Title: Restricting checkout, end-of-aisle, and store entrance sales of food and drinks high in fat, salt, and sugar (HFSS) **IA No:** 9561 **RPC Reference No:** RPC-DHSC-4332(3) **Lead department or agency:** Department of Health and Social Care (DHSC) **Other departments or agencies:**	**Impact Assessment (IA)** **Date:** 11/11/2020 **Stage:** Final **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries:** Childhood.Obesity@dhsc.gov.uk

Summary: Intervention and Options

RPC Opinion: Fit for purpose

Cost of Preferred (or more likely) Option (in 2019 prices)			
Total Net Present Social Value	**Business Net Present Value**	**Net cost to business per year**	**Business Impact Target Status**
£68,152m	-£5,496m	£1,067m	Qualifying provision

What is the problem under consideration? Why is government intervention necessary?

Regular overconsumption of food and drink high in fat, sugar and salt (HFSS) is one of the key factors contributing to weight gain and, over time, obesity. Obesity is a major cause of ill health in England, increasing the risk of heart disease, stroke, type II diabetes and some cancers, imposing a substantial burden and negative externality on the NHS and the wider economy in the long run. Evidence increasingly suggests that even when individuals and families are attempting to make healthier choices, the shopping environment can encourage impulse purchasing of HFSS products. Promotional offers of HFSS products in key selling locations are a significant driver of impulse purchasing resulting in overconsumption which increases the risk of obesity and serious long-term health conditions. Previously voluntary programmes have been very limited and unsuccessful in creating a significant change in the shopping environment, hence government intervention is necessary to ensure that all retailers (with some justifiable exceptions) do not encourage impulse purchasing and over consumption of HFSS products.

What are the policy objectives and the intended effects?

The policy is intended to reduce excess purchases and therefore overconsumption of HFSS products which are associated with a greater propensity to create impulse purchases and is likely to lead to excess calorie intake and therefore, over time weight gain. By encouraging retailers to provide healthier options in key selling locations, wider improvements in diets may be experienced. Mandating consistent promotional restrictions ensures that there is a level playing field for businesses.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 0: Do nothing

Option 1: End placement of HFSS food and drink items included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses.

Option 2: End placement of HFSS food and drink items which contribute significant sugar and calories to children's diets and are of most concern for childhood obesity, at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses.

Option 3: End placement of HFSS food and drink items which contribute significant sugar and calories to children's diets and are of most concern for childhood obesity, at store entrances, checkouts and end-of-aisles in the retail sector excluding micro businesses.

Option 4: End placement of HFSS products included in original list of categories consulted on in all retailers who sell food and drink in the retail sector excluding small and micro businesses

Under options 1-4, all stores that have floor space of under 2,000 sq. ft are excluded from the restrictions. Stores that are part of a symbol group[1] are not excluded from the policy, unless they are under 2,000 sq. ft.

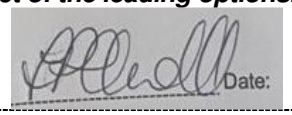
Option 2 is the preferred option, because it strikes the best balance between delivering the aims of the policy and significant health benefits while taking into account proportionality and feasibility of implementation. The product categories in scope are significant contributors to children's sugar and calorie intakes and are often heavily promoted, therefore they are the products of most concern for childhood obesity.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** Before 2023

[1] Symbol groups consist of independent and multiple retailers who trade under a common fascia.

Does implementation go beyond minimum EU requirements?		N/A		
Is this measure likely to impact on international trade and investment?		Yes / No		
Are any of these organisations in scope?	**Micro:** No	**Small** No	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)		**Traded:**	**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:  Date: 15/07/21

Summary: Analysis & Evidence

Policy Option 0

Description: Do Nothing

FULL ECONOMIC ASSESSMENT

Price Base Year	PV Base Year	Time Period Years	Net Benefit (Present Value (PV)) (£m)		
			Low:	**High:**	**Best Estimate:**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low				
High				
Best Estimate				

Description and scale of key monetised costs by 'main affected groups'

No costs have been monetised under this option. Businesses who currently voluntarily limit the placement of certain HFSS products at key locations, and those not currently restricting the placement of HFSS sales at key locations would be expected to continue doing so.

Other key non-monetised costs by 'main affected groups'

No non-monetised costs have been outlined under this option.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate				

Description and scale of key monetised benefits by 'main affected groups'

No benefits have been monetised under this option.

Other key non-monetised benefits by 'main affected groups'

No non-monetised benefits have been outlined under this option. The benefits as a result of other policies announced from the 'Childhood obesity: A plan for action' or any other possible future actions by government have not been monetised and considered in this option due to the considerable number of uncertainties. The impact SDIL has had on products in scope of this policy has been considered in the counterfactual but has not been factored into the calculations. This is due to the impact to benefits being less than 1% and to streamline calculations, this has not been factored in.

Key assumptions/sensitivities/risks **Discount rate (%)**

There are a number of implicit assumptions about the counterfactual that are key to the calculations for other options relative to this: (1) industry's use of location promotions would stay roughly constant without this policy, (2) the effectiveness of location promotions on HFSS products would stay roughly constant without this policy, (3) the discounted costs of treating obesity-related conditions, and the impact on QALYs, is roughly constant over the 25-years projected in this analysis.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs:	**Benefits:**	**Net:**	

Summary: Analysis & Evidence

Policy Option 1

Description: End placement of HFSS food and drink items included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses, and stores that are under 2,000 sq. ft.

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low:	**High:**	**Best Estimate:** 58,233

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low				
High				
Best Estimate	47.35		226	**5,700**

Description and scale of key monetised costs by 'main affected groups'

Transition costs for retailers include familiarisation costs (£0.1m), product assessment costs (£3.1m), store planning and arrangement (£42.1m), knowledge sharing costs (£0.7m) and IT system costs (£1.3m). Retailers will also have on-going product assessment costs for new and reformulated products, £3.3m every two years, and a net loss in profits, £213.4m per year. Manufacturers will incur a net loss of profits, £84.2m per year. The enforcement cost to Government is expected to be £72k in the first year with an on-going cost of £32k per year.

Other key non-monetised costs by 'main affected groups'

A reduction in sales, and hence profits, for suppliers of ingredients to food and drink manufacturers of HFSS products has not been monetised, it is a second order effect and therefore not in scope of the IA. If businesses choose to reformulate their products, they may incur additional indirect costs – although we only expect businesses to reformulate if it is profitable to do so. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for preferential location of their items.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low				
High				
Best Estimate				**63,933**

Description and scale of key monetised benefits by 'main affected groups'

Over the 25-year appraisal period the health benefits expected to accrue because of lower calorie consumption amongst overweight and obese people are estimated to be £49,980m. In addition, it would provide NHS savings of £3,785m, social care savings of £4,275m and reduced premature mortality is expected to deliver an additional £5,983m of economic output.

Other key non-monetised benefits by 'main affected groups'

There would also be non-monetised health benefits from manufacturers reformulating their HFSS products providing a reduction in fat, sugar and salt in products. In addition, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5/1.5%

Key assumptions in the analysis are: (1) The reduction in sales will be offset by 40% due to compensatory behaviour from consumers and businesses switching to alternative marketing techniques and is based on limited evidence. (2) Costs to industry is based on limited data on the level of sales generated from these locations and the profit margins. (3) Calorie reductions are calculated based on the proportion of products in the market that are classified as HFSS and non-HFSS. (4) We assume that HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations. This is an unevidenced assumption. The proportion of HFSS sales from checkouts is based on a German study, proportion of sales from end of aisle is based on evidence from alcoholic drinks and proportion of sales from store entrances is based on the proportion of alcoholic drinks at end of aisle. Due to the uncertainty around this evidence we have applied a sensitivity analysis.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: -982.1	**Benefits:** N/A	**Net: -982.1**	

Summary: Analysis & Evidence

Policy Option 2

Description: End placement of HFSS food and drink items which contribute significant sugar and calories to children's diets and are of most concern for childhood obesity, at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses, and stores that are under 2,000 sq. ft.

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low: -1,625	**High: 279,789**	**Best Estimate: 68,152**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	32.6		63.7	**1,625**
High	198.2		978.2	**24,652**
Best Estimate	47.9		218	**5,496**

Description and scale of key monetised costs by 'main affected groups'

Transition costs for retailers include familiarisation costs (£0.1m), product assessment costs (£3.1m), store planning and arrangement (£42.1m), knowledge sharing costs (£0.7m), and IT system costs (£1.3m). Retailers will also have on-going product assessment costs for new and reformulated products, £3.3m every two years, and a net loss in profits, £190m per year. Manufacturers will incur a net loss of profits, £213.8m per year. The enforcement cost to Government is expected to be £72k in the first year with an on-going cost of £32k per year.

Other key non-monetised costs by 'main affected groups'

A reduction in sales, and hence profits, for suppliers of ingredients to food and drink manufacturers of HFSS products has not been monetised, it is a second order effect and therefore not in scope of the IA. If businesses choose to reformulate their products, they may incur additional indirect costs – although we only expect businesses to reformulate if it is profitable to do so. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for preferential location of their items.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low				**0**
High				**344,971**
Best Estimate				**73,648**

Description and scale of key monetised benefits by 'main affected groups'

Over the 25-year appraisal period the health benefits expected to accrue because of lower calorie consumption amongst overweight and obese people are estimated to be £57,600m. In addition, it would provide NHS savings of £4,364m, social care savings of £4,896m and reduced premature mortality is expected to deliver an additional £6,788m of economic output.

Other key non-monetised benefits by 'main affected groups'

There would also be non-monetised health benefits from manufacturers reformulating their HFSS products providing a reduction in fat, sugar and salt in products. In addition, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5/1.5%

Key assumptions in the analysis are: (1) The reduction in sales will be offset by 40% due to compensatory behaviour from consumers and businesses switching to alternative marketing techniques and is based on limited evidence. (2) Costs to industry is based on limited data on the level of sales generated from these locations and the profit margins. (3) Calorie reductions are calculated based on the proportion of products in the market that are classified as HFSS and non-HFSS. (4) We assume that HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations. This is an unevidenced assumption. The proportion of HFSS sales from checkouts is based on a German study, proportion of sales from end of aisle is based on evidence from alcoholic drinks and proportion of sales from store entrances is based on the proportion of alcoholic drinks at end of aisle. Due to the uncertainty around this evidence we have applied a sensitivity analysis.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: -1,067.1	**Benefits:** N/A	**Net: -1,067.1**	

Summary: Analysis & Evidence

Policy Option 3

Description: End placement of HFSS food and drink items which contribute significant sugar and calories to children's diets and are of most concern for childhood obesity, at store entrances, checkouts and end-of-aisles in the retail sector excluding micro businesses, and stores that are under 2,000 sq. ft.

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low:	**High:**	**Best Estimate:** 68,272

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low				
High				
Best Estimate	65.8		218.8	**5,469**

Description and scale of key monetised costs by 'main affected groups'

Transition costs for retailers include familiarisation costs (£0.6m), product assessment costs (£4.6m), store planning and arrangement (£57.7m), knowledge sharing costs (£1m) and IT system costs (£1.9m). Retailers will also have on-going product assessment costs for new and reformulated products, £4.9m every two years, and a net loss in profits, £190m per year. Manufacturers will incur a net loss of profits, £97.3m per year. The enforcement cost to Government is expected to be £83k in the first year with an on-going cost of £44k per year.

Other key non-monetised costs by 'main affected groups'

A reduction in sales, and hence profits, for suppliers of ingredients to food and drink manufacturers of HFSS products has not been monetised, it is a second order effect and therefore not in scope of the IA. This policy could also impact the profitability of small businesses to the point of destabilising them due to the disproportional burden on smaller businesses who may find it difficult to implement the policy. If businesses choose to reformulate their products, they may incur additional indirect costs – although we only expect businesses to reformulate if it is profitable to do so. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for preferential location of their items.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low				
High				
Best Estimate				**73,810**

Description and scale of key monetised benefits by 'main affected groups'

Over the 25-year appraisal period the health benefits expected to accrue because of lower calorie consumption amongst overweight and obese people are estimated to be £57,726m. In addition, it would provide NHS savings of £4,374m, social care savings of £4,907m and reduced premature mortality is expected to deliver an additional £6,803m of economic output.

Other key non-monetised benefits by 'main affected groups'

There would also be non-monetised health benefits from manufacturers reformulating their HFSS products providing a reduction in fat, sugar and salt in products. In addition, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5/1.5%

Key assumptions in the analysis are: (1) The reduction in sales will be offset by 40% due to compensatory behaviour from consumers and businesses switching to alternative marketing techniques and is based on limited evidence. (2) Costs to industry is based on limited data on the level of sales generated from these locations and the profit margins. (3) Calorie reductions are calculated based on the proportion of products in the market that are classified as HFSS and non-HFSS. (4) We assume that HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations. This is an unevidenced assumption. The proportion of HFSS sales from checkouts is based on a German study, proportion of sales from end of aisle is based on evidence from alcoholic drinks and proportion of sales from store entrances is based on the proportion of alcoholic drinks at end of aisle. Due to the uncertainty around this evidence we have applied a sensitivity analysis.

BUSINESS ASSESSMENT (Option 3)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: -880.3	**Benefits:** N/A	**Net: -880.3**	

Summary: Analysis & Evidence

Policy Option 4

Description: End placement of HFSS products included in original list of categories consulted on in all retailers who sell food and drink in the retail sector excluding small and micro businesses, and stores that are under 2,000 sq. ft.

FULL ECONOMIC ASSESSMENT

Price Base Year 2019	PV Base Year 2020	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low:	**High:**	**Best Estimate:** 75,677

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low				
High				
Best Estimate	47.4		232.7	**5,865**

Description and scale of key monetised costs by 'main affected groups'

Transition costs for retailers include familiarisation costs (£0.1m), product assessment costs (£3.1m), store planning and arrangement (£42.1m), knowledge sharing costs (£0.7m) and IT system costs (£1.3m). Retailers will also have on-going product assessment costs for new and reformulated products, £3.3m every two years, and a net loss in profits, £198.5m per year. Manufacturers will incur a net loss of profits, £107.7m per year. The enforcement cost to Government is expected to be £72k in the first year with an on-going cost of £32k per year.

Other key non-monetised costs by 'main affected groups'

A reduction in sales, and hence profits, for suppliers of ingredients to food and drink manufacturers of HFSS products has not been monetised, it is a second order effect and therefore not in scope of the IA. If businesses choose to reformulate their products, they may incur additional indirect costs – although we only expect businesses to reformulate if it is profitable to do so. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for preferential location of their items.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low				
High				
Best Estimate				**81,542**

Description and scale of key monetised benefits by 'main affected groups'

Over the 25-year appraisal period the health benefits expected to accrue because of lower calorie consumption amongst overweight and obese people are estimated to be £63,795m. In addition, it would provide NHS savings of £4,836m, social care savings of £5,396m and reduced premature mortality is expected to deliver an additional £7,515m of economic output.

Other key non-monetised benefits by 'main affected groups'

There would also be non-monetised health benefits from manufacturers reformulating their HFSS products providing a reduction in fat, sugar and salt in products. In addition, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5/1.5%

Key assumptions in the analysis are: (1) The reduction in sales will be offset by 40% due to compensatory behaviour from consumers and businesses switching to alternative marketing techniques and is based on limited evidence. (2) Costs to industry is based on limited data on the level of sales generated from these locations and the profit margins. (3) Calorie reductions are calculated based on the proportion of products in the market that are classified as HFSS and non-HFSS. (4) We assume that HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations. This is an unevidenced assumption. The proportion of HFSS sales from checkouts is based on a German study, proportion of sales from end of aisle is based on evidence from alcoholic drinks and proportion of sales from store entrances is based on the proportion of alcoholic drinks at end of aisle. Due to the uncertainty around this evidence we have applied a sensitivity analysis.

