454)
All other food and drinking places	($2,892,576,577)
Accounting, tax preparation, bookkeeping, and payroll services	($2,797,565,671)
Wholesale - Drugs and druggists sundries	($2,569,378,874)
Medical and diagnostic laboratories	($2,361,473,564)

Source Data for Direct Economic Implications

Changing Food Consumption Levels and Patterns

GLP-1s work by decreasing appetite and can reduce calorie intake by 20% to 30% daily, according to findings from a Morgan Stanley research survey. Consumers in the survey reported reduced food consumption across the board, with the differences being most notable for snacks, confections, carbonated and sugary drinks and alcohol. The findings of the Morgan Stanley Research AlphaWise survey suggest the following reductions in food and beverage consumption by 2035 as the

use of obesity drugs in the U.S. grows.



While food and beverage consumption is expected to fall on net, some of the decreases may be partially offset by [increased consumption of fruits and vegetables, weight management foods, poultry, and fish].

Restaurant chains that mainly sell foods regarded as unhealthy face a longer-term risk, with same-store sales growth forecast to **fall between 1% to 2%**.

Increased Production in the Pharmaceutical Industry

Morgan Stanley analysts expect the market for GLP-1s to be worth **$105 billion** annually by 2030.

Reduced Obesity-Related Healthcare Costs

Data from the Kaiser Family Foundation indicates that the average annual healthcare expenditures for an obese member in a health plan was about $12,600 in 2021, about 3 times higher than the $4,700 spent for non-obese members. Morgan Stanley analysts estimate that 31.5 million people will take GLP-1s by 2035, which would translate into a savings in healthcare costs of **$264.65 billion.**

- Our understanding of the above is that these are expenditures that the insurers will no longer need to make.
- Households may also experience a reduction in spending on healthcare. May spend some/all of those savings on other things; we are not modeling either of those here.

Increased Productivity

Researchers at Deloitte estimate that obesity-related absenteeism and presenteeism costs U.S. employers an estimated at $4.3 billion annually.

IMPLAN Analysis Set-Up

Changing Food Consumption Levels and Patterns

- We mapped the % reductions by food items from the Morgan Stanley survey to IMPLAN commodities, multiplied by the current household consumption of those commodities, then used these dollar value reductions in demand to set up a series of Commodity Change Events with margins applied.
    - For multiple food items that map to a single NAICS code (and thus a single IMPLAN industry) we used the average percentage reduction across those food items.
    - We don't know how much of this reduction will come from restaurant meals vs. purchases from food and beverage stores for at-home consumption, so we treated them all as coming from food and beverage stores, for the following reasons:
        - Nearly all the food items listed in the Morgan Stanley report seem to be the types of items that are purchased for at-home consumption (e.g., frozen pizza, candy, cereal).

        - This includes alcohol, given that the NIH reports that (as of 2017) 67% of drinking occurs at home. This percentage has likely increased further since the pandemic.
        - We don't have enough specific information about the restaurant vs. at-home split to justify too much work to make this analysis more precise.
- Because the Morgan Stanley survey suggests that some portion of these forgone expenditures will be offset by increased spending on fruit, vegetables, fish, poultry, and weight management foods, we take 25% of the sum total of these reductions and distributed that value among the following 6 IMPLAN commodities, in proportion to current household demand for them, and modeled them as positive Commodity Change Events with margins applied:
    - 3003
    - Vegetables and melons
    - 3004
    - Fruit
    - 3077
    - Frozen fruits, juices and vegetables
    - 3088
    - Processed poultry meat products
    - 3092
    - Seafood products
    - 3103
    - All other food products

Increased Production in the Pharmaceutical Industry

- Positive $105 billion Industry Change Event to IMPLAN industry 172 (Pharmaceutical preparation manufacturing)

Reduced Obesity-Related Healthcare Costs

- Negative $264.65 billion Commodity Change Event distributed among the following IMPLAN commodities based on current household demand among these commodities:
    - 3483
    - Offices of physicians
    - 3485
    - Offices of other health practitioners
    - 3486
    - Outpatient care centers

- 3487
- Medical and diagnostic laboratories
- 3488
- Home health care services
- 3489
- Other ambulatory health care services
- 3490
- Hospitals
- 3491
- Nursing and community care facilities

Potential Spending of Food and Healthcare Cost Savings on Other Goods and Services

- Some of the food and healthcare expenditure savings might be spent by households on other goods and services – we're not making any assumptions about that or running any analyses of such spending.

Increased Productivity

- There could be a boost to worker productivity, which could boost U.S. GDP but would have minimal indirect impacts, as it would largely go toward company profits rather than increased wages or input purchases.