
Cost-benefit analysis of obesity interventions

Detailed intervention cost calculations



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Background to this document

This document expands on the details provided on the Blueprint for Halving Obesity toolkit for policies where more extended calculations were carried out to arrive at a policy cost.

Restrict location promotions (e.g. on home page, on 'favourite product' pages) of HFSS food and drink on food/ drink delivery platforms with the largest market share

To calculate the cost of restricting location promotions of HFFS food and beverages on delivery platforms and restaurant-owned apps, we used proxy costs from other promotion restriction policies on Out-of-Home (OOH) businesses, and scaled those costs based on the proportion of OoH calories purchased through delivery apps and restaurant-owned apps, which was 0.106 (10.6%) (Internal analyses conducted by Nesta). For the ongoing product assessment cost to retailers, in which new and modified products need to be assessed for eligibility for the location promotion restriction, the cost was scaled similarly, then inflated for each year of the simulation, 2019 to 2024, and then divided by 25 to get an annual cost, as the original cost was calculated across 25 years (1).

Mandate data collection on proportion of healthy to unhealthy products via the FDTP

To calculate the cost of mandating data collection of healthy to unhealthy food products, we used cost estimates from the Food Standards Agency (FSA). In order to comply with the FSA, Food Business Operators (FBOs) incur costs that include

- Inspections
- Addressing any non-compliance
- Putting in place food safety management systems by meeting specific premises and equipment requirements
- Adhering to food safety procedures set out in Food Law (2)

The cost of inspections was approximately 10 GBP per retailer.

To equate food product costs to FBO costs, we assumed that the number of FBOs would be equal to the number of food products in the UK. The 2016 Global Agricultural Information Network (GAIN) reported that one large UK chain store carried approximately 25,000 food and beverage products (3). If we further assume the cost would be the same per product as it is per retailer, then the annual cost complying with inspections would be 250,000 GBP per year (calculated as 10 GBP * 25,000 products).



In addition, there is an initial cost of approximately 100 GBP. Thus the initial cost for all products would be 2,500,000 (calculated as 100 GBP * 25,000 products).

Provide business rates relief of 75% to new grocery stores with fresh fruit and vegetables opening in food deserts

A 75% business relief to new grocery stores selling fruit and vegetables in food deserts would incur costs to government. We estimated the active number of businesses that are registered in the Company House (CH) registry under Standard Industrial Classification code 4711 to be 31,444. Of those 31,444, 3203 were incorporated into CH in 2023. It is estimated that 16% of the population live in food deserts – using a broad assumption this 16% was applied to the number of businesses, resulting in an estimate of 512 businesses being incorporated in food deserts (4, 5). Using an average business rate of £3,678 in 2023 (6), we estimated an average business rate of £1,884,901.44 for all grocery stores. Applying 75% business rate would result in a total of **£1,413,676.08**. This reflects a cost to government in terms of lost business rate revenue.

Introducing universal free school meals for all primary school children during term time

To calculate the cost of introducing free school meals for all primary school children during term time, we needed data for the 1) unit cost of a hot school meal, 2) the number of school days during term time, and 3) the number of primary school children between the years of 2019 and 2024.

The unit price cost of a hot school meal was sourced from the London Assembly, in which they were funding the price per hot school meal at £2.65 (7). Assuming a standard 13 weeks of holiday, there are 190 school days per school year (8). Multiplying £2.65 by 190 days results in an annual cost per child for introducing free school meals during term time of £503.50 in 2023. This annual cost was then scaled to each year between 2019 – 2024 (£414.85, £435.97, £437.23, £463.47, £503.50, £522.63 respectively).

To estimate the primary school children, which is two-thirds of all 4-year olds, and all 5-11 year olds, we used mid-year population estimates for 2019-2022, and then population projection estimates for 2023-2024, from the Office for National Statistics (Estimates used from 2019-2024: 6318685, 6329139.33, 6067460, 6074444, 5979627.67, 5914384.33 respectively) (9, 10). Multiplying the annual cost of universal free school meals during term time per child by the number of primary school-aged children between 2019-2024 results in a total intervention cost over the simulation of £16.95bn. This value was reduced by 6% in order to account for the proportion of children who attend private education to get **£15.93bn** (11).