BUSINESS ASSESSMENT (Option 4)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: -1,165.3	**Benefits:** N/A	**Net: -1,165.3**	

Contents

Executive Summary

Problem and justification for action

1. Childhood obesity is one of the biggest health problems this country faces[1]. Around a fifth of children in England are overweight or obese by the time they start primary school aged five, and this rises to one third by the time they leave aged 11[2].
2. Childhood obesity increases the risk of obesity in adulthood. Data shows an obese child is five times more likely to be an obese adult[3]. Obesity is a major determinant of ill health[4], increasing the risk of heart disease, stroke, type 2 diabetes and some cancers. This imposes a substantial burden on the NHS, with overweight and obesity costing the health service in England an estimated £5.1bn in 2014/15[5]. Some estimates place this cost higher. Obesity causes further costs to society through premature mortality, increased sickness absence, the increase in cost of social care and additional benefit payments.
3. Obesity is caused by regularly consuming more calories than is expended. There is consensus that excess calorie intake is the largest factor contributing to weight gain and obesity[6]. HFSS foods that are highly processed and energy-dense are often the items that are over-consumed, and this is a strong contributing factor to obesity[7].
4. Over consumption of HFSS products is a key driver of childhood obesity. Evidence suggests that basic environmental factors, such as the location of products within stores, can affect sales[8] [9]. Product placement in prominent in-store locations such as checkouts, aisle ends, and store entrances is typically used to promote HFSS products and can often lead to impulse purchases and pester power for parents. Voluntary action by retailers to use location promotions for healthier products, through the Responsibility Deal, has been limited in the past, with healthier checkout pledges not implemented at scale or consistently. Therefore, Government intervention is necessary to ensure businesses promote healthier environments and establish shopping environments that do not encourage impulse purchasing and overconsumption of HFSS food and drink.

Policy Objective

5. The restriction of location promotions on HFSS food and drinks is intended to:
    - Reduce overconsumption of HFSS products likely to lead to excess calorie intake and, over time, weight gain, while minimising the impact on food purchases that do not contribute to childhood obesity;
    - Shift the balance of promotions towards healthier options and maximise the availability of healthier products that are offered on promotion, to make it easier for parents to make healthier choices when shopping for their families;
    - Assist the wider childhood obesity strategy to reduce circumstances currently contributing to the obesogenic environment;
    - Create a level playing field in which stores that make voluntary progress are no longer penalised.

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[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837907/cmo-special-report-childhood-obesity-october-2019.pdf

[2] NHS Digital (2019) National Child Measurement Programme- England, 2018/19:Tables

[3] "*Predicting adult obesity from childhood obesity: a systematic review and meta-analysis*" by Simmonds et al., 2015.

[4] Guh et al. (2009) The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis, BMC Public Health

[5] Estimates for UK in 2014/15 are based on: Scarborough, P. (2011) The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: an update to 2006–07 NHS costs. Journal of Public Health. May 2011, 1-9. Uplifted to take into account inflation. No adjustment has been made for slight changes in overweight and obesity rates over this period. We assume England costs account for around 85% of UK costs.

[6] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837907/cmo-special-report-childhood-obesity-october-2019.pdf

[7] Sonntag D, Schneider S, Mdege N, Ali S, Schmidt B. Beyond Food Promotion: A Systematic Review on the Influence of the Food Industry on Obesity-Related Dietary Behaviour among Children. *Nutrients*. 2015;7(10):8565–8576. Published 2015 Oct 16. doi:10.3390/nu7105414

[8] Larson (2006) Core Principles for Supermarket Aisle Management, Journal of Food Distribution Research, http://ageconsearch.umn.edu/record/8554/files/37010101.pdf (accessed 23/10/2018)

[9] Nakamura et al (2014) Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Social Science & Medicine, https://www.ncbi.nlm.nih.gov/pubmed/24632050 (accessed 23/10/2018)

6. The policy has been updated following the consultation, see summary of consultation responses below for further detail.

Policy Options

7. The policy options analysed in the IA are:

   - Option 0 – Do nothing
   - Option 1 – End placement of HFSS food and drink items included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses.
   - Option 2 - End placement of HFSS food and drink items which contribute significant sugar and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding small and micro businesses
   - Option 3 - End placement of HFSS food and drink items which contribute significant sugar and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding micro businesses
   - Option 4 - End placement of HFSS products included in original list of categories consulted on in all retailers who sell food and drink in the retail sector excluding small and micro businesses

8. Option 4[10], restricting promotion of HFSS products outlined in Annex D at store entrances, checkouts and end-of-aisles in the retail sector, which was presented as the Government's preferred proposal in the consultation, has the highest NPV due to the wide scope of products included in the restrictions. However, following consultation feedback from industry outlined in the summary of consultation responses, further engagement with businesses and additional analysis and modelling by DHSC, it became clear that this option would likely result in disproportionate burden for businesses and present significant implementation challenges.

9. Therefore, Government decided that Option 2, similar to Option 4, but with a smaller list of HFSS products, is the preferred option because it strikes the best balance between delivering a robust policy that will deliver significant health benefits while taking into account proportionality and feasibility of implementation. The product categories in scope are significant contributors to children's sugar and calorie intakes. Further, many are often heavily promoted at store entrances, checkouts and end-of-aisles in large and medium businesses.

Cost and benefits of options

10. The benefits from restricting the promotion of HFSS products are expected to be a reduction in purchasing of excess HFSS products. Excess consumptions of HFSS products leads to an excess calorie consumption and weight gain over time. In the long-term this will help lower obesity prevalence and obesity related morbidity and mortality, compared to a counter-factual of no restrictions.
11. The main categories of costs are familiarisation, transition and on-going costs associated with checking products and lost profits to industry due to reduced sales of HFSS products. The impact of promotion restrictions at store entrances has not been monetised due to lack of evidence.

Preferred Option

12. Option 2 exempts small and micro businesses in England, apart from those stores that are part of a symbol group. This option ensures the policy is as targeted as possible to minimise the costs to business and the distortionary impact of regulation on the market.

13. As outlined in table 2, this policy does not have the highest NPV, however it is more proportionate to implement, monitor and enforce, as there are less stores in scope. It still captures product categories that are of most concern for childhood obesity.

[10] In the Consultation this option included small businesses and out-of-home food outlets,

14. Over 25 years, expected costs to retailers include total transition and on-going product assessment costs of £65m and net lost profit of approximately £3,591m. Over this period, manufacturers would also experience net lost profits of around £1,840m. The enforcement costs will be borne by the Department of Health and Social Care. The cost to the department of enforcing these regulations is estimated to be around £0.6m across 25 years.

15. The IA assumes that location restrictions will come into force alongside volume restrictions. As both sets of restrictions would apply to the same products, product assessment would only need to occur once to establish if it is subject to both restrictions. This is therefore a shared cost across both polices. As there are more businesses in scope under the volume restrictions than this policy, the double counting is addressed in the Volume Promotions IA.

16. The expected benefits for Option 2 are estimated to be around £73.6 billion over the 25-year appraisal period. There would be additional benefits to government from NHS savings, these are estimated to be worth around £4,364m over the appraisal period. Reduced morbidity would also result in reduced cost pressures to the NHS. Health benefits would amount to £57,600m. Social care savings would amount to £4,896m and reduced premature mortality would be expected to deliver an additional £6,788m economic output through additional labour force participation. The benefits will be experienced by all age groups as the food and drink targeted is consumed across age groups. Although a significant amount of the costs from obesity accrue in later life, the rising incidence in paediatric cases of type 2 diabetes[11] and liver disease[12] in the UK shows the burden of obesity is increasingly being felt in younger generations. Therefore, today's children will benefit their lifetime health from the policy being implemented from their childhood.

17. The total benefits will be around £73,648m, giving a total net present value of £68,152m.

Alternative options

18. The table below outlines what businesses are in scope under each option. All options exclude stores that are under 2,000 sq. ft and include any stores that are part of a symbol group.

Table 1: Exclusions under each option

Option	Excluding small and micro businesses	Excluding micro businesses
Option 1		
Option 2		
Option 3		
Option 4		

19. The table below outlines the expected impacts of the different policy options over the 25-year assessment period. Option 0 represents the do-nothing option against which the other options are compared. As such, the costs and benefits of this option are 0.

Table 2 Summary of the central estimates for the policy options (£m) over a 25-year appraisal period

Option	Total cost	Total benefit	NPV
0	0	0	0
1	-5,700	63,933	58,233
2	**-5,496**	**73,648**	**68,152**
3	-5,535	73,810	68,272
4	-5,865	81,542	75,677

[11] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5969249/pdf/DME-35-737.pdf

[12] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5483623/pdf/children-04-00048.pdf

Critical Value Analysis

20. It is possible that wider factors, such as changes to consumer behaviour, could offset some of the expected benefits of this policy. To assess the impact of this compensation, we consider the degree of offsetting required to result in a neutral net present value. Any offset would depend on additional consumption, and thus further profits to industry. Therefore, most of the costs and benefits of the policy tend to vary together. Considering this suggests that 92% of the benefits of the policy would need to be offset for the policy not to be considered socially beneficial (based on Option 2).

Problem under consideration

21. England has some of the highest rates of childhood obesity in Western Europe and a significant inequalities gap. When children start primary school aged 4-5, around 1 in 5 are overweight or obese and this increases to 1 in 3 by the time they leave aged 10-11.[13].

22. Children living in the most deprived areas are twice as likely to be obese and four times as likely to be severely obese than children in the least deprived areas[14]. Obesity has a significant impact on children's health and wellbeing and increases the risk of obesity and related diseases in adulthood.

23. In England, 28% of adults are obese and 63% are either overweight or obese. Amongst children aged 2-15, the equivalent figures are 15% and 28% respectively[15]. Obesity is a major determinant of ill health in the UK and a leading cause of serious diseases such as type 2 diabetes, heart disease and some cancers. Being overweight is the biggest single preventable cause of cancer after smoking and causes 13 types of cancer[16]. It is estimated 40,000 deaths per year in England are attributable to being overweight or obese (over 10% of all deaths). An estimated 70,000 premature deaths could be avoided each year if diets matched nutritional guidelines[17].

24. This is causing a huge strain on the NHS and economy more broadly. In 2014, there were 16 million sickness days attributed to obesity[18]. Obesity costs the NHS £5.1bn a year and wider societal costs are estimated at between £27-47bn[19].

25. The COVID-19 pandemic has further highlighted the impact that obesity can have on people's health. Evidence suggests people living with obesity who contract COVID-19 are more likely to be admitted to hospital and have an increased risk of dying from COVID-19 compared to those with a healthy weight. Tackling obesity is therefore an immediate priority to support individuals and the NHS.[20]

26. Childhood obesity is a complex problem with many drivers, including food production, societal influences, food consumption, individual psychology and biology, individual activity and environment[21]. Therefore, the government is committed to pursuing a wide set of actions across the system to reduce obesity. Despite the complexity of its drivers, at its root obesity is caused by consistently consuming more calories than we use to maintain our bodies and through activity over a long amount of time. It is estimated that on average, compared with those of healthy body weights, overweight and obese children

[13] NHS Digital (2019) National Child Measurement Programme 2018/19

[14] NHS Digital. (2019). National Child Measurement Programme 2018/19

[15] Health Survey for England 2018, NHS Digital

[16] Secretan, B. L. et al. Special Report Body Fatness and Cancer — Viewpoint of the IARC Working Group. (2016). Available at: https://www.nejm.org/doi/10.1056/NEJMsr1606602?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dwww.ncbi.nlm.nih.gov

[17] Mortality attributable to excess adiposity in England and Wales in 2003 and 2015: explorations with a spreadsheet implementation of the Comparative Risk Assessment methodology, Christopher Kelly, Nora Pashayan, Sreetharan Munisamy and John W Powles, Population Health Metrics, 2009, 7:11

[18] Public Health England (2014), Adult obesity and socioeconomic status data factsheet. Public Health England: London

[19] Estimates for UK in 2014/15 are based on: Scarborough, P. (2011) The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: an update to 2006–07 NHS costs. Journal of Public Health. May 2011, 1-9. Uplifted to take into account inflation. No adjustment has been made for slight changes in overweight and obesity rates over this period. We assume England costs account for around 85% of UK costs.

[20] Docherty, A.B., Harrison, E.M., Green, C.A., Hardwick, H.E., Pius, R., Norman, L., Holden, K.A., Read, J.M., Dondelinger, F., Carson, G. and Merson, L., (2020). Features of 16,749 hospitalised UK patients with COVID-19 using the ISARIC WHO Clinical Characterisation Protocol. medRxiv

[21] Butland.B (2017) *Tackling obesities: future choices.* Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf

consume between 140 and 500 excess calories per day for boys and between 160 and 290 for girls, depending of their age[22].

Rationale for intervention

27. On average, diets in the UK are not in line with the recommended diet and contain too much sugar, saturated fat and salt and not enough fibre and fruit and vegetables.[23] Overweight or obese children consume between 146 and 505 kcals more than they need per day for boys and between 157 and 291 kcals per day for girls.[24] Regular overconsumption is one of the key factors contributing to weight gain and, over time, obesity. Although some HFSS products will be purchased as part of a balanced diet and may not contribute to excess consumption and obesity, they nevertheless represent the most focused group of products to reduce excess calorie consumption, as they are widely available and are often over consumed[25].

28. Individuals face only some of the costs associated with ill health as universal healthcare ensures the financial costs are borne by the taxpayer. Consequently, the health costs associated with overconsumption of HFSS products are passed on to society and are not just experienced by the individual. In economic terms, this is referred to as a negative externality.

29. An individual is likely to make decisions based on the costs they face. When a negative externality is present, the market fails to operate efficiently because the social costs are greater than the personal costs and therefore not considered in an individual's decision making at the margin.

30. This negative externality gives a rationale for intervention, but it is not immediately clear what form this intervention should take.

31. Many different cues can affect food and drink purchases. It is clear from academic evidence that marketing and promotions in stores are extensive and effective at influencing preferences and purchases[26]. The shopping environment plays an important part in the way products are marketed to us, with simple factors such as the location of products within stores significantly affecting what we buy[2728]. A high-quality observational study in England found that end-of-aisle displays (after controlling for the effect of price, price promotion and number of display locations) increased sales volumes for carbonated drinks by over 50%[29].

32. Increasing the distance between food and people has been found to decrease the likelihood that they select and consume it[30]. This effect has been observed across a wide variety of different foods

[22] Calorie reduction: the scope and ambition for action, Public Health England, 2018: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685359/Calorie_reduction_The_scope_and_ambition_for_action.pdf (Accessed 15/06/2018)

[23] Public Health England. Sugar reduction: The evidence for action 2015 [Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sug ar_reduction_The_evidence_for_action.pdf].

[24] Calorie reduction: The scope and ambition for action, Public Health England, 2018. Available at: https://www.gov.uk/government/publications/calorie-reduction-the-scope-and-ambition-for-action

[25] Hawkes, Corinna. "Sales Promotions and Food Consumption." *Nutrition Reviews* 67.6 (2009): 333-42. Web.

[26] Public Health England (2018) Sugar Reduction: The evidence for action, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sugar_reduction_The_evidence_for_action.pdf (accessed 06/06/2018)

[27] Public Health England (2018) Sugar Reduction: The evidence for action, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sugar_reduction_The_evidence_for_action.pdf (Accessed 15/06/2018)

[28] Larson (2006) Core Principles for Supermarket Aisle Management, Journal of Food Distribution Research, http://ageconsearch.umn.edu/record/8554/files/37010101.pdf (accessed 23/10/2018)

[29] Nakamura et al (2014) Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Social Science & Medicine, https://www.ncbi.nlm.nih.gov/pubmed/24632050 (accessed 23/10/2018)

[30] Bucher et al (2016) Nudging consumers towards healthier choices: a systematic review of positional influences on food choice. British Journal of Nutrition;115(12):2252-63, https://www.ncbi.nlm.nih.gov/pubmed/27185414

including confectionary[3132], savoury snacks, fruit and vegetables[33], and nutrient- and energy-dense food[34].

33. Location promotions of HFSS products can lead to excess purchasing and therefore overconsumption of products which are associated with a greater propensity to create impulse purchases[3536] and act as a significant contributor to weight gain[3738]. This suggests that the intrinsic value of products is not increased by being placed in prominent locations; rather their consumption is stimulated via ease of access or triggered impulsive behaviour.

34. As a result, there are valid grounds for restricting the types of products placed in these locations if the current system results in excess consumption. Just under 60% of consultation responses agreed with the Government's proposal that HFSS promotions at prominent locations should be restricted. Responses from individuals said that prominent in-store locations are the most visible in stores, they attract shoppers, and they lead to unwanted impulse purchases of HFSS, unnecessary temptation and pester power for parents.

