Updated estimates of the cost of obesity and overweightness

Analysis prepared by Frontier Economics for The Tony Blair Institute

8th September 2023

Overview

- The updated estimates in this report follow the same methodology as Frontier Economics' 2022 report with the following extensions:
    1. New estimates of the costs of overweightness (a BMI of 25-30)
    2. New estimates of the losses from economic inactivity (as obese and overweight individuals are more likely to exit the labour force prematurely)
    3. Updated cost estimates to account for inflation between 2021 and 2023
    4. New forecasts to illustrate how the costs of obesity and overweightness could evolve out to 2040

- This pack briefly describes Frontier Economics' updated methodology for each of the above steps and highlights some of the remaining limitations of the analysis. The work was undertaken over August and September 2023.

1. Estimating the cost of overweightness

Overweight, but not obese

1) Of the £98bn, £74bn is due to **obesity** and £24bn due to **overweight**

- QALY has a particularly large impact for obesity, whereas cost of illness is more proportionally significant for the overweight group
- NHS + social costs represent 33% of the costs for overweight vs with 15% for obese

2) Breakdown of medical cost for overweight **diabetes and hypertension are the main drivers**

- Cost of illness as a result of being overweight is estimated off the obesity PAF figures, but drawing on relative BMI intensity of condition cited in various literature.
- For diabetes, hypertension, musculoskeletal, stroke, ovarian cancer, breast cancer and depression, **condition-specific scaling factors are derived**.
- We typically see that overweight have around 40% of the excess prevalence as obese, which is used as our proxy scaling assumption where condition-specific scaling factors aren't possible to derive.

Breakdown by cost category:

£bn	Obese	Overweight
Cost of illness and medicines*	11.3	7.9
QALY	48.1	8.5
Social care	5.9	1.1
Unproductive days	3.3	3.0

Breakdown by cost of illness:

Costs per individual £		
	Male	Female
Type 2 diabetes	83	79
Hypertension	171	178
CHD (w/o diabetes)	8	8
CHD and diabetes	5	5
Musculoskeletal disorders	42	30
Stroke (w/o hypertension)	3	2
Stroke and hypertension	7	6
Colorectal cancer	3	2
Ovarian cancer	0	0
Kidney cancer	0	0
Liver cancer	0	0
Oesophageal cancer	1	0
Breast cancer	0	1
Depression	68	74

**Includes £30m in anti-depressant costs for obese patients.*

2. Estimating losses from economic inactivity

Losses from economic inactivity *

We reviewed various academic papers to explore impacts of obesity on economic inactivity. They largely focus on labour market exit associated with retirement.

- We identified two that work well to calculate overall economic cost figures, but we have had to make some links in inferring these losses.
- It is worth noting that these are empirical papers and not easy to identify impacts whilst stripping out other confounding effects, so we therefore see a range of estimates. We have therefore used an upper and lower bound approach.

Approach 2 (upper bound)

Multivariate analysis estimating labour market exit as a function of health characteristics including BMI

- Obesity associated with 38% higher probability of not being employed among those aged 50-65.
- Among age group ~26% inactive / unemployed, but this is 30% for obese compared with 22% with healthy weight, so **+8% are inactive as a result of obesity**.
- This represents around 350k people in that age group who are inactive as a result of being with obesity.

Approach 1 (lower bound)

Diabetes associated with 1.1 year reduction in labour force participation for those aged 30-60

- Use obesity-driven excess diabetes prevalence to get an average time out of employment for obese people (and scale similar for overweight).
- Calculate excess prevalence of other conditions and compare severity with diabetes to get equivalent including these.
- Does labour market exit affect other age bands? Study ignores 60-65 for practical empirical reasons, but this group is likely to be significant.

** There could additionally be an impact on employment (not on inactivity) that we have not included in this piece of analysis*

3. Accounting for recent changes in inflation

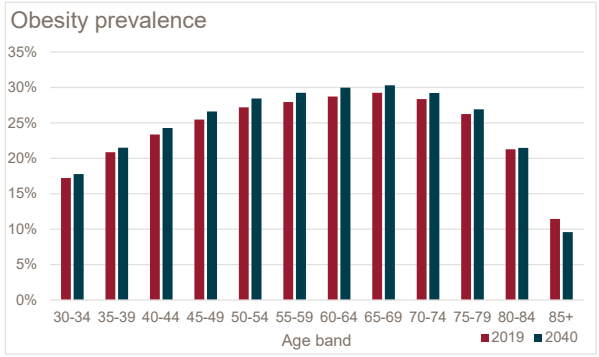
- All previous cost figures for 2021 have been rebased to 2023 prices using the Consumer Prices Index. This amounts to a 17% uplift in costs, based on the observed path of consumer prices between 2021 Q1 and 2023 Q3 and the Bank of England's forecast for 2023 Q4 (published in the November 2023 Monetary Policy Report).

