Methodological Background for "The Miracle Weight-Loss Drug Is Also a Major Budgetary Threat"

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In our New York Times editorial titled "The Miracle Weight-Loss Drug Is Also a Major Budgetary Threat," we argue that there will be enormous fiscal costs to the US government at current prices for GLP-1 receptor agonists (GLP-1s) unless prices are dramatically reduced. In this document, we present the methodology behind our estimate.

The basic strategy is to first find the total fiscal savings of the drug per individual, which we will denote as P_s. We represent P_s as the sum of savings from foregone diabetes (P_d) and weight loss (P_w), i.e., $P_s = P_d + P_w$. Once we have found P_s, we can then take the difference between the current price (P_c) and P_s and to get net cost, or savings, per individual. Finally, we can then multiply by the number of individuals who would be taking the drug, adjusted for the efficacy of the drug, to get aggregate savings.

Note that in our editorial, we only model the **direct** fiscal impacts of increased GLP-1 usage. We do not model the **indirect** fiscal impacts, which could either increase or decrease budget deficits.

Savings from foregone diabetes

We attempt to find P_d by answering the question: if obese individuals *did not* take a GLP-1, how many of them would become diabetic, and what would the cost of be of treating an increased number of diabetics? To calculate this, we take the flow rates from obese individuals into diabetes from Hillas (2022), which is 70 percent. Then, we use an estimate from Parker et al (2022) which shows the cost of treating a diabetic is $12,022/year in medical costs. Note that this figure is **not** costs in excess of what the average American accrues in a given year, but rather the contribution of diabetes towards healthcare costs for an individual with diabetes. It is therefore a more conservative estimate, in the sense that it increases P_d, and therefore reduces aggregate savings.

Now, if 70 percent of obese individuals were to eventually become diabetic, then we should be able to apply 1) the share of obese people who are assumed to be taking the drug in the future and 2) the efficacy of the drug to the flow rate from obese➔diabetic to yield the share of obese individuals who avoided getting diabetes and the attendant costs of treating diabetes. For (1), we use survey evidence as discussed in Pecci (2023) that shows roughly 40 percent of individuals who are overweight are interested in taking the drug. For (2), we use a conservative estimate (in the sense that the estimate is on the high side of efficacy, therefore increasing the P_d and decreasing fiscal savings) of 60 percent, found in Isaacs (2023).

We are now ready to calculate P_d:

$$P_d = \underbrace{70\% * 40\% * 60\%}_{Share\ of\ obese\ individuals\ avoiding\ diabeties\ because\ of\ GLP-1s}$$

$$*$$

$$\underbrace{12{,}022}_{\textit{Savings per individual who avoided diabetes}}$$

$$= \$2{,}019$$

in savings per obese person per year resulting from currently obese individuals not becoming future diabetics.

Savings from Weight Loss

To estimate savings from weight loss, we utilize two studies: Ghusn et al (2022) and Thorp et al (2021). Thorp et al estimate savings to the medical system resulting from weight loss for a variety of conditions, while Ghusn estimates how much weight is lost after taking a GLP-1. Based on Ghusn et al's sample, they estimate average body weight loss of 10.9% after six months, while Thorp et al produce a range of estimates (across all conditions) for the savings associated with a reduction in body-mass index (BMI). We translate a 10.9% weight loss to its corresponding reduction in BMI, and then interpolate between the Thorp et al estimates to generate a weight savings calculation. We find this number to be $1,258 per person per year in weight loss savings. As a result,

$$P_s = P_d + P_w = \$2{,}019 + \$1{,}258 = \$3{,}278$$

Aggregate Net Costs

Our final step is to find the number of individuals on private, public, and exchange-provided insurance and then multiply this by the fiscal costs per individual to get aggregate costs. To get the share of obese individuals with private and public insurance, we use estimates from Mylona et al (2020). To our knowledge, there is no detailed study examining what fraction of obese individuals are on exchange-provided insurance. As a result, we assume that the share is the same as it is for the population, which we calculate as 8.8% based upon CMS (2023) (for the number of individuals on exchange insurance and Peterson (2023) (for the total number of individuals with health insurance).

To find the total obese population, we simply apply the obesity rate estimated by the NIH (2021) to an estimate of the adult population by the Anne E. Kasey Foundation (2023), yielding roughly 104 million obese individuals.

The net cost is the difference between the price and the fiscal savings. As Caplan (2024) notes, the annual cost of Ozempic is likely $15,000, as a lower bound.

For those on public insurance, the government cost is the total system cost. For those with employer-provided insurance, we assume that health care costs are passed on to workers in the form of lower wages, and that the government no longer collects taxes on those wages. We therefore multiply the savings by the average federal tax paid by individuals (from OECD (2023)) plus the average state and local rate (from Tax Foundation (2022)). For those on the exchange, the savings to the government is based on the reduced subsidies that will be paid for those who are subsidized for their purchases. We therefore calculate the savings to those on exchange insurance as the number of obese individuals on healthcare exchange insurance times individual savings per person ($P_c - P_s$) times the share of individuals on exchange-provided insurance who receive a subsidy from healthcare exchanges, as provided by KFF (2023).