35. Generally, the retail promotional environment does not align with healthy eating guidelines and makes it harder for families to make healthier choices when shopping. A recent survey showed that 43% of all food and drink products located in prominent areas, such as store entrances, checkouts, and aisle ends were for sugary foods and drinks. 70% of these products in prominent areas were for food and drinks that contribute significantly to children's sugar and calorie intakes and less than 1% of food and drink products promoted in high profile locations were fruit or vegetables[39].

36. The survey also showed that 86% of food and drink products located at store entrances were for products that contribute significantly to children's sugar and calorie intake, 67% for checkout areas and 67% for aisle ends.

37. Acting to reduce the promotion of HFSS food and drinks in retailers has previously been recommended by Public Health England as a way of reducing excessive sugar consumption[40]. In 2015, Public Health England conducted a review of the evidence[41] to establish the most effective levers to reduce sugar intake across the population. As part of this review, researchers specifically investigated the impact that marketing and promotions can have on purchasing decisions and, therefore, consumption. Overall, Public Health England's research recommended that reducing and rebalancing promotions towards healthier products would improve the balance of people's diets.

38. The importance of where products are located within stores is recognised by manufacturers, as they are willing to pay retailers to ensure products are placed in desirable locations[42]. Research has shown that

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[31] Meiselman et al (1994) Effect of effort on meal selection and meal acceptability in a student cafeteria. Appetite, https://www.ncbi.nlm.nih.gov/pubmed/7826056

[32] Wansink et al (2006) The office candy dish: proximity's influence on estimated and actual consumption. International journal of obesity;30(5):871, https://www.ncbi.nlm.nih.gov/pubmed/16418755

[33] Kroese et al (2015) Nudging healthy food choices: a field experiment at the train station. Journal of Public Health. Jul 17;38(2):e133-7, https://www.ncbi.nlm.nih.gov/pubmed/26186924

[34] Musher-Eizenman et al (2010) Children's sensitivity to external food cues: how distance to serving bowl influences children's consumption. Health Education & Behavior. Apr;37(2):186-92, https://www.ncbi.nlm.nih.gov/pubmed/19482961

[35] Hultén P, Vanyushyn V. (2011) Impulse purchases of groceries in France and Sweden. Journal of consumer marketing. Aug 2;28(5):376-84, https://www.emeraldinsight.com/doi/abs/10.1108/07363761111150026 (accessed 23/10/2018)

[36] Muruganantham G, Bhakat RS. (2013) A review of impulse buying behavior. International Journal of Marketing Studies. Apr 22;5(3):149, https://www.emeraldinsight.com/doi/abs/10.1108/IntR-12-2016-0377?journalCode=intr (accessed 23/10/2018)

[37] Kant AK, Graubard BI. (2005) Energy density of diets reported by American adults: association with food group intake, nutrient intake, and body weight. International Journal of Obesity. Aug;29(8):950, https://www.ncbi.nlm.nih.gov/pubmed/15917854 (accessed 23/10/2018)

[38] Mendoza et al. (2007). Dietary energy density is associated with obesity and the metabolic syndrome in US adults. Diabetes care. Apr 1;30(4):974-9, https://www.ncbi.nlm.nih.gov/pubmed/17229942 (accessed 23/10/2018)

[39] Obesity Health Alliance (2018), Out of place: The extent of unhealthy foods in prime locations in supermarkets. http://obesityhealthalliance.org.uk/wp-content/uploads/2018/11/Out-of-Place-Obesity-Health-Alliance-2.pdf

[40] Public Health England (2018) Sugar Reduction: The evidence for action, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sugar_reduction_The_evidence_for_action.pdf (accessed 06/06/2018)

[41] Public Health England (2018) Sugar Reduction: The evidence for action, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sugar_reduction_The_evidence_for_action.pdf (accessed 06/06/2018)

[42] Food Standards Scotland (2017) Identifying and understanding the factors that can transform the retail environment to enable healthier purchasing by consumers, Leigh Sparks and Steve Burt, University of Stirling, https://www.foodstandards.gov.scot/downloads/FSS-_Final_Report_June_1st_2017.pdf (accessed 23/10/2018)

the impact of special displays depends more on the characteristics of the display than on the characteristics of the individual viewing the display, so the effect is not limited to a subset of consumers[43].

39. One academic describes the effect as follows: *"Even when people are consciously trying to make healthful choices, their ability to resist palatable foods in convenient locations wanes when they are distracted, are under stress, are tired, or have just made other decisions that deplete their cognitive capacity. Once cognitive capacity is depleted, automatic processing that relies on heuristics and other shortcuts dominates, and under these circumstances people are more likely to choose foods high in sugar and fat."*[44]

40. We recognise there have been voluntary programmes by retailers to reduce the use of prominent locations, particularly checkouts, to promote unhealthy products. However, these have been very limited and not created a significant change in the shopping environment. A 2018 study[45] used data from 30,000 UK households to assess sales of small packages of sugary confectionery, chocolate, and potato crisps before and after supermarkets in the UK introduced voluntary policies to restrict unhealthy foods at checkout areas. The research found 7% fewer small packages of sugary confectionery, chocolate, and potato crisps were bought and taken home from supermarkets immediately after they announced a checkout food policy. One year after, the difference was about 16% fewer.

41. The study also analysed data from 7,500 people who recorded all the food they bought and ate without bringing it home. In 2016 and 2017, about 76% fewer small packages of sugary confectionery, chocolate, and potato crisps were bought and eaten 'on the go' from supermarkets with checkout food policies compared to those without a policy. It might be expected that checkouts will account for a greater degree of sales in supermarkets, however as the study does not show where purchases were selected, it is not possible to determine the effect on changes in purchases on consumption.

42. Overall, this shows that the current market conditions have failed to eliminate the negative externalities of overconsumption of HFSS products due to location promotions and previous voluntary actions have not been that successful in eradicating the problem either. The existence of this market failure provides a rationale for government intervention.

43. In addition, there is also public support for action on food and drink promotions. Polling has shown:

    - Just over half of people polled said that supermarkets should offer more healthy food in promotions, and this was named as the top action shoppers wanted from retailers[46]
    - More than 90% of respondents to a nationwide survey believe that HFSS foods at checkouts contribute to obesity[47]
    - 78% of shoppers said they found junk food at checkouts 'annoying'; and 83% of them had been pestered by children to buy food at checkouts with 75% giving in and buying something through 'pester power'[48].

Impact on children

44. This policy benefits all age groups and the food and drink categories outlined in Option 2 focus on foods that significantly contribute to children's sugar and calorie intakes. Obesity in childhood directly affects physical and mental health and is associated with an increased risk of obesity in adulthood[49] when the majority of costs of obesity occur. Although food habits are not perfectly stable over the life course, there

[43] Wedel M, Pieters R. (2012) Visual marketing: from attention to action. Psychology Press (accessed 23/10/2018)

[44] Cohen DA, Babey SH. (2012) Candy at the cash register—a risk factor for obesity and chronic disease. New England Journal of Medicine. Oct 11;367(15):1381-3.

[45] https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002712

[46] Which? Survey, August 2016. Available at: https://press.which.co.uk/whichpressreleases/more-supermarket-promotions-on-less-healthy-food/

[47] British Dietetic Association and Children's Food Campaign, 2013. Available at: http://www.foodingredientsfirst.com/news/bda-calls-for-uk-government-action-to-chuck-junk-food-off-the-checkout.html

[48] British Dietetic Association and Children's Food Campaign, 2013. Available at: http://www.foodingredientsfirst.com/news/bda-calls-for-uk-government-action-to-chuck-junk-food-off-the-checkout.html

[49] Singh AS, Mulder C, Twisk JW, Van Mechelen W, Chinapaw MJ. (2008) Tracking of childhood overweight into adulthood: a systematic review of the literature. Obesity reviews. 2008 Sep 1;9(5):474-88.

is considerable scope for influencing lifetime habits by intervening in children[50]. Adjusting the consumption patterns of children therefore offers substantial benefits in the long term.

45. Parents often make decisions on what their child eats. Multiple influences and factors play into the decisions that parents make about the food and drinks that they buy for their families and these decisions will vary depending on each individual. However, it is reasonable to assume that parents often lack an understanding of long-term health consequences and the risks around unhealthy foods[51] This impacts the food they give to their children as they may not be fully aware of the short and long-term cost of consuming the product.

46. Children are uniquely vulnerable to the techniques used by marketers to promote sales[52], a fact that marketers have responded to in the past by significantly increasing advertising budgets for products aimed at children[53]. These effects can be transmitted into the purchasing behaviours of parents through 'pester power'[54].

47. The results of numerous academic studies provide strong evidence that food promotion does encourage children to pester their parents to purchases specific foods, particularly HFSS products[55]. A study into Australian parents' experiences of food marketing directed towards children, for example, found that most of the items requested by children were HFSS foods and 70% of parents purchased at least one food item requested during the shopping trip[56]. Furthermore, parents may not fully realise the extent to which their purchases are driven by prompts from children, with an observational study finding that children trigger twice as many purchases as parents realised[57].

Policy objective, context and options

Policy objective

48. Restricting the placement of HFSS food and drink products at key selling locations such as store entrances, checkouts and aisle ends in England is intended to:

    - Reduce overconsumption of HFSS products likely to lead to excess calorie intake and, over time, weight gain while minimising the impact on food purchases that do not contribute to childhood obesity;
    - Reduce pester power for parents and impulse purchases of HFSS products resulting from placement at prominent locations;
    - Shift the balance of promotions towards healthier options and maximise the availability of healthier products that are offered on promotion, to make it easier for parents to make healthier choices when shopping for their families;
    - Assist the wider childhood obesity strategy to reduce circumstances currently contributing to the obesogenic environment;

[50] Hursti UK. Factors influencing children's food choice. Annals of medicine. 1999 Jan 1;31(sup1):26-32.

[51] Butland.B (2017) *Tackling obesities: future choices.* Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf

[52] Carter OB, Patterson LJ, Donovan RJ, Ewing MT, Roberts CM. (2011) Children's understanding of the selling versus persuasive intent of junk food advertising: Implications for regulation. Social Science & Medicine. 2011 Mar 31;72(6):962-8.

[53] Linn S, Novosat CL. (2008) Calories for sale: food marketing to children in the twenty-first century. The ANNALS of the American Academy of Political and Social Science. 2008 Jan;615(1):133-55.

[54] Marshall D, O'Donohoe S, Kline S. (2007) Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour. 2007 Jul 1;6(4):164-81.

[55] McDermott et al. (2006). International food advertising, pester power and its effects. International Journal of Advertising, Jan 1;25(4):513-39, http://oro.open.ac.uk/9382/ (accessed 23/10/2018)

[56] Campbell et al. (2012) A mixed-method examination of food marketing directed towards children in Australian supermarkets. Health promotion international, Nov 15;29(2):267-77, https://www.ncbi.nlm.nih.gov/pubmed/23154998 (accessed 23/10/2018)

[57] Ebster et al. (2009) Children's influences on in-store purchases. Journal of Retailing and Consumer Services, Mar 31;16(2):145-54, https://www.sciencedirect.com/science/article/pii/S0969698908000520 (accessed 06/06/2018)

- Create a level playing field in which businesses that have voluntarily made progress are no longer penalised.

Policy context

Obesity and the retail sector

49. The proposal to restrict promotions of HFSS products by price and location in the retail sector is part of a wider set of policies included in the Government's Childhood Obesity: a plan for action – Chapter 2[58], published in June 2018. The plan sets out the Government's national ambition to halve childhood obesity by 2030 and significantly reduce the gap in obesity prevalence between children from the most and least deprived areas[59]. The proposals outlined in Chapter 2 include consulting on ending the sales of energy drinks to children, encouraging further action in local areas, mandating consistent calorie labelling in takeaways, restaurants and cafés and consulting on introducing a 9pm watershed on tv and similar protections online. The proposed policies will help parents make the best decisions for their families by changing the food environment, so that healthier choices become the easiest choices.

50. In the budget 2016 the government announced the introduction of a new levy on soft drinks that contain added sugar to help tackle childhood obesity, the Soft Drinks Industry Levy (SDIL). In August 2016, the Government launched the first part of its plan for action[60]. This comprehensive plan aims to help children and families make healthier choices and be more active[61]. Key measures in the plan included a sugar reduction programme, and a commitment to helping children enjoy an hour of physical activity every day. Chapter 2 builds on the first chapter of the plan, both to cement the action already taken, and to take action in other areas.

51. The SDIL, was designed to incentivise businesses to reformulate sugary drinks. It is a charge on drinks with a total sugar content of 5 grams or more per 100 millilitres, with a higher charge for drinks that contain 8 grams or more sugar per 100 millilitres. The levy came into force in April 2018 and has been hugely successful. The latest data published in September 2019 shows that the average sugar content of drinks subject to the soft drinks industry levy decreased by 28.8% between 2015 and 2018[62]. The report also showed an increase in sales of drinks subject to the levy of 10.2% (due to increased sales of lower sugar drinks), but a reduction in the total sugar content in the drinks sold of 21.6%. Analysis by socio-economic group shows that the total sugar purchased per household from drinks subject to SDIL has decreased in all socio-economic groups by between 9% and 29%.

52. As part of the wider reformulation programme, in March 2018 Public Health England announced an extensive calorie reduction programme. This programme aims to remove excess calories from the foods children eat most, helping to make the healthy choice the easy choice for consumers. The calorie reduction programme challenges the food industry to achieve a 20% reduction in calories by 2024 in product categories that contribute significantly to children's calorie intakes and where there is scope for substantial reformulation and/or portion size reduction. This requires work to be undertaken by retailers and manufacturers, restaurants, pubs, cafes, takeaway and delivery services and others in the eating out-of-home sector.

53. In June 2019 Government published Chapter 3 of the Childhood Obesity Plan in the Prevention Green Paper including; consulting on improving the marketing and labelling of infant foods, a reduction and reformulation programme aimed at commercial infant feeding foods, consulting on building on the success of front of pack nutrition labelling and further action to support individuals to achieve and maintain a healthier weight.

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[58] https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2

[59] Childhood obesity: a plan for action, chapter 2 https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2 (last accessed 06/08/2018)

[60] Childhood obesity: a plan for action is available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/546588/Childhood_obesity_2016__2__acc.pdf (last accessed 06/08/2018)

[61] Ibid.

[62] https://www.gov.uk/government/publications/sugar-reduction-progress-between-2015-and-2018 (last accessed 02/10/2019)

54. A range of policies are being proposed in the childhood obesity plan because the "causes of obesity are embedded in an extremely complex biological system, set within an equally complex societal framework"[63] to which there is no single, simple solution. The size of the problem has led to its normalisation and the inability of many people to judge their own weight accurately[64]. Furthermore, evidence suggests that 50% of parents underestimate their overweight/obese child's weight[65].

55. Although people have difficulty identifying obesity as an issue at a personal level, the public recognises the problem at a national level. Obesity is reported as the second biggest health problem facing people today, with 35% of people identifying it as an issue – only 1% less than cancer. Additionally, 19% of people now report diabetes as a major issue – up from just 10% in 2010[66].

56. There has been significant engagement with industry to encourage businesses to promote healthier eating and support their customers to make healthier choices. For example, as part of the Public Health Responsibility Deal (RD), a partnership between Government and industry, the food industry was challenged to take voluntary action on food promotions, including the placement of confectionery at checkouts and increasing the promotion of healthier foods. Some approaches included:

    - Retailers removing sweets from their checkouts (Lidl, Aldi, Tesco; Marks and Spencer announced removal of the 'guilt tills' in July 2015).
    - Retailers taking voluntarily action on discounting and price promotions. For example, Sainsbury's moved away from multi-buy offers in 2016.

57. However, these voluntary commitments to restrict promotions of HFSS food and drink have been limited to individual retailers and were not implemented consistently across all stores and different stores have used different definition of HFSS. In addition, the definition of what products are categorised as HFSS vary by retailer. The evaluation of the RD clearly showed the programme failed to encourage concerted action from businesses to establish healthier shopping environments and therefore did not have the anticipated impact on helping people make healthier choices[67]. The RD was shown to be unsuccessful in encouraging retailers to reach a common agreement on promotion restrictions and feedback from industry stakeholders, including retail trade bodies, was clear that competition law inhibits businesses from openly discussing or agreeing a common promotional strategy voluntarily; in order to achieve consistent and concerted action on promotions, legislation is required.