Expand NHS provision of bariatric surgery to individuals with BMI > 35 with pre-existing condition (specifically double the amount of people receiving surgery from [approx] 6,500 per year to 13,000 per year)

The cost for bariatric surgery was calculated by the averaging of two estimates: 1) the estimated cost to the NHS paying for the additional 6,500 patients who require bariatric surgery to receive private treatment, and 2) the estimated cost to the NHS of increasing capacity in order to provide treatment for all 6,500 additional patients who require bariatric surgery 'in-house'.

Estimate 1: Estimating the cost to the NHS of paying for all 6,500 additional patients who require bariatric surgery to receive private treatment

We assumed that the cost to the NHS of paying for a patient to receive private bariatric surgery would be the same as if the patient had opted to pay for themselves. Ramsay Health Care provides ranges for the cost of each bariatric surgery: Gastric Bypass prices typically range between £9,500 and 15,000; Gastric Sleeve prices typically range between £7,000 and £11,000; and Gastric Band prices typically range between £5,000 and £8,000 (12). A weighted mean cost of bariatric surgery in the UK, using the midpoint of aforementioned ranges, was estimated to be £9,250. Scaling this cost up to the 6,500 additional patients that would require private bariatric surgery would cost the NHS £60,125,000.

Estimate 2: Estimating the cost to the NHS of increasing capacity in order to provide treatment for all 6,500 additional patients who require bariatric surgery 'in-house'

The costing for this estimate has been split into three sections: 2.1) Estimating the direct cost of performing 6,550 additional bariatric surgeries, 2.2) Estimating the cost of training additional surgical staff, and 2.3) Estimating the cost of constructing new surgical theatres/NHS surgeries.

Estimate 2.1 - Elliot et al., 2021 provide a cost of £7879.75 (inflated from 2021 to 2024 using EPPI-centre cost converter (13)) per bariatric surgery (14). The upscaled cost of bariatric surgery for the additional 6,500 patients was estimated to be £51,218,375.00.

Estimation 2.2 - To estimate the cost of training additional staff to perform the 6,500 required surgeries, we required:

- Annual cost of training for an individual to reach a level sufficient to perform bariatric surgery
- The number of years required to train an individual to a level sufficient to perform bariatric surgery



- The number of new surgeons required to perform an additional 6,500 bariatric surgeries per year

For the first step, we assumed that the cost of training a new surgeon includes costs borne out by the government, from the moment the individual begins their medical training until they are awarded the Certificate of Completion of [surgical] Training (CCT), which is typically after 4-6 years of being a registrar surgeon. To complete the CCT, it typically takes 5 years of undergraduate medical training, 2 years of foundational training, 2 years of core training, and ~5 years of additional training at the registrar level, totalling to 14 years (15).

For the second step, we first used the Full Fact estimate of £210,816.61, after inflation, which is the total government cost of putting a student through medical school (16). This includes only the grant awarded to undergraduate medical students in the UK, and excludes loans which medical students typically pay back to the government. We then used an estimate of the cost of a foundation doctor FY1 (£28,717.50), a foundation doctor FY2 (£31,146.49), and a registrar (£45,518.93), to calculate a total cost per surgeon of training from FY1 to achieving the CCT of £574,994.67. This cost assumes that surgeons at the level of 'core' require the mean cost of foundation doctor FY2 and registrar surgeon. (17). This cost includes the cost of training, infrastructure costs, clinical placement activity costs and lost production costs whilst staff are not at their posts due to training.

For the final step, Nesta estimated that a single full-time equivalent (FTE) NHS surgeon can carry out around 3 bariatric surgeries per day. Assuming that there are typically 222 days in the working year, excluding weekends, bank holidays, and 30 days of annual leave (18), in a single year an FTE NHS surgeon could carry out 666 bariatric surgeries per year. The required number of additional NHS surgeons is therefore $6500 / 666 = 9.76 = 10$ additional FTE surgeons. The estimated cost of training additional surgical staff to perform the 6,500 required surgeries is $10 \times £574,944.67 = £5,749,446.70$.

Estimate 2.3 – Nesta estimated that a single NHS surgery can carry out around 3 bariatric surgeries per day. Assuming the same number of working days as above, 666 additional bariatric surgeries could be performed per year in a single NHS surgery, meaning that 10 additional NHS surgeries would be needed to perform the additional 6,500 surgeries ($6,500/666 = 9.76$). Building.com estimated the cost of constructing a new NHS surgical theatre to be £1,974,512.88 after adjusting for inflation (19). Scaling this cost up to the 10 new NHS surgeries required equals an estimated cost of £19,745,128.80

Final results

Estimation 1: The cost of outsourcing the required additional bariatric surgeries to private practice is estimated at an annual 2024 cost of **£60,125,000**.