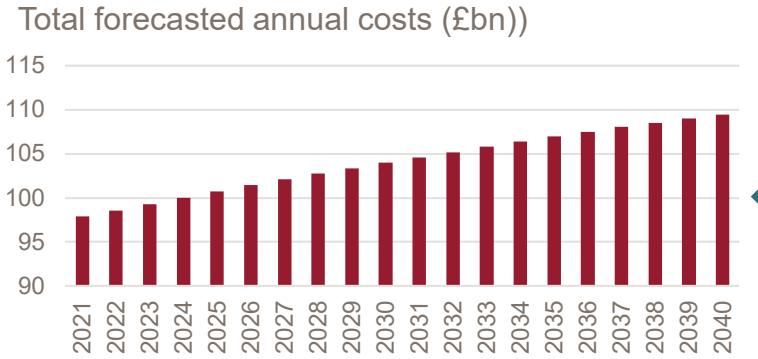
4. Forecasting future costs of obesity out to 2040

Forecasted costs of overweight and obesity

Obesity prevalence forecasted to increase moderately

- Modelling by the Health Foundation / University of Liverpool shows only a moderate increase in obesity prevalence by age band, **typically just less than one % point.**
- Meanwhile, ONS population projections show an ageing population, with over-75s share growing from 11% to 15%. In absolute terms the number of people aged 65+ rises from 12.7m to 16.9m, whereas working age population barely changes, from 42.0m to 42.4m.



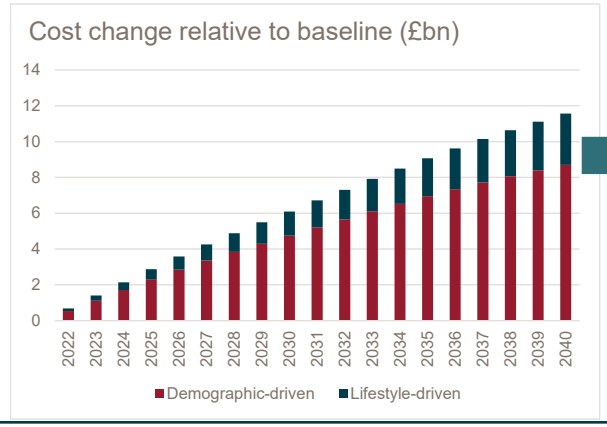


We combine the current cost estimates, prevalence projections and population projections

- We see a **moderate increase**, from around £97.9bn now to around £109.4bn in 2040.

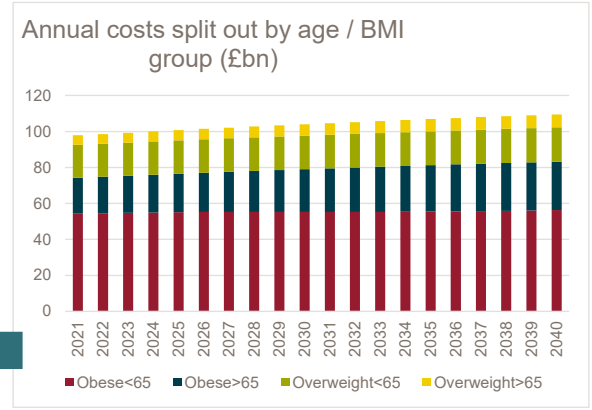
Note: These figures are a partial forecast as they only account for the changes in the incidence of obesity and overweightness and the age structure of the population. They do not account for other changes, such as price changes nor the expected change in the value of a quality adjusted life year (which would be expected to rise with real earnings over time).

What do our forecasts reflect?



We are able to breakdown certain drivers of the increase in annual forecasted costs

- 75% of this cost increase is due to population change (ageing), the other 25% is due to changes in prevalence, largely driven by **lifestyle or other risk factors**.
- 75% of the increase in cost is attributable to the population aged >65, with working-age only counting for 25%.



Possible extensions to this analysis

Refinements

1

Analysis could be refined to include ***Population Attributable Factors for overweight***, where we are currently using proxies due to lack of evidence available.

- Coronary Heart Disease – both with and without diabetes
- Stroke <u>without</u> hypertension
- Cancers (Colorectal, Kidney, Liver and Oesophageal)

Further work to help shape policy decisions

1

Developing a more sophisticated forecast (potentially using a cohort approach)

This updated methodology would ideally:

- Be extended beyond 2040 and account for the pass through of high childhood obesity rates to adult obesity. This would allow policymakers to then develop targeted policy responses, e.g. potentially targeting reductions in childhood obesity to reduce prevalence later in life.
- Account for expected changes in cost inflation (particularly for NHS medical costs), to understand how spending on obesity and overweight treatment might vary as a share of nominal GDP.
- Allow the value of QALY and productivity effects to vary in the future based on exected growth in real average earnings and productivity.

2

Expand the productivity losses component of the analysis to additional elements of productivity such as in-work productivity.

- This would allow policy-makers to understand the degree to which this form of productivity impact exists, and policies they could take to reduce these issues.
- For example, if some of these impacts largely impact women with obesity, tailored policies could be developed to particularly improve outcomes from this group.

3

Additional analysis to calculate the cost of unemployment

- Our analysis currently doesn't include an assessment of the impact of living with obesity and overweightness on individuals likelihood of experiencing unemployment.
- Analysis looking at these costs by different groups (gender, race etc) would allow policy-makers to think about how they could target policies most effectively to reduce these costs.

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