58. Some retailers currently implement confectionary-free checkouts. However, such actions are not always implemented consistently across all stores or all store formats. These approaches are summarised in Table 3 below. We are not aware of any evidence to suggest that any retailers currently restrict the range of items available at store entrances and at the ends of aisles and no such evidence was submitted through the consultation.

[63] Government Office for Science (2007) Tackling Obesities: Future Choices – Project report, https://www.gov.uk/government/publications/reducing-obesity-future-choices (last accessed 08/09/2018)

[64] Johnson et al. (2014) Do weight perceptions among obese adults in Great Britain match clinical definitions? Analysis of cross-sectional surveys from 2007 and 2012, BMJ Open

[65] Lundahl et al. (2014) Parental underestimates of child weight: a meta-analysis. Pediatrics 014;133:e689–703.

[66] Public Perceptions of the NHS and Social Care - Winter 2014: Ipsos MORI report for the Department of Health, https://www.gov.uk/government/publications/public-perceptions-of-the-nhs-and-social-care-winter-2014 (last accessed 14/09/2018)

[67] Knai C. et al, Has a public–private partnership resulted in action on healthier diets in England? An analysis of the Public Health Responsibility Deal food pledges, July 2015. Available at: https://www.sciencedirect.com/science/article/pii/S0306919215000391

Table 3: Major retailer approaches to placement of HFSS food and drinks at checkouts (As of June 2018)

Retailer	Actions Taken
The Co-operative[68]	Has banned the display of high fat, sugar, or salt products from checkout stands and kiosks.
Sainsbury's[69]	Has a policy of no sweets or chocolates at checkouts in supermarkets. This does not apply to smaller convenience stores.
Tesco[70]	Its policy is not to place any confectionary at checkouts in all its stores.
ASDA[71]	Limits the display of confectionary treats to one in three checkouts.
Iceland[72]	Its policy is to allow a confectionary stand at only one checkout in each of its stores.
Morrisons[73]	Does not allow sweets at its main bank of checkouts but continues to place them around self-service tills.
Aldi[74]	Has a policy not to place confectionary at checkouts.
Lidl[75]	Has a policy not to place confectionary at checkouts.
Waitrose[76]	Has a policy not to place confectionary at checkouts.

59. Furthermore, a level playing field is required to ensure forward thinking businesses are not penalised for taking action, and this is not possible with a voluntary approach. This experience has shown that these initiatives require comprehensive participation, and some are too commercially sensitive or complex for voluntary initiatives to be effective.

Summary of consultation responses

60. The consultation asked for views on what size of businesses should be in scope of the regulation. Whilst many highlighted the need for an even playing field, those representing smaller businesses said that the policy could disproportionately impact small businesses. Stakeholders explained that, compared to large businesses, the policy could be more burdensome for small businesses to:

    - familiarise themselves with the new regulation;
    - assess which products are in scope of the restrictions;
    - plan a new store layout; and
    - implement the policy.

[68] Which? (2012) A taste for change? Which? Consumer Report, https://www.which.co.uk/documents/pdf/a-taste-for-change---which-briefing---responsibility-deal-445309.pdf (accessed 23/10/2018)

[69] Which? (2012) A taste for change? Which? Consumer Report, https://www.which.co.uk/documents/pdf/a-taste-for-change---which-briefing---responsibility-deal-445309.pdf (accessed 23/10/2018)

[70] Tesco (2015) Sweets and chocolates removed from all checkouts from today, https://www.tescoplc.com/news/news-releases/2015/sweets-and-chocolates-removed-from-all-checkouts-from-today/ (accessed 23/10/2018)

[71] Which? (2012) A taste for change? Which? Consumer Report, https://www.which.co.uk/documents/pdf/a-taste-for-change---which-briefing---responsibility-deal-445309.pdf (accessed 23/10/2018)

[72] Which? (2012) A taste for change? Which? Consumer Report, https://www.which.co.uk/documents/pdf/a-taste-for-change---which-briefing---responsibility-deal-445309.pdf (accessed 23/10/2018)

[73] Morrisons (2015) Morrisons to Remove Sweets from Checkouts, https://www.morrisons-corporate.com/media-centre/corporate-news/morrisons-to-remove-sweets-from-checkouts/ (accessed 23/10/2018)

[74] Aldi (ND) Healthier checkouts, https://www.aldi.co.uk/healthier-checkouts (accessed 23/10/2018)

[75] Lidl (ND) Healthy eating, https://www.lidl.co.uk/en/Healthy-eating-11187.htm (accessed 23/10/2018)

[76] Hayward (2017) Supermarkets break pledge to stop tempting kids with chocolates at checkout, Mirror, http://www.mirror.co.uk/news/uk-news/supermarkets-break-pledge-stop-tempting-10053212 (accessed 23/10/2018)

61. Following this consultation feedback, we recognise that the small businesses might find the requirement more challenging and burdensome and therefore are exempted from the restriction.

62. As a result, Government decided to exempt small businesses from the restrictions unless they are part of a symbol group.

63. Following further engagement with stakeholders, symbol groups have been identified as businesses who provide a support function to stores, often on promotions and what products to stock, similar to supermarkets. For example, we expect the assessment of which products are in scope of the restrictions to be carried out by the symbol business' HQ, meaning the product assessment cost would not fall on the individual store. Hence, the stores that are part of a symbol group would not find it as burdensome to familiarise themselves with the regulation, assess the products in scope and implement the policy, compared to small/micro businesses not part of a symbol group.

64. The consultation asked for views on whether the location restrictions should apply to very small stores that may not have distinct checkout, aisle end and store entrance locations. Having considered the feedback including a range of store layout plans, we also recognise that stores that are over 2,000 sq. ft would be able to implement the location restrictions as they tend to have distinct checkout and front of store areas and they tend to have multiple aisles to which they can move HFSS goods. Further discussion post consultation with stakeholders has also clarified that stores above 2,000 sq. ft are considered large stores. In addition, we have been advised by Trading Standards that many retailers create stores that are just under 3,000 sq. ft to avoid Sunday Trading law restrictions. We want to capture these stores within the Regulations as these are likely to be used by many people for their daily or weekly grocery needs and will be the only option for those shopping on a Sunday outside of the restricted trading hours. Including these in the policy will increase the expected benefits and help to reduce obesity.

65. The consultation also asked for views on whether the Government's proposal should apply to online retailers that also sell food and drink. 50% of respondents agreed that the restrictions should also apply to online shopping, to reflect the increasing trend of people shopping online and to ensure a level playing field with retailers that only operate online. On this basis Government decided that location promotions will apply online to all medium and large businesses, given that square footage is not an applicable concept online this threshold will not apply. We are exploring with businesses if any symbol groups sell their products online through third party websites. Discussions with sector associations suggests this is not common practice. We are also exploring definitions for online equivalents for store entrance, end of aisle displays and check outs and accompanying guidance for industry. Further discussion with industry, has revealed that the online equivalent locations we have proposed appear to be broadly consistent with industry's definitions. A store entrance would equate to the website's home page, a checkout would equate to the 'view shopping basket' or proceed to payment page. End of aisle would equate to a category landing page i.e. products being promoted when a customer is browsing other product categories. The specific wording of these online location definitions in the draft regulations will be tested further in the enforcement consultation.

66. It should be noted that the Government will consult on how to enforce this policy in due course. This consultation will be another opportunity for stakeholders to provide evidence on how the enforcement of the policy may differ for businesses part of a symbol group and depending on the square ft size of stores.

67. Specialist retailers who only sell a specific type of HFSS product (e.g. chocolatiers or sweet shops) are also not in scope of the location restrictions because it would be impractical for them to implement this policy and would likely lead to significant disruption to their business.

68. The consultation also asked for views on whether the placement of HFSS products should be restricted in the out of home sector.

69. Considering the feedback, Government decided that promotions in the out of home sector will not be in scope of the restrictions, given that the evidence showed that the problem is more significant in the retail sector, and the use of space in out-of-home food outlets is different from retail environments. Out-of-home food outlets do not generally have multiple aisles in addition, food in the out of home sector tends to be unpackaged or packaged for immediate consumption, and therefore there would be practical challenges with calculating the NPM score of products, due to the lack of nutritional

information on pack. Given the complexity in defining the promotional locations in out-of-home food outlets and the challenges in calculating the NPM, it would not be reasonable for them to have the same restrictions as the retail sector.

Policy options

70. This IA includes modelling of a range of regulatory options restricting the placement of HFSS products in prominent in store locations. Non-regulatory options have been investigated but are not considered sufficient to achieve the policy objectives, as previous voluntary attempts have not succeeded and businesses have stated that voluntary action on promotions is not feasible. The proposed options are therefore:

- Option 0 – Do nothing
- Option 1 – End placement of HFSS food and drink items included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses.
- Option 2 - End placement of HFSS food and drink items which contribute significant sugar and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding small and micro businesses
- Option 3 - End placement of HFSS food and drink items which contribute significant sugar and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding micro businesses
- Option 4 - End placement of HFSS products included in original list of categories consulted on in all retailers who sell food and drink in the retail sector excluding small and micro businesses

Option 0: Do nothing

71. This is the do-nothing scenario against which all other options are compared. Option 0 assumes no changes in age-specific rates of overweight and obesity, but does assume that the average BMI of cohorts of individuals increases over time as they age. This increase in average BMI has been based on modelled estimates of current experiences[77]. Under the do-nothing scenario, several supermarkets would continue to voluntarily limit the sales of certain HFSS products at checkouts, and those not currently restricting sales would be expected to continue doing so.
72. Other policies already in place like the voluntary sugar reduction programme and the SDIL will continue to incentivise businesses to reformulate their products to reduce sugar.
73. Due to the considerable number of uncertainties which would need to be considered, the do-nothing scenario in this IA does not attempt to quantify the future impact of the policies already announced or any other possible future actions by government.

Option 1: End placement of HFSS food and drink items included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles in the retail sector excluding small and micro businesses.

74. Under Option 1, retailers would be prevented from placing HFSS food and drink products included in a narrow list of discretionary categories at store entrances, checkouts and end-of-aisles. These categories are defined as products that are not essential to the diet and do not provide useful nutrients, and include the following: chocolate and sweet confectionery, sweet biscuits, cakes, puddings and dairy desserts, morning goods (e.g. pastries), ice cream, soft drinks with added sugar, crisps & savoury snacks).
75. HFSS foods within the above categories in scope would be defined using the 2004/05 Nutrient Profile Model (NPM) (see Annex A for more details).

[77] Ara et al. (2012) What is the clinical effectiveness and cost-effectiveness of using drugs in treating obese patients in primary care? A systematic review. Health technology assessment (Winchester, England);16(5):iii, https://www.ncbi.nlm.nih.gov/pubmed/22340890 (accessed (28/06/2018).

76. 'Non pre-packaged products' would be excluded from the policy as it may be impractical for businesses to assess the NPM score of products when nutritional information is not available on pack. This is because businesses are not currently required to provide nutritional information for certain products which are sold loose [78].

77. Micro and small businesses[79] are excluded from the restrictions, under options 1, 3, and 4 unless they are part of a symbol group. However, symbol group stores that fall below 2,000 sq. ft will still be excluded (see below) so many of these symbol stores will fall into this exclusion. Civil society organisations such as voluntary bodies or charities are excluded from the restrictions.

78. We have made the decision to include symbol groups as they consist of independent and multiple retailers who trade under a common fascia such as Budgens, Co-op, Spar etc. The symbol group itself is seen as a large business who have small and micro independent and multiple retailers trading under the symbol group who provide support to the retailers. Stakeholder engagement highlighted that support could include having central standards, support on legal requirements and a shared marketing proposition, but independent and multiple retailers operating under a symbol group can still make their own buying and operational decisions. According to 2019 data from the Association of Convenience Stores (ACS), there are around 13,000 stores in England that are part of 15 symbol groups who make up 38% of total sales in the convenience sector[80]. Data from ACS[81] estimates that 12% of affiliated independent retailers or multiples are over 2,000 sq. ft and part of a symbol group.

79. Industry also highlighted that the relationship between a symbol group and a retailer can vary widely, with some being more stringently controlled (similar to a franchise arrangement) than others. Stakeholder engagement has also revealed that stores may receive direct support in planning store layouts and making these arrangements to meet the locations restrictions at an additional costs. This could potentially disincentivise retailers with stores above 2,000 sq. ft to join a symbol group, however this would be dependent on whether the benefits of being part of a symbol group outweigh the costs.

80. Overall, the regulation is considered to be less burdensome on stores who are part of a symbol group compared to small/micro stores in the sector, who would not get any additional support. It was therefore decided appropriate that symbol stores should be in scope of this policy. For the purposes of the remainder of this document and the calculations herein, symbols will be re-categorised under large businesses. By requiring stores that are part of a symbol group to end placement of HFSS products in key locations, it ensures we deliver significant health benefits whilst not including businesses who do not have the resources to implement this regulation.

81. Taking into consideration consultation feedback, stores below 2,000 sq. ft would also be excluded from the location restrictions even if they are part of a medium or large business or a symbol, as they may not have distinct checkout and front of store areas or multiple aisles to which they can move HFSS goods.

82. Specialist retailers who only sell a specific type of HFSS product that is within the categories in scope (e.g. sweets) would also be excluded from the location restrictions, as it would be impractical for them to implement this policy and would likely lead to unmanageable disruption to their business.

83. Promotional offers in the out of home sector would be excluded. There are a number of practical barriers to this being applied in out of home food outlets. Firstly, as food in the out of home sector tends to be unpackaged, there would be practical challenges with calculating the NPM score of products, due to the lack of nutritional information on pack. Also, out of home food outlets do not have multiple aisles where they could move the items to, as food retailers do. For these reasons out of home food outlets were excluded.

84. The consultation asked for views on how to define in store locations, but businesses did not provide any definitions, stating the lack of standardised common definitions across industry. Therefore, further work was carried out by DHSC to establish definitions of store entrances, checkouts and the ends of

[78] Department for Environment, Food & Rural Affairs (2017) Food labelling: loose foods, available at https://www.gov.uk/guidance/food-labelling-loose-foods (accessed 29/06/2018)

[79] Micro businesses as those with 10 or less full time equivalent employees and small businesses are those with 11-49 full time equivilant employees

[80] Association of Convenience Stores (ACS) (2019) *ACS Local shop report. Available:* https://www.acs.org.uk/sites/default/files/acs_local_shop_report_2019.pdf (accessed 16/10/2019)

[81] This data was provided by ACS in 2019.

aisles, including assessing the available published evidence and drafting clear and comprehensive definitions. These will be communicated with stakeholders for further views and potential refinement as appropriate. The definitions are in Annex D.

85. We have not modelled all subtleties regarding defining in store locations in this IA, such as queueing areas blending into wider store space, as the data available is insufficient to do so. However, we recognise that the precise definition of these areas will have impacts on the policy outcomes.

Option 2: End placement of HFSS food and drink items which contribute significant sugar and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding small and micro businesses

86. The same exclusions discussed above for Option 1 would also apply to Option 2.

87. In addition, under Option 2, retailers would be prevented from placing HFSS food and drink products which contribute significant sugar and calories to children's diets and are of most concern for childhood obesity, at store entrances, checkouts and end-of-aisles. A list of the product categories included in this option can be found in Annex C.

88. Including these products means the regulations are targeting the products that contribute significant sugar and calories to children's diets, while also reducing costs to business, and therefore represents a balanced and proportionate approach.

Option 3: End placement of HFSS food and drink items which contribute the significant and calories to childrens diets and are of most concern for childhood obesity at store entrances, checkouts and end-of-aisles in in the retail sector excluding micro businesses

89. Under option 3, retailers would be prevented from placing HFSS food and drink products, as outlined in option 2, at store entrances, checkouts and end-of-aisles however it would only exclude micro businesses from this regulation in addition to the other exclusions discussed in option 1 and 2.