Estimation 2: Accounting for operating, staff training, and construction costs, the cost of expanding NHS capacity to perform the required additional bariatric surgeries is estimated



at just under **£76,713,000** with direct surgical costs accounting for around 67%, training costs for around 7%, and construction costs for around 26%. £51,218,375 of the total £76,713,00 would be an annual cost – the remainder of the costs would be a one-off cost.

Table 1. Breakdown of costs for each estimation for bariatric surgery policy

Estimation	Cost option	Cost type	Time period	Cost (2024 GBP)
Estimate 1	Private outsourcing	-	Annual	60,125,000.00
Estimate 2	Expanding NHS capacity	Operating	Annual	51,218,375.00
		Training	One-off (assumed)	5,749,446.70
		Construction	One-off	19,745,128.80

The costs for these two estimates were then converted to 2019 costs, as this is the start year of the simulation, and then averaged together to get a first-year cost of £54,308,963.46. Annual average costs were applied thereafter to 2024.



Extension of Soft Drink Industry Levy to flavoured milks

The extension of Soft Drink Industry Levy (SDIL) to flavoured milk includes 3 components: 1) the extension of the SDIL itself, 2) the cost of policy familiarisation, 3) the cost of monitoring the policy. In order to calculate the cost of applying these to the values applicable for extending the SDIL to flavoured milk, we took each values, and divided by the number of sugar sweetened sodas and fruit drinks and multiplied by the number of flavored milks available in the UK marketplace. We obtained the data on the number of beverages available in the UK marketplace based on data we obtained from a consumer report on Tesco stores. Tesco reports selling 25,000 products food and beverage product lines (3). Other data report that 9.9% of available packaged food products are beverages (20), and that among those, 4.38% are sugar-sweetened sodas, 13.5% are fruit drinks that may or may not be sweetened, and 1.04% are flavoured milks (21). For all calculations, we assumed that the SDIL included sugar-sweetened sodas and fruit drink, representing 17.88% of the beverage market, and that any extension this would include flavoured milks (1.04%).

1. The SDIL liabilities were reported for the years 2019 through 2023 (22). For each of these years, the total SDIL liabilities were divided by the total number of SDIL beverages (444 products) and then multiplied by the number of flavoured milks (25 products) in order to obtain the SDIL liabilities with an extension to flavoured milks. The value for 2024 was calculated using a cost conversion tool using the data from 2023.

Year	SDIL liabilities	Extension to flavoured milks
2019	£338,000,000	£19,659,955
2020	£311,000,000	£18,089,485
2021	£318,000,000	£18,496,644
2022	£358,000,000	£20,823,266
2023	£345,000,000	£20,067,114
2024	NA	£20,829,661

2. A familiarisation cost of £2,000,000 was taken from a 2018 impact assessment performed by the Department of Health and Social Care (23). The estimated familiarisation cost in regarding the mandating of energy labelling of all food and drink items in out-of-home setting was estimated at £2,000,000, and we made the assumption that this estimate would be equal to the cost of familiarisation of the SDIL program. Thus, the £2,000,000 was divided by the total number of SDIL beverages (444 products) and then multiplied by the number of flavoured milks (25 products) in order to obtain the cost of the extension to flavoured milks.
3. Monitoring of a salt reduction policy in England, where product labels are reviewed for accuracy, the salt content of reformulated foods is tested and the salt levels of the



general population and food products are tested, was estimated at £17,527,929 over 10 years (24). We made the assumption that the monitoring of salt reduction would be equal to monitoring the SDIL program. Thus, this £17,527,929 was divided by the total number of SDIL beverages (444 products) and then multiplied by the number of flavoured milks (25 products) to obtain the cost of extension to flavoured milks, and then 1/10 of this cost was applied to each year from 2019 to 2024.



Fund and support all neonatal, maternity and health visiting services, Children's Centres and midwifery and health visiting courses in universities to become Unicef UK Baby Friendly Initiative accredited

To understand the typical cost of going Baby Friendly in maternity wards, community child centres, and universities, we used granular cost estimates from UNICEF, which included accreditation, training and auditing. For each maternity ward, community child centre, and university, the one-off cost to go Baby Friendly was £16,305, £16,305, and £4,200 respectively (25). These costs were then scaled up to the number of maternity wards, community child centres, and universities in the UK (139, 3050, and 288 respectively) (26-28).



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