Option 4: End placement of HFSS products included in original list of categories consulted on in all retailers who sell food and drink in the retail sector excluding small and micro businesses

90. The same exclusions discussed above for Option 1,2 and 3 would also apply to Option 4.

91. In addition, under Option 4, retailers would be prevented from placing HFSS food and drink products included in the Public Health England's Sugar reduction Programme and SDIL, which contribute significant amounts of sugar and calories to children's' diets, at store entrances, checkouts and end-of-aisles. A list of the product categories included in this option can be found in Annex D.

Details of Alternative Options Considered

92. In addition to the policy options above, several other options have been considered but were not been deemed sufficient to deliver the policy objectives.

93. Alternative options include education and awareness initiatives such as doing more to educate children through the curriculum and raising awareness among the public through a public health campaign.

94. The curriculum gives teachers the scope to do this, not least through the science programmes of study and Personal, Social, Health and Economic education (PSHE). Guidance published by the Department for Education makes it clear that through PSHE pupils should learn what constitutes a healthy diet as well as the characteristics of a poor diet and the risks associated with unhealthy eating. It is for teachers to decide how to approach education on these matters and what examples to use.

95. The Government encourages everyone to have a healthy balanced diet, in line with the national food model the Eatwell Guide which depicts a diet that is based on fruit, vegetables and higher fibre starchy carbohydrates. It shows the proportions of the different types of foods and drinks for a healthy, balanced diet.

96. The Government supports behaviour change through its social marketing campaigns including: Change4Life and OneYou, the reduction and reformulation programme and providing advice to the consumer through NHS choices to promote making the healthier choice, the easiest choice.

97. Through the Change4Life campaign, Public Health England (PHE) provides practical advice to families and children to help them make healthier choices.

98. Education and awareness initiatives already exist, but there is still concern about excess calorie and sugar consumption and obesity prevalence has not declined. Therefore, whilst these form a complementary part of the strategy, alone, we believe these would have limited efficacy in achieving the policy aim of reducing childhood obesity.

    Consideration was also given to a voluntary approach to limiting promotions of HFSS foods, which was unsuccessful when attempted under the Responsibility Deal (see paragraph 56 for details), therefore this option was not considered appropriate as explained in the table below. No viable alternative options to deliver this policy were provided in response to the consultation.

99. Prior to consultation we also considered a number of alternatives that could be used to define what products were in scope, including the option to use the front of pack nutrition labelling scheme. Again this approach was not considered appropriate as it was designed as a voluntary scheme and it does not consider the overall nutritional content of the product in the same way as the nutrient profiling model.

Table 4: Alternative options considered

Option	Consideration
Educating children through the curriculum on healthy eating	• There is already scope in the curriculum to do this but is has limited impact if used in isolation.
Public health campaigns	• These already exist but are not considered sufficiently effective to reduce the prevalence of obesity in children.
The consultation proposed restricting HFSS promotions at checkouts, aisle ends and store entrances, but asked for views on the best way to implement this, including any alternative options that stakeholder may wish to suggest.	• Although industry stakeholders were not supportive of this policy, no alternative options were put forward by respondents.
A voluntary ban on promotions of HFSS food and drink by location.	• Voluntary action on restricting promotions of HFSS products by location was attempted through the Public Health Responsibility Deal. Several retailers made voluntary commitments to ban sweets at checkouts. However, this was not applied consistently among different store types of the same retailer or among different retailers. • This approach would not promote a level playing field among retailers or between the retail and out of home sector and may penalise forward thinking businesses who have already acted in this space.
Using the front of pack nutrition labelling scheme to define food and drink high in fat, sugar and salt (HFSS) – only allowing promotions of products that have a combination of green and amber ratings.	• The front of pack scheme was designed and intended to be a voluntary scheme. Using this model to define HFSS food for the purposes of this policy would mean using a voluntary scheme as mandatory and part of a legislative approach. • The front of pack scheme rates products based on levels of specific nutrients rather than giving an overall score. As a result, it does not consider the overall nutritional content of products in the same way as the Nutrient Profile Model (NPM). Therefore, it would not give products a representative and appropriate scoring for the purposes of this policy. • The Government consulted on the UK's front of pack labelling scheme in 2020.

International comparisons

100. At least 11 countries[82], including Ireland, Norway, Portugal and Sweden in Europe, have introduced restrictions on advertising HFSS foods to children on television or online. Incentives such as free toys that could attract children are also prohibited in Chile and Taiwan.

101. Whilst several countries have introduced controls over marketing of HFSS food to children, we are not aware of any countries restricting the promotion of HFSS food in stores or online by location or volume price. However, Berkeley City Council[83] in the USA has recently approved a law that will restrict the availability of foods high in calories, salt and sugar at checkouts in favour of healthier options from March 2021. This will apply to all grocery stores above 2500 sq. ft.

102. A recent randomised controlled trial[84] in Australia found that restricting the promotion of high sugar products in favour of healthier options in a real-world store setting led to significant reductions in sales of high sugar products with no adverse impact on retailer profit.

Rationale for Preferred Option

103. Following careful analysis of the consultation feedback Option 2 is the preferred option because it strikes the best balance between delivering a robust policy that will deliver significant health benefits while taking into account proportionality and feasibility of implementation.

104. Although in all options considered, this policy benefits all age groups, Option 2 focuses on foods that make up a larger proportion of children's sugar and calorie intake. Obesity in childhood directly affects physical and mental health and is associated with an increased risk of obesity in adulthood[85] when the majority of costs of obesity occur. Although food habits are not perfectly stable over the life course, there is considerable scope for influencing lifetime habits by intervening in children[86]. Adjusting the consumption patterns of children therefore offers substantial benefits in the long term.

105. The product categories in scope are the categories of most concern regarding childhood obesity because they are significant contributors of sugar and calories to children's diets. Although the aim of the policy is to reduce overconsumption of HFSS products which is a contributor to childhood obesity, and has been designed with children's health at the centre, the restrictions are expected to have a positive impact on the wider family as well, due to the reduced consumption of HFSS products bought on location promotions.

106. Restricting the locations in which certain goods can be sold will influence impulse purchasing of those goods while not removing them from sale altogether, therefore targeting impulse buying. Although we presume the current mix of goods in these locations maximises profits, a replacement product mix can still maximise profits, even if total sales are slightly lower.

107. Consultation feedback suggested that small businesses would also find the restrictions more challenging to implement. By requiring medium and large businesses (which have the largest turnover[87]) to end placement of HFSS food and drink items in key locations, it avoids the risk of disproportionately burdening those who might find the new requirement more challenging while delivering significant health benefits. It also greatly reduces the costs to businesses (a 1% reduction in costs is seen compared with Option 3). Symbol stores represent 37.6% of turnover of the convenience sector and therefore delivers

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[82] World Cancer Research Fund International, *Nourishing and Moving policy datatbases*. Available here: https://policydatabase.wcrf.org/level_one?page=nourishing-level-one#step2=3#step3=328 (Accessed 14/10/2020)

[83] Berkeley City Council (2020) *Healthy Checkout Ordinance*

[84] Brimblecombe J, McMahon E, Ferguson M, De Silva K, Peeters A, Miles E, Wycherley T, Minaker L, Greenacre L, Gunther A, Chappell E, Chatfield MD, Mah CL. *Effect of restricted retail merchandising of discretionary food and beverages on population diet: a pragmatic randomised controlled trial*. Lancet Planet Health. 2020 Oct;4(10):e463-e473. doi: 10.1016/S2542-5196(20)30202-3. PMID: 33038320. Available at: https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30202-3/fulltext?utm_campaign=trials20&utm_content=141864365&utm_medium=social&utm_source=twitter&hss_channel=tw-27013292#articleInformation (accessed: 14/10/2020)

[85] Singh AS, Mulder C, Twisk JW, Van Mechelen W, Chinapaw MJ. (2008) Tracking of childhood overweight into adulthood: a systematic review of the literature. Obesity reviews. 2008 Sep 1;9(5):474-88.

[86] Hursti UK. Factors influencing children's food choice. Annals of medicine. 1999 Jan 1;31(sup1):26-32.

[87] Medium and large stores account for 80% of the market in terms of turnover.

significant health benefits whilst having the support from the symbol group in implementing these changes.

108. Academics have found that children have greater influence over purchases on products such as cereal[88] [89]and snacks[90], therefore the extended list of food items may be better at influencing the HFSS intake of a child and therefore it is important to incorporate these restrictions within the policy.

109. Option 4[91], which was presented as the Government's preferred proposal in the consultation, has the highest NPV due to the wide scope of products included in the restrictions. However, following consultation feedback from industry, further engagement with businesses and additional analysis and modelling by DHSC, it became clear that this option would be burdensome for businesses.

110. Feedback from the consultation did not provide further evidence on how the restrictions at store entrances would impact businesses. Businesses highlighted the difficulties in defining store entrances and were not able to gather further evidence through stakeholder engagement and have therefore not monetised the impact of restrictions on store entrances.

111. As outlined in table 1, Option 4 has the highest cost but also the highest benefit because it applies to the widest range of product categories compared to the other options. In contrast, Option 2 is more focussed on the product categories that are significant contributors to children's sugar and calorie intakes and are often heavily promoted in retailers so has lower costs and benefits. Though the NPV for Option 4 is greater than that of Option 2, Option 2 is the preferred option by Government because it represents a balanced and proportionate approach.

112. The Department of Health and Social Care is committed to undertaking an evaluation of these regulations within 5 years of the policy coming into force. This evaluation will be used to consider extending the requirement to smaller businesses in the future, subject to consultation. Further information about the Post Implementation Review is in Annex E. In the meantime, we encourage smaller retailers to voluntarily adopt the requirement.

Interactions with volume promotion restrictions

113. There is a well-recognised relationship between the use of volume promotions and placement of goods in prominent locations around stores.

114. A number of businesses and products will be subject to both the restrictions on location and volume promotions. However, the scale of the potential overlap between polices is unclear. The individual impacts of restricting these activities could therefore differ from the combined impact of implementing both. It is not clear if each policy would reinforce the effectiveness of the other to have a magnifying effect, or if their individual effectiveness would be diminished by pursuing both policies, and no evidence was found, or provided through the consultation or further stakeholder engagement, either way. The evidence used to determine the scale of HFSS products in key locations in scope of this policy doesn't distinguish whether any these products were on volume offer of not. The evidence in this area is limited and a further breakdown of other promotions being used in addition to location promotions is not available. All businesses and stores under this policy are also in scope of the volume restrictions in addition to medium and large businesses with stores that are below 2,000 sq. ft and specialised stores. The double counting, we have been able to identify has therefore been adjusted in the volume promotions IA as there are more businesses and stores in scope under that policy compared to the location restrictions.

115. The analysis for the individual policies is presented in separate IAs given the uncertainty around the scale of the overlap between the two and that individually they are tackling different problems. We therefore have assumed that the calculation of the costs and benefits of the policies are independent and can simply be added. There is one exception to this in the calculations: the costs of assessing

[88] Aitkin CK. 1978. Observation of parent-child inter-action in supermarket decision-making.Journalof Marketing42(4): 41–45.in Marshall D, O'Donohoe S, Kline S. (2007) Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour. 2007 Jul 1;6(4):164-81.

[89] Mehorta and Jurges. 1997. In Marshall D, O'Donohoe S, Kline S. (2007) Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour. 2007 Jul 1;6(4):164-81.

[90] Bordy et all. 1981; Hall et al. 1995. In Marshall D, O'Donohoe S, Kline S. (2007) Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour. 2007 Jul 1;6(4):164-81.

[91] In the Consultation this option included small businesses and out-of-home food outlets,

products to identify if they are in scope. Many businesses captured under this policy are also in scope of the volume promotion restrictions, therefore the product assessment costs have been adjusted in the volume promotions IA in order to avoid double counting with the costs in this IA.

116. In terms of benefits we have not been able to make any adjustments to consider the change in consumers calorie intake if a product is promoted under the restricted locations under this policy and is on volume promotion. We did not have any further evidence on where volume promotions occur in a store and did not receive any evidence through the consultation or further stakeholder engagement, due to the commercial sensitive nature of this information. Without this information it has not been possible to understand what proportion of volume promotions are sold in the key locations in scope of this policy. There currently is no database available that captures what products are bought on volume promotions and where in a store these products are picked up. This is an area we are trying to look into as part of the Post Implementation Review, with the use of innovative primary research.

Current composition of the market

Market share and sales

117. The 'big four' retailers Tesco, Asda, Sainsbury's and Morrison's account for the majority of GB grocery sales, capturing 67.7% of the market in the 12 weeks ending 01/12/19. Retailers outside of the top 9 identified by Kantar, account for less than 5% of the market. These market shares include the sales of some non-food and drink items such as health and beauty products. However, we expect these to be a reasonable reflection of shares within the food only market. In 2014, the GB food retail market was worth an estimated £88.5bn[92]. This includes products bought both in store and online, however a breakdown is not available in the data.

Table 5: GB Grocery Market Shares, 12 weeks ending 01/12/19[93]

Tesco	27.3%
Sainsbury's	15.7%
Asda	14.6%
Morrison's	10.1%
Aldi	8.0%
The Co-Operative	6.3%
Waitrose	4.8%
Lidl	6.1%
Iceland	2.2%
Symbols & Independent	1.7%
Ocado	1.4%
Other Outlets	1.7%

118. Much of grocery retail spend occurs within supermarkets and hypermarkets. IGD data for 2019 shows that 'Hypermarkets & superstores' accounted for 54.9% of all grocery sales[94]. Convenience stores account for 21.4% of grocery sales. Again, this definition of grocery captures non-food items. This results in a total 2019 UK market size of £193.6bn, compared to Kantar's food-specific GB estimate of £88.5bn. This IGD dataset captures non-food items, therefore Kantar data is used to estimate the value of the food and drink market.

[92] 2014 Kantar Worldpanel Purchasing Data

[93] https://www.kantarworldpanel.com/en/grocery-market-share/great-britain (accessed 25/11/17)

[94] IGD (2019) https://www.igd.com/about-us/media/press-releases/press-release/t/uk-food-sales-to-grow-by-24bn-by-2024/i/21868 (Accessed 19/08/2019)

Table 6: UK Grocery sales, 2019[95]

Store Type	2019 sales, £bn	%
Hypermarkets	16.3	8%
Supermarkets	90.0	47%
Convenience stores	41.4	21%
Discounters	24.5	13%
Online	11.6	6%
Other retailers	9.8	5%
Total	**193.6**	**100%**

119. Restricting the placement of food and drink items within stores is expected to have particular relevance to the food to go market. Driven by changing lifestyles the food to go sector is an increasingly important part of the retail market, with many people having their lunch and snacking on the go. This sector is forecast to grow strongly over the coming years and can be split into the following two broad categories that are in scope of these restrictions:
    - Convenience, forecourt & other retailers
    - Supermarkets & hypermarkets

120. The analysis uses the value of the GB food retail market from Kantar, of £88.5bn. This only considers food and drink that is taken home and therefore we have adjusted the value of the food retail market to take into account food and drink eaten on the go from IGD data[96], which shows that the value of the food-to-go market in convenience, forecourt & other retailers is £2.7bn and £1.3bn for supermarkets and hypermarkets.

Table 7 Value of the food retail market

	Kantar estimate of the value of take-home food retail market (2014)[97]	Value of food-to-go market in convenience, forecourt & other retailers (2017)	Value of food-to-go market in supermarkets and hypermarkets (2017)	Total	Adjusted total at 2019 prices
Value of the market (bn)	£88.5	£2.7	£1.3	£92.5	£100.5

121. The value of the retail market is based on data with different base years; therefore, it has been inflated to 2019 prices using the GDP deflator[98] of 2%, which is in accordance with the standard practice outlined in the HMT Green Book.

122. There are no forecasts relating to the growth in the HFSS market, however, we do expect there to be changes in the size of the market over the 25-year appraisal period. As such, we have looked at the growth of the take home market from Kantar. Following discussions with Kantar, their data over the last 5 years on the volume of take-home food and drink purchases indicated a yearly increase by around 1% each year, driven by population increase. It has not been possible to identify another appropriate growth rate, and therefore we have assumed that the market (outlined in table 7) will grow by 1% each year over the 25-year appraisal period. It is possible that other factors could influence the size of the market in the future, however, this cannot be captured in the analysis due to the high level of uncertainty.

[95] IGD (2019) https://www.igd.com/about-us/media/press-releases/press-release/t/uk-food-sales-to-grow-by-24bn-by-2024/i/21868 (Accessed 19/08/2019)

[96] https://www.igd.com/about-us/media/press-releases/press-release/t/food-to-go-on-the-move-to-235bn-by-2022-igd-forecasts/i/17287

[97] Kantar data includes both products bought in store and online, but the data does not provide the breakdown.

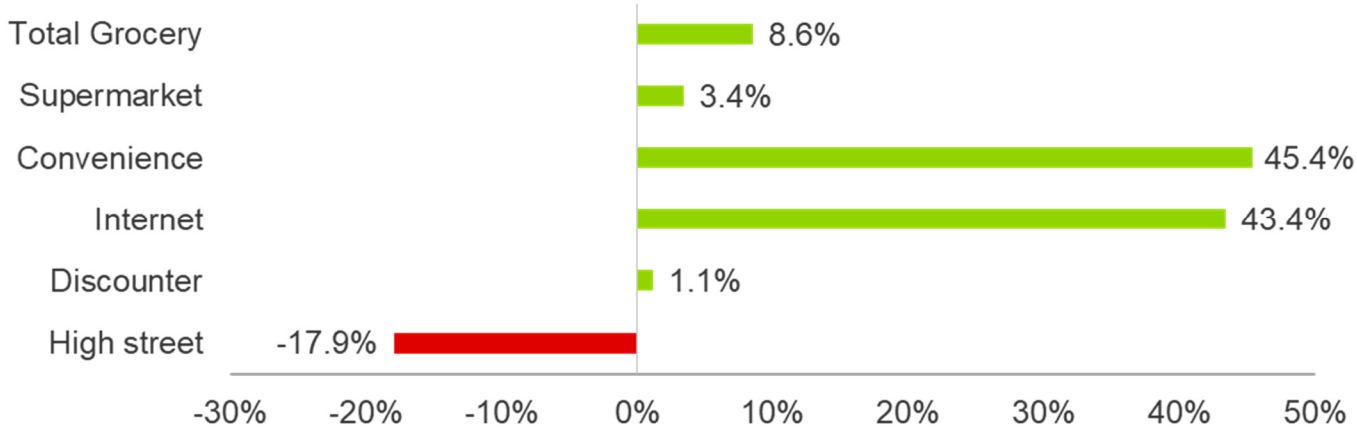
[98] https://www.gov.uk/government/publications/tag-data-book

Impact of the COVID-19 pandemic

123. The COVID-19 pandemic has affected the market share of retailers, where consumers shop, the frequency and what they have been buying. This has has a impact on other buisnesses part of the supply chain including manufactures, wholesales and ingredient suppliers.

124. Figure 1**Error! Reference source not found.**[99] below shows the change in growth of grocery sales in the beginning of the pandemic, and highlights the increase in sales from convenience stores and online grocery platforms and a decrease in sales from the high street, by around 17.9%.

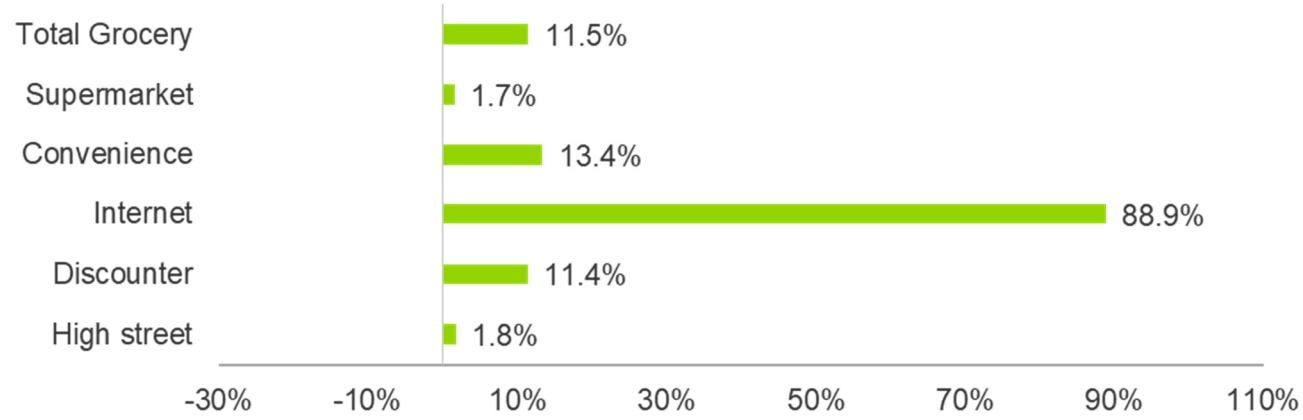
Figure 1 Total percentage change in grocery sales and by type of store in April 2020



125. The latest grocery market share figures from Kantar show take-home grocery sales rose by 10.8% during the 12 weeks to 6 September 2020[100]. Although this is the sector's fifth consecutive period of double-digit growth, sales had slowed down in August.

126. Figure 2[101] shows more recent data on the change in growth in grocery sales, showing a contious increase in sales from convenience stores and online grocery platforms, and a increase in sales from the high street of 1.8%.

Figure 2 Total percentage change in grocery sales and by type of store in August 2020



[99] Kantar, FMCG Panel, 4 weeks to 19th April 2020
[100] Kantar FMCG
[101] Kantar, FMCG Panel, 4 weeks to 9th August 2020

127. Evidence from Kantar shows that online grocery sales have rose during the pandemic. Retailers have seen a cumulative increase in online orders of £3.2 billion since lockdown began with the highest growth reported in June at 91.6%, however since then it has been falling[102].

128. Evidence from Kantar[103] also highlights that the frequency of purchases has declined, with consumers making bigger shopping trips across all retailers in the beginning of the pandemic. Although this pattern has not changed significantly online, there has been a rise in the frequency of online grocery purchases.

129. The data used in the analysis below is prior to the pandemic. Whilst evidence does suggest changes in consumers shopping behaviour, it is not clear whether these trends will continue or whether it is for a limited time. We currently do not have recent data to update the analysis in the IA, however baseline research for the Post Implementation Review has been shifted in order to capture changes in the market following the pandemic.

Turnover of the market

130. The proportion of turnover that is in scope of this regulation have been calculated using business population estimates[104] by SIC code. The retail market consists of 3 SIC codes: 47.1-Retail sale in non-specialised stores, 47.2-Retail sale of food, beverages and tobacco in specialised stores and retail sale of automotive fuel in specialised stores. Other SIC codes in this category have not been chosen as they are not part of the food and drink retail market. Given that specialised stores are out of scope from these restrictions. The table below outlines the proportion of turnover in scope of the regulation by the size of businesses.

131. These figures have been adjusted to take into account Symbol groups (further information in paragraph 69). IGD data categorises symbols as part of the convenience sector, and the individual businesses are categorised as either small or micro. ACS consider symbol stores and businesses to be small and micro as the affiliated stores to a symbol group are largely considered as independent businesses. Granular information on what type of businesses are included under each SIC code is not available.

132. Further stakeholder engagement has identified that individual stores that are part of a symbol group would receive additional support, support unaffiliated small and micro businesses would not get. Therefore, in the table below, symbol groups have been re-categorised, so each symbol is represented as a single large business, rather than many individual small and micro businesses, with a turn-over matching the totality of the small and micro businesses that belong to that symbol group.

Table 8: Proportion of turnover in scope of the regulation under each option

Options	**Proportion of turnover in scope of the restrictions**
Option 1	84.33%
Option 2	84.33%
Option 3	84.52%
Option 4	84.33%

Number of stores

133. An assessment of the size of the relevant market can be taken from IGD data on the UK grocery market. In 2017, IGD data identifies 84,521 stores involved in grocery retail in the UK[105]. Without further

[102] Kantar FMCG

[103] Kantar FMCG

[104] Department for Business, Energy and Industrial Strategy (2018) Business population estimates https://www.gov.uk/government/statistics/business-population-estimates-2018 (Accessed 13/03/20)

[105] IGD data (2017)

information available on the number of stores specifically in England, we have assumed the number of stores would scale with population size and have applied appropriate weighting of 84.3%[106].The estimated distribution of stores, by store type, for England, is displayed in Table 9.

Table 9 Estimated grocery retailers in England– number of stores by type, 2017

Convenience (includes forecourts and excludes symbols[107])	25,324
Symbols	13,052
Discount	3,733
Hypermarkets/Supermarkets	5,007
Online - Grocery Retail	N/A
Other retailers	24,100
Total	**71,216**

134. As specialist stores ('other retailers' in the table above) are not in scope of the regulation, we assume there are 47,115 stores in the grocery market in England.
135. As well as the grocery and other stores listed in the IGD data, these regulations would affect several other predominately non-food retailers who offer sales of HFSS products. The Inter Departmental Business Register (IDBR) contains detailed information on the number of enterprises and local units involved in consumer retail. No systematic data exists on the extent to which non-food stores offer sales of HFSS goods. A number may sell food and drink items despite having an alternative designation (such as newsagents and clothing stores). Table 10 below presents the numbers of firms for those SIC codes[108] thought most likely to fall in scope.

136. It can be assumed that food would be sold at either checkout or store entrances in these type of stores, however there is no way of knowing which of these actually sell food, and whether it is sold in the key locations. In the absence of such evidence we have assumed that half of them sell food in these key locations.

Table 10 Stores in England that are non-food retailers.

SIC codes		**Micro (<10)**	**Small (10-49)**	**Medium-sized (50-249)**	**Large (>250)**
47190	Other retail sale in non-specialised stores	6,555	4,045	930	50
47620	Retail sale of newspapers and stationery in specialised stores	3,940	700	15	0
47710	Retail sale of clothing in specialised stores	14,435	4,765	895	105
47730	Dispensing chemist in specialised stores	7,125	2,680	40	5
47750	Retail sale of cosmetic and toilet articles in specialised stores	3,120	1,015	30	5
	Total	35,175	13,205	1,910	165

137. The businesses captured in table 10 are those that we have identified as likely to sell food and drink. In addition, we have identified other business types that may sell food but are considered to be very unlikely to do so. These are captured in the sensitivity analysis. This is done to capture a number of stores who could be in scope of the policy but would vary depending on the store itself and whether food is sold in

[106] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland

[107] Convenience stores within petrol stations.

[108] Nomis business counts https://www.nomisweb.co.uk/query/construct/summary.asp?reset=yes&mode=construct&dataset=142&version=0&anal=1&initsel= (last accessed 12/03/19)

the key locations under this policy. We have reviewed other SIC codes, and have excluded those who are not in scope of the policy.

138. Therefore, given these uncertainties we have down-weighted the number of stores by 50%. This assumption is not evidence based, as data on how many non-food retailers sell HFSS products is not available and did not receive any additional information through the consultation. It is logical to assume that it is not 0% or 100%, and without any further evidence 50% was chosen. This assumption results in an additional 955 medium stores and 83 large stores which are likely to incur costs from this policy.

139. In order to calculate the number of stores in scope of the regulation we have split the sector by the size of the businesses and size of store based on floor space. Table 11 shows the grocery retail sector split by size; micro (0-9 employees), small (10-49 employees), medium (50-249 employees) and large (over 250 employees), and by store size.

Table 11: Estimated retailers in England– number of stores by size and floor space

	1-999 sq. ft	1,000-1,999 sq. ft	2,000-3,000 sq. ft	>3,000 sq. ft	Total
Micro	19,165	9,841	3,715	0	32,721
Small	7,399	5,266	4,128	0	16,793
Medium	0	0	1,195	0	1,195
Large	6,004	5,482	1,566	8,582	21,634
Total	32,569	20,589	10,604	8,582	72,343

140. In order to understand what proportion of the total stores are above 2,000 sq. ft and in scope of the policy, we assumed that all hypermarket/supermarket stores are considered as part of a medium or large business. The same assumption has been applied to non-food retailers.

141. Any hypermarkets/supermarkets with more than 25 stores were considered as large businesses and if lower this was checked on Companies House to determine whether they were medium or large. We have considered all medium supermarkets/hypermarkets having floor space between 2,000-3,000 sq. ft and large supermarkets/hypermarkets having floor space above 3,000 sq. ft.

142. For small and micro businesses, we have used data from ACS which provides a breakdown of the number of convenience stores by floor size[109]. Through further engagement following the consultation, we were able to gather data on the number of convenience stores in England by floor size from ACS. This data highlighted that with the 2,000 sq. ft. restriction, 88% of small and micro stores will be excluded from the restriction. However as small and micro businesses are excluded from the regulation following the consultation, the 12% of small businesses who have stores above 2,000 sq. ft will also be excluded from the policy. This is because it is likely that the burden of complying with these regulations will be disproportionately high for these businesses, even if they have sufficient floor space.

143. Further stakeholder engagement also highlighted that stores who are part of symbols often get additional support from the head office similar to larger supermarkets. We therefore have considered these stores to be part of large businesses in the analysis. The size of these stores vary, and therefore have used data from ACS which provides the proportion of stores that are part of symbol by floor size[110].

Number of businesses

144. To estimate the number of businesses these stores belong to, we use the Inter Departmental Business Register (IDBR) data which outlines the number of businesses in the sector. SIC codes 47.1 (retail sale in non-specialised stores) were used to calculate the number of businesses.

[109] 50% of stores are between 1-999 sq. ft, 33% are between 1,000-1,999 sq. ft and 18% are between 2,000-3,000 sq. ft.

[110] 46% of stores that are part of a symbol group are between 1-999sq ft, 42% are between 1,000-1,999 sq ft and 4% are between 2,000-3,000 sq ft

145. For non-food retailers SIC codes outlined in table 9 were used. As outlined in paragraph 137, there are some uncertainties on what proportion of these businesses will sell HFSS products in the key locations, and therefore number of businesses have been down weighted by 50%.

146. Adjustments were made to the number of small and micro businesses, to remove the 15 businesses that are symbols[111], currently captured as small and micro.

147. To make this adjustment we estimated how many of the stores that are part of the 15 symbol businesses were considered either small or micro. Data from ACS showed that around 60% of convenience businesses are considered as micro and 40% as small businesses. We used these proportions to estimate the number of symbol businesses currently included in the IDBR data as small and micro businesses. These businesses were removed from the total of small and micro businesses and added to the total number of large businesses in the IDBR data.

148. Given that stores below 2,000 sq. ft are excluded from the policy, businesses who have stores under 2,000 sq. ft would also be excluded from the policy. In order to split the number of businesses by floor size of the store, we used data from ACS[112] on the number of stores to calculate the number of small and micro businesses by store floor size. We have used the ACS data on the proportion of stores by floor size as a proxy to calculate the split for number of businesses as the data to do this split was not available and was not provided through the consultation.

149. We have assumed that all medium businesses will have stores between 2,000-3,000 sq. ft. Further evidence on medium businesses was not available through the consultation, however IBR data shows that they make up less than 1% of businesses in the market.

150. We have assumed that all large businesses (supermarkets, hypermarkets and discounters) have stores that are above 3,000 sq. ft. Symbols have also been categorised as large businesses, however we have used ACS data on the proportion of stores, that are part of a symbol group, by floor size to calculate the number of businesses by store floor size. Table 12 below outlines the breakdown.

Table 12: Retailers in England– number of businesses by size and floor space

	1-999 sq. ft	1,000-1,999 sq. ft	2,000-3,000 sq. ft	>3,000 sq. ft	Total
Micro	16,853	11,118	6,007	-	33,979
Small	1,659	1,094	591	-	3,344
Medium	-	-	238	-	238
Large				128	128
Total	18,512	12,212	6,836	128	37,688

Businesses with an online offering and online only retailers

151. To calculate the number of medium and large businesses with an online offering, we have assumed that 60% of these businesses would have an online offering. This assumption is based on stakeholder engagement and therefore is not a conclusive estimate representing the whole sector. Without any further evidence on whether this assumption is a fair assessment of the proportion of businesses with an online offering, this has been adjusted in the sensitivity analysis.

152. To calculate the number of small and micro businesses with an online offering, we have assumed that 17% of these businesses would have an online offering. This is based on data from ACS[113] which estimates that 17% of convenience stores provide a grocery home delivery service. This includes both convenience retailers that use online delivery platforms and those that provide a home delivery service.

[111] Breakdown from the IGD data.

[112] ACS data showed that 49.6% of stores are between 1-999sq ft, 32.7% are between 1,000-1,999 sq ft and 17.7% are between 2,000-3,000 sq ft

[112] Breakdown from the IGD

[113] ACS (2020) *The Local shop report*. Available online: https://www.acs.org.uk/sites/default/files/acs_local_shop_report_2020.pdf (Accessed 08/10/2020)

153. Data on the number of online only retailers is not available. Stakeholder engagement identified two online only retailers. Without any further information, these two retailers have been captured in the analysis below.

Table 13 Retailers in England– number of online only businesses and those with an online offering

	Online only businesses	Businesses with an online offering
Micro	0	5,776
Small	0	568
Medium	0	143
Large	2	77
Total	2	6,564

Proportion of products that fail the Nutrient profile Model

154. To calculate the total value of sales at checkouts and end-of-aisles that are included in the product categories in scope of the restrictions, the 2004/05 Nutrient Profile Model (NPM) was used to work out what proportion of products are considered HFSS. This is done by taking a subset of Kantar dataset of 2,500 products[114] and working with PHE to identify what proportion of these products failed the NPM.

155. The product categories outlined in Annex D are not aligned to the categories included in the Kantar dataset. To address this, a degree of matching was conducted to translate the categories outlined in Annex D to the Kantar categories, using primary and sub categories in the Kantar dataset. Despite this alignment work, there may remain a small number of products within the Kantar categories that are not included in the product categories outlined in Annex D and vice versa, and therefore we have considered this in the sensitivity analysis.

156. This provides us with an estimate of the proportion of sales at risk from these restrictions. The proportion of products in scope under each option, and which fail the NPM are outlined in Table 14. We have not been able to quantify what proportion of these products are from the different locations. Evidence[115] from the consultation highlighted what proportion of products were placed in checkouts, end of aisle and store entrances however no evidence on the proportion of sales generated from these locations.

157. It seems reasonable to assume that the majority of HFSS products located at checkouts are confectionary and therefore do not include the proportion of products under each option for checkouts. Therefore around 62% of GB food sales under option 2 and 3 would be considered HFSS by the 2004/05 Nutrient Profile Model. We would therefore expect at least 62% of checkout sales for stores who have not pledged to implement healthy checkouts to be from HFSS products. This was supported by evidence provided by Ulster University[116] through the consultation, which showed similar results when looking at what products are unhealthy through their food scoring system.

158. We consider a wider range of products to be sold at end of aisle and store entrances, and therefore take into account that a proportion of products in the relevant categories would be sold at these two locations, and a proportion of those products would fail NPM. Therefore, under option 2 and 3, 58% of total sales would be from the list of products in scope of these options and 62% of these products would be classified as HFSS and therefore fail the NPM.

159. We have used the subset of Kantar dataset to represent the food retail market. Given this database is of the top selling products, and therefore may not be a true representation of the market, we have adjusted for the percentages in Table 14 in the sensitivity analysis.

[114] Some of these products were removed due to lack of nutritional content.

[115] Obesity Health Alliance (2018), Out of place: The extent of unhealthy foods in prime locations in supermarkets. http://obesityhealthalliance.org.uk/wp-content/uploads/2018/11/Out-of-Place-Obesity-Health-Alliance-2.pdf

[116] https://www.food.gov.uk/sites/default/files/media/document/fs305021fsasummaryreportmarch16.pdf

Table 14: Percentages of products in scope under each option, and which fail the NPM

	Option 1	Option 2 and 3	Option 4
Proportion of food sales captured under each option for end of aisle and store entrances	37%	58%	65%
Proportion of sales included in the option that fails the NPM	80%	62%	62%

160. However, once these products are removed from these locations retailers will rearrange store layouts, filling prominent locations with items that pass the NPM, and relocating those which do not pass to aisle locations. We expect sales of moved HFSS items in normal aisle space to be significantly reduced compared to prime locations. The sales these products achieve in their new location will compensate some of the sales that are at risk from these restrictions and are considered in our calculations. This is considered as an indirect benefit to businesses as they would not be required through the regulation to relocate these items.

161. Discussion with stakeholders has highlighted that relocating bulkier items from store entrances, particularly seasonal products like Easter Eggs, can be challenging as large enough space would need to be identified in order to relocate products within aisles. Although we have been informed of this potential impact, we have not been able to factor this into the analysis as it will vary by store and will be depend on how store entrances are used.

162. In addition, consumers' behaviour and businesses' marketing techniques are likely to change following the restriction of location promotions. To account for changes to consumers' behaviour and retailers possible responses to the restrictions to location promotions we have assumed a further proportion of loss sales are offset. These additional products could be HFSS and non-HFSS, and could in these prime locations or somewhere else in store. With limited evidence we don't assume were these products will be picked up as it is highly dependent on how businesses will respond to this policy.

163. From the Kantar data, we have calculated that 57% of all products are HFSS and 43% are non-HFSS regardless of option. These estimates have been used to estimate what proportion of the 40%[117] offset is HFSS and non-HFSS. We have used this dataset to represent the food retail market. Given this database is of the top selling products, and therefore may not be a true representation of the market, we have adjusted for this in the sensitivity analysis. We have explored whether other databases could be used to represent the type of products in the market, but as the Kantar data has been used alongside the 2004/05 NPM, we were able to identify the proportion of products that are HFSS and non-HFSS, something which wasn't possible with other datasets.

164. There is a possibility that the proportion of all products that are HFSS and non-HFSS may vary by size of store. However, as we are unable to get that breakdown from Kantar data, as it captures all take home products and does not record where products were purchased, we have not been able to factor this into our calculations. It is possible that smaller stores may have more HFSS products, however given the disproportionate burden on small and micro stores, they have been excluded from the preferred option regardless of size of store.

Impact on sales and profits

165. No data was found through the consultation process that disaggregates sales of HFSS products, or sales of all goods, by their placement within retail stores. Further stakeholder engagement also did not

[117] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

provide additional evidence due to the inherent uncertainty of where a product was picked up from within a store when that same item is available in numerous locations, as is usually the case for promoted products. However, published studies of individual supermarkets provide some indication as to the likely contribution of checkouts and ends-of-aisles to overall sales. The impact on sales and profit include both products bought in store and online, however a breakdown is not available in the data.

Retailers

166. Retailers are expected to organise stores to maximise profits. Therefore, any restriction on their ability to do this is expected to reduce profits.

167. The impact on retailer profits is estimated using differential profit margins between HFSS and non-HFSS products. There is some evidence of a differential profit margin. There is also some evidence of a differential sales uplifts between the two, but there is limited evidence to quantify this. We were not able to gather further information on sales uplifts through the consultation or further stakeholder engagement due to the commercially sensitive nature of the data. As a major source of lost profits to businesses, we have varied the differential profit margin in the sensitivity analysis. The methodology used to calculate the impact on retail profits is outlined in Figure 1 below.

168. First, the expected value of lost sales due to removing HFSS products from key selling locations is estimated. Secondly, we apply assumptions on what proportion of these sales will be offset from either moving the products within aisles or consumers compensating for the lost calories by picking up either HFSS or non-HFSS products in other locations within the store and businesses using alternative marketing strategies. Finally, relevant profit margins are applied to the net loss in sales to calculate the impact on retailer's profits.

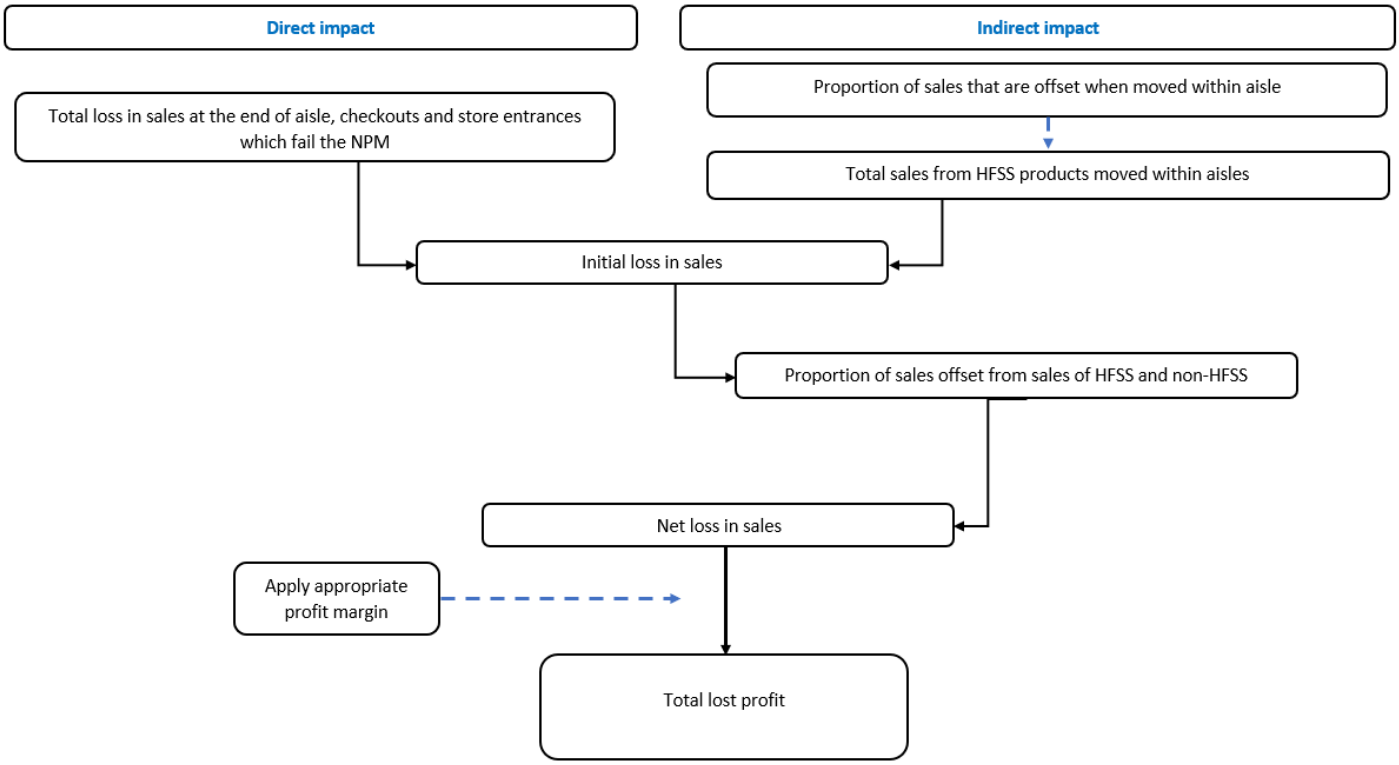
169. Figure 3 outlines the direct and indirect impact to retailers sales and profit. Assumptions used to calculate the total lost profit is discussed in turn below. Indirect impacts are calculated separately and are not included in the EANDCB.

170. As mentioned previously, small and micro businesses that are not part of a symbol group are not in scope of the preferred option due to the likely disproportionate burden that may result from the restrictions. Stores under 2,000 sq. ft are also not in scope under all options, regardless of the size of the businesses or if they are part of a symbol group, as it might not be possible to define store entrances, checkouts and ends-of-aisles as distinct zones, or to reorganise these stores to comply with the regulations.

171. Data provided by the ACS on the proportion of convenience stores that would fall into this category means we have been able to adjust our calculations to consider this.

172. We recognise that the exemption for stores under 2,000 sq. ft means that some medium, large and symbol businesses may have more stores excluded from the restrictions than others. However, we have not been able to estimate the impact on different retailers that are large, medium and symbol businesses. Firstly, as described above, in the 'Number of Stores' section, we have had to make assumptions about the proportion of stores for each size of business that are above and below the 2,000 sq. ft exemption. Secondly, we do not have data on the proportion of sales each size of store contributes to the overall sales for an individual retailer. For example, the proportion of total sales that are accounted for by shops below 2,000 sq. ft is likely to vary between large, medium and symbol businesses.

Figure 3: Impact on retailers sales and profit



Text-only description:
Step 1: To estimate the the total loss in sales due to these restrictions, we use the total loss in sales from the products that fail the NPM under the three locations in scope of the policy and assume that a proportion of these are moved within aisles.
Step 2: We assume that a proportion of these sales will be offset by consumers buying both HFSS and non-HFSS products within stores.
Step 3: The retailer profit margin is applied to lost sales, to calculate the total lost profit to retailers.

Checkout sales and profit

Direct impact on sales

173. A study by EHI Retail Institute found that the checkout area accounts for 1% of the sales space in most supermarkets, but delivers 7.1% of total sales[118]. Since the study was of German supermarkets this figure must be cautiously applied to the UK market. The German grocery market differs in several ways to the UK, such as the proportion of the market served by discounters[119] and the fact that tobacco products are available at checkouts, and it is possible that German consumers may behave differently to those in the UK.

174. No further evidence was provided through the consultation or further stakeholder engagement to reassess this evidence. Given a lack of UK specific information on the total sales of HFSS items being sold at checkouts, we assume that 7.1% of UK grocery sales also occur at the checkout.

175. It is not clear to what extent the checkout area accounts for sales in smaller, convenience type stores. The EHI Retail Institute study does find that checkout areas accounted for more sales in smaller supermarkets than in larger hypermarkets. It might therefore be expected that checkouts will account for a greater degree of sales in convenience stores.

[118] 'Die umsatzstärksten Quadratmeter im Markt: Bedeutung der Kassenzone im LEH nimmt zu', Wrigleys Press Release, 2013

[119] IGD (2017) IGD: German grocery market to grow 10.5% to 2021, https://www.igd.com/about-us/media/press-releases/press-release/t/igd-german-grocery-market-to-grow-105-to-2021/i/17008 (accessed 12/10/2018)

176. Given the limitations of this evidence, the central estimates presented below assume a 7.1% share of sales for all stores and the sensitivity analysis examines lower and higher percentages to capture this uncertainty.

177. It was not possible to assess the proportion of checkout items that are HFSS for all retailers. Where supermarkets have publicly committed to removing HFSS products from checkouts, we assume this to have been implemented fully. Feedback from the consultation did not provide further clarity on to what extend business are implementing this policy and whether it is consistent in all stores, and therefore have not adjusted this assumption. For those stores that have not made such a commitment, it is likely that HFSS goods represent a greater than proportionate share (in terms of total sales) of checkout items. In the above study by EHI Retail Institute, confectionary was the single biggest contributor to checkout sales once tobacco and cigarettes are excluded.

Indirect offset in sales

178. The EHI Retail Institute study concluded that check-outs account for only 1% of shop floor space but 7.1%[120] of sales. This implies that checkouts provide a 610% sales uplift. Using this figure, were the displaced HFSS products placed within aisles, we would expect them to generate 14.1% of the sales previously achieved. This would represent a considerable drop in sales and seems unlikely given the alternative marketing strategies retailers could use to promote these products. Assuming HFSS products removed from checkouts continue to generate a significant proportion of their previous sales seems more reasonable and was not questioned during the consultation.

179. We therefore assume that HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations. This is an unevidenced assumption, chosen to be roughly double the figure provided by the German study which was thought to be an under-estimate. No additional evidence or data on how much sales these products will continue to generate within aisles was submitted through the consultation, and due to the commercial sensitive nature of the data, we were not able to gather it through further stakeholder engagement. This assumption was further tested with stakeholders, but received no responses. Given the uncertainty, a sensitivity analysis has been applied.

180. It is also assumed that some of the loss in sales will be offset by increased sales of other products due to compensating behaviour by consumers and alternative marketing techniques used by retailers.

181. Consumers may buy additional products to compensate for the loss in calories from not buying HFSS products. The evidence on compensating behaviour suggests that consumers will compensate some of the loss in calories. Retailers and manufacturers are likely to respond in multiple ways to maximise profits following restrictions to location promotions. For example, retailers and manufacturers could use alternative in-store promotions, such as, increased shelf space, preferential aisle positioning, posters / banners and in-store samples.

182. Consumers compensation could also involve shifting some of their purchases to the OOH environment, such as to food on-the-go, where restrictions do not apply. There could be increased consumption in the OOH environment or consumption of takeaways, either directly from OOH businesses or through takeaway delivery services.

183. We therefore assume a further proportion of loss sales are offset. We assume that 40%[121] of sales will be offset by HFSS or non-HFSS products. This assumption is based on the evidence around compensating behaviour, as a consumer is more likely to replace some of the lost calories with calories from other food items. It is possible more of the sales will be offset with HFSS or non-HFSS products and therefore have adjusted for this in the sensitivity analysis. We assume that the proportion of sales that are offset that are HFSS and non-HFSS are the same as those outlined in paragraph 163.

Checkout profit

[120] Die umsatzstärksten Quadratmeter im Markt: Bedeutung der Kassenzone im LEH nimmt zu', Wrigleys Press Release, 2013

[121] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

184. There is evidence to suggest that retailers have a greater incentive to position confectionary at checkouts instead of other items, with the EHI Retail Institute finding that average confectionary profit margins are substantially higher than other products sold at checkouts[122].We cannot know the relative importance of these effects, so we regard the use of 31.5%, from the EHI retail Institute study[123], as a central estimate.

185. The 31.5% figure applies solely to confectionary, which is just a subset of HFSS food. However, it seems reasonable to assume that the majority of HFSS products located at checkouts are confectionary. Further evidence was not made available through the consultation or further stakeholder engagement, due to the commercial sensitive nature of this data, to change this assumption. Given the impact this assumption has on the direct loss of profit to retailers, this assumption has been varied in the sensitivity analysis.

186. As stated previously, we would expect a partial offsetting of this loss as consumers compensate for the loss in calories and businesses change marketing strategies resulting in increased sales of either HFSS or non-HFSS products. We assume that these products achieve an average profit margin of 3%[124]. Non-HFSS products could be bought at checkout and both HFSS or non-HFSS could be bought in other locations in the store. Given this uncertainty we do not make an assumption on where consumers buy these additional products.

187. The offsetting through increased sales of HFSS or non-HFSS products is an indirect benefit as the use of alternative marketing strategies and the change in purchasing by consumers is not a requirement under this policy. It is reasonable to assume that businesses will replace the HFSS at checkouts with other items, given we have seen this from businesses who have voluntarily removed confectionary at checkouts, however it is not a direct impact as a result of the policy and given the lack of information on what will be replaced at checkouts, this has not been monetised or captured in the EANDCB.

188. The loss in profits could be further offset if retailers move the HFSS items previously at checkouts into aisles, resulting in an increase in sales of HFSS products. The difference in profit margins of confectionary and other products (19.1%[125]) is applied to HFSS items that are moved from checkouts to within aisles. Given the single non-UK source for this estimate, we have adjusted this in the sensitivity analysis. This would be an indirect benefit as it would be a businesses' decision whether they want to move the HFSS products from checkouts into aisles and would not be a requirement of the policy, and therefore not captured in the EANDCB.

189. There is a possibility that as HFSS products are moved from checkout to within aisles, non-HFSS products are displaced due to limited space. We do not have evidence to support this assumption and therefore has not been monetised.

End of aisle sales and profit

190. Retailers display at least some HFSS products on the ends of aisles, though the type of products located on the end of aisles is likely to vary depending on the type and size of the store. For example, convenience stores are likely to locate items differently to supermarkets, even when they are part of the same chain.

Direct impact on sales

191. There is limited evidence on the contribution of ends-of-aisles sales to total sales. Nakamura et al. estimate that 30% of supermarket sales are from products placed in these locations[126]. To check the robustness of this estimate, we calculate a further possible share below.

[122] 'Die umsatzstärksten Quadratmeter im Markt: Bedeutung der Kassenzone im LEH nimmt zu', Wrigleys Press Release, 2013

[123] https://www.confectionerynews.com/Article/2013/11/13/Wrigley-checkout-zone-research-Encouraging-impulse-sales

[124] Net profit margin for retailers. Explained in paragraph 168 onwards..

[125] This is calculated by by taking the difference in profit margin of confectionary at checkout (31.5%) and other products at checkout (12.4%) from the EHI Reatil Insitute Study.

[126] Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Nakamura et al. Social Science & Medicine 2014.

192. The approach used in this assessment considers the relative size of ends-of-aisles compared to aisle space, and the observed increase in sales when moving products into end-of-aisle locations. Nakamura et al. estimate that end-of-aisle locations increase sales of alcoholic beverages by 23.2% - 46.1%, and non-alcoholic beverages by 51.7% to 113.8%[9]. Given this wide range, we take a central estimated uplift of 55% - implying that every 1 metre of aisle shelf space is equivalent to 1.55 metres of end-of-aisle shelf space in terms of generating sales. Assuming an average aisle length of 10 metres and end-of-aisle width of 1 metre means a typical store might be expected to have 1 metre of end-of-aisle space for every 10 metres of aisle space. In terms of 'sales generating' power, this gives a ratio of 10:1.55 – so ends of aisles would be expected to account for 13.4%[127] of sales (excluding sales from other areas of the store, such as checkouts and store entrances). This method of checking the proportion of sales at end of aisle was not questioned at consultation.

193. This estimate is highly dependent on the ratio of aisle length to end-of-aisle width. If average aisle length were only 5m, the above calculation would assign 23.7% of sales to ends-of aisles and if the average length were 15m, the figure would be 9.4%.

194. As this approach results in figures substantially less than 30%, we revise our estimate of the share of end-of-aisle sales to 20%. Downweighing this to 20% also captures the fact that the difference in sales of alcoholic and non-alcoholic beverages may be different when using it as a proxy for HFSS and non-HFSS products. This assumption was not questioned at consultation stage, nor was further evidence made available through further stakeholder engagement to reassess this assumption. Given the uncertainty in this key assumption, we have applied a sensitivity analysis to it.

195. No evidence or data on the composition of end-of-aisle displays with respect to the proportion of HFSS products being sold was submitted through the consultation. DHSC engaged further with retailers and manufacturers to request this data, however, businesses were either not willing or unable to share it, even in confidence with DHSC officials. Likewise, we are not aware of any retailers having committed to removing HFSS products from the ends of aisles.

Indirect offset in sales

196. Using the evidence from Nakamura et al. study, we assume as a central estimate that end of aisle locations provide a 55% sale uplift. We therefore assume if these products are now moved within aisles, the uplift will no longer apply.

197. We therefore assume that HFSS items removed from end of aisle will not generate the same level of sales when moved within aisles. No additional evidence or data on how much sales these products will continue to generate within aisles was submitted through the consultation, and due to the commercial sensitive nature of the data, we were not able to gather it through further stakeholder engagement. Given the uncertainty, a sensitivity analysis has been applied.

198. Similar to checkouts, an indirect impact of this policy is that some of the loss in sales will be offset by increased sales of other products. We assume that 40%[128] of sales will be offset by HFSS or non-HFSS products due to compensating behaviour by consumers and alternative marketing techniques used by retailers and manufacturers. This assumption is based on the evidence around compensating behaviour, as a consumer is more likely to replace some of the lost calories with calories from other food items. It is possible more of the sales will be offset with HFSS or non-HFSS products and therefore have adjusted for this in the sensitivity analysis. We assume that the proportion offset sales that are HFSS and non-HFSS are the same as those outlined in paragraph 163.

End of Aisle profit

199. End-of-aisle displays contain a far wider range of products than checkouts, so it would not be appropriate to apply the estimated confectionary profit margin to these sales as done previously.

[127] 100%/(10+1.55)=8.66%, 8.66%*1.55=13.4%

[128] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

200. As we do not have profit margins for either the HFSS products displaced or the products in other parts of the store, it is difficult to assess the total impact of rearranging store layouts. It seems reasonable to assume that there will be some marginal reduction in profit as stores can no longer follow their previous, presumably optimised, strategy - but it is not clear how great this will be.

201. To work out the impact of this reduction on profits, the profit margins must be applied. Grocery and food retailing is a low margin, high volume business, with increased competition over recent years meaning that profit margins for most grocery retailers are under pressure[129]. For the purposes of this analysis we could use retailers gross or net profit margins.

202. The gross profit margin is the difference between total revenue and the cost associated with selling products, such as the cost of purchasing the product from the supplier and transporting it to stores. As a result, using the gross margin would imply that these marginal costs associated with selling products decrease as revenue changes, but fixed costs remain constant.

203. In contrast, the net profit margin is the difference between total revenue and total operating costs. This measure of profit also considers fixed costs and using it would imply that both marginal and fixed costs can be adjusted as revenue changes.

204. Evidence suggests that food retailers net profit margins are around 2%[130], with gross margins ranging from around 6% at Tesco and Sainsburys to around 4% at Morrisons. With no evidence on the ability of retailers to adjust fixed costs and the different profit margins delivered by HFSS products and other goods, we present illustrative costs based on a 3% profit margin to capture the variation in profit margin between net and gross and that profit margins would vary by the type of products. Given its importance we vary this in the sensitivity analysis. The consultation did not provide any further evidence and given the data is commercially sensitive, we were not able to gather any further evidence through further stakeholder engagement.

Store entrance sales and profit

205. Retailers display at least some HFSS products at store entrances, though the type of products located at store entrances is likely to vary depending on a number of factors suchas the season, type and size of the store. For example, convenience stores are likely to locate items differently to supermarkets, even when they are part of the same chain.

206. In the consultation stage IA, aswe were not aware of any information on the proportion of sales occurring from goods located in store entrances, nor of the relative composition of food on these displays, the impact was not monetised. We are currently not aware of any evidence on this and no information was submitted through the consultation or during further engagement with industry.

207. Evidence from Obesity Health Alliance[131] highlights 86% of food and drink products located at store entrances were for products that contribute significantly to children's sugar and calorie intake, including crisps, cakes and confectionery. Given this evidence and the knowledge that some HFSS products are displayed in store entrances we consider it proportionate to attempt to monetise the costs of restricting the promotion of HFSS products in store entrances. However, we do not have data on what proportion of sales these products at store entrances generate.

208. As we do not have any specific evidence on the additional sales generated by placing products at store entrances, we consider that the best available proxy to be the uplift from selling products at end of aisle. Therefore, we assume that the impact on sales as a result of restrictions at store entrances will be the same as the impact on sales from end of aisle restrictions.

209. We recognise that store entrances are often used to sell seasonal and bulkier items, especially in larger stores, which could impact sales in a different way to end-of-aisle placement.

[129] Identifying and understanding the factors that can transform the retail environment to enable healthier purchasing by consumers, Leigh Sparks and Steve Burt, University of Stirling, Food Standards Scotland, 2017. https://www.foodstandards.gov.scot/downloads/FSS-Final_Report_June_1st_2017.pdf (last accessed 05/03/2020)

[130] Identifying and understanding the factors that can transform the retail environment to enable healthier purchasing by consumers, Leigh Sparks and Steve Burt, University of Stirling, Food Standards Scotland, 2017. https://www.foodstandards.gov.scot/downloads/FSS-Final_Report_June_1st_2017.pdf (last accessed 05/03/2020)

[131] Obesity Health Alliance (2018), Out of place: The extent of unhealthy foods in prime locations in supermarkets. http://obesityhealthalliance.org.uk/wp-content/uploads/2018/11/Out-of-Place-Obesity-Health-Alliance-2.pdf

210. An argument could also be made that this assumption overestimates the impact on sales of restricting promotion of HFSS products at store entrances. A consumer would usually visit a store entrance when entering a store, however, would pass numerous ends of aisles during their shop, which would impact the number of products they pick from these locations. An argument can also be made that is assumption is an underestimate given the use of store entrances to sell seasonal items. This had been tested with industry, the majority did not comment, with one stakeholder highlighting that this would be an underestimate, but no further evidence was provided to justify this argument.

211. Given the uncertainties and the absence of better evidence on the impact on sales of promotions at store entrances we have applied sensitivity analysis around this assumption. The sensitivity analysis also presents a scenario of what the total costs and benefits would be if the impacts of store entrances were not monetised, given the uncertainty in the evidence used.

Direct impact on sales

212. As highlighted above, there is no evidence available on the contribution store entrances have to total sales. It has therefore been assumed that 20% of retailers' sales are from products placed at store entrances. This is based on the Nakamura et al. study[132] and has been down weighted to capture the fact that the difference in sales of alcoholic and non-alcoholic beverages may be different when using it as a proxy for HFSS and non-HFSS products, as highlighted above. This assumption has been adjusted in the sensitivity analysis given the uncertainties and lack of better data.

213. No evidence or data on proportion of HFSS products being sold from store entrances was submitted through the consultation. DHSC engaged further with retailers and manufacturers to request this data, however, businesses were either not willing or unable to share it, even in confidence with DHSC officials. Likewise, we are not aware of any retailers having committed to removing HFSS products from store entrances.

Indirect offset in sales

214. As highlighted in paragraph 192, we assume that end of aisle locations provides a 55% sale uplift based on the Nakamura et al. study. In the absence of better evidence, we assume that store entrances also provide the same sales uplift, and therefore if these products are now moved within aisles, the uplift will no longer apply. Seasonal promotions at store entrances may provide a higher sales uplift than promotions at store entrances throughout the rest of the year. However, as we do not have any further evidence on the impact on sales of seasonal promotions at store entrances this has not been factored into the sensitivity analysis.

215. Although we assume that HFSS items removed from store entrances will not generate the same level of sales when moved within aisles, no additional evidence or data on how much sales these products will continue to generate within aisles was submitted through the consultation. In addition, due to the commercial sensitive nature of the data, we were not able to gather it through further stakeholder engagement. Given the uncertainty, a sensitivity analysis has been applied.

216. Similar to checkouts and end of aisle, an indirect impact of this policy is that some of the loss in sales will be offset by increased sales of other products. We assume that 40%[133] of sales will be offset by HFSS or non-HFSS products due to compensating behaviour by consumers and alternative marketing techniques used by retailers and manufacturers. This assumption is based on the evidence around compensating behaviour, as a consumer is more likely to replace some of the lost calories with calories from other food items. It is possible more of the sales will be offset with HFSS or non-HFSS products and therefore have adjusted for this in the sensitivity analysis. We assume that the proportion offset sales that are HFSS and non-HFSS are the same as those outlined in paragraph 163.

[132] Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Nakamura et al. Social Science & Medicine 2014.

[133] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

Store entrance profit

217. Store entrances contain a far wider range of products than checkouts, so it would not be appropriate to apply the estimated confectionary profit margin to these sales as for checkout restrictions.

218. As we do not have profit margins for either the HFSS products displaced or the products in other parts of the store, it is difficult to assess the total impact of rearranging store layouts. It seems reasonable to assume that there will be some marginal reduction in profit as stores can no longer follow their previous, presumably optimised, strategy - but it is not clear how great this will be.

219. As highlighted in paragraph 204, we present illustrative costs based on a 3% profit margin to capture the variation in profit margin between net and gross and that profit margins would vary by the type of products. Given its importance we vary this in the sensitivity analysis. The consultation did not provide any further evidence and given the data is commercially sensitive, we were not able to gather any further evidence through further stakeholder engagement.

Manufacturers

220. Individual promotions deliver clear increases in product sales for manufacturers and retailers. However, promotions for a specific brand do not occur in isolation – they form part of a product category in which other brands can be expected to discount in a similar fashion.

221. We have engaged extensively with businesses and trade bodies in the retail and manufacturing sectors to better understand the relationship between manufacturers and retailers with regard to promotional strategies. Although businesses have generally been reluctant to share detailed information about how promotional strategies are determined and how the relationship between manufacturers and retailers works, it was commonly acknowledged by businesses that promotions are decided by negotiation between the manufacturer and the retailer. The details of a promotional strategy are dependent on many factors such as the type of product, seasonality, estimated sales, and they are often decided months in advance and agreed in contracts between the businesses.

222. Stakeholder engagement has also highlighted that retailers do charge manufacturers a fee in order to promote their products in prime locations (e.g. store entrance, checkout and end of aisle). The level of fee would be dependent on the resulting increase in sales. The consultation did not provide any further information about the impact of this loss in revenue to retailers and we were not able to gather further information through stakeholder engagement due to the commercially sensitive nature of the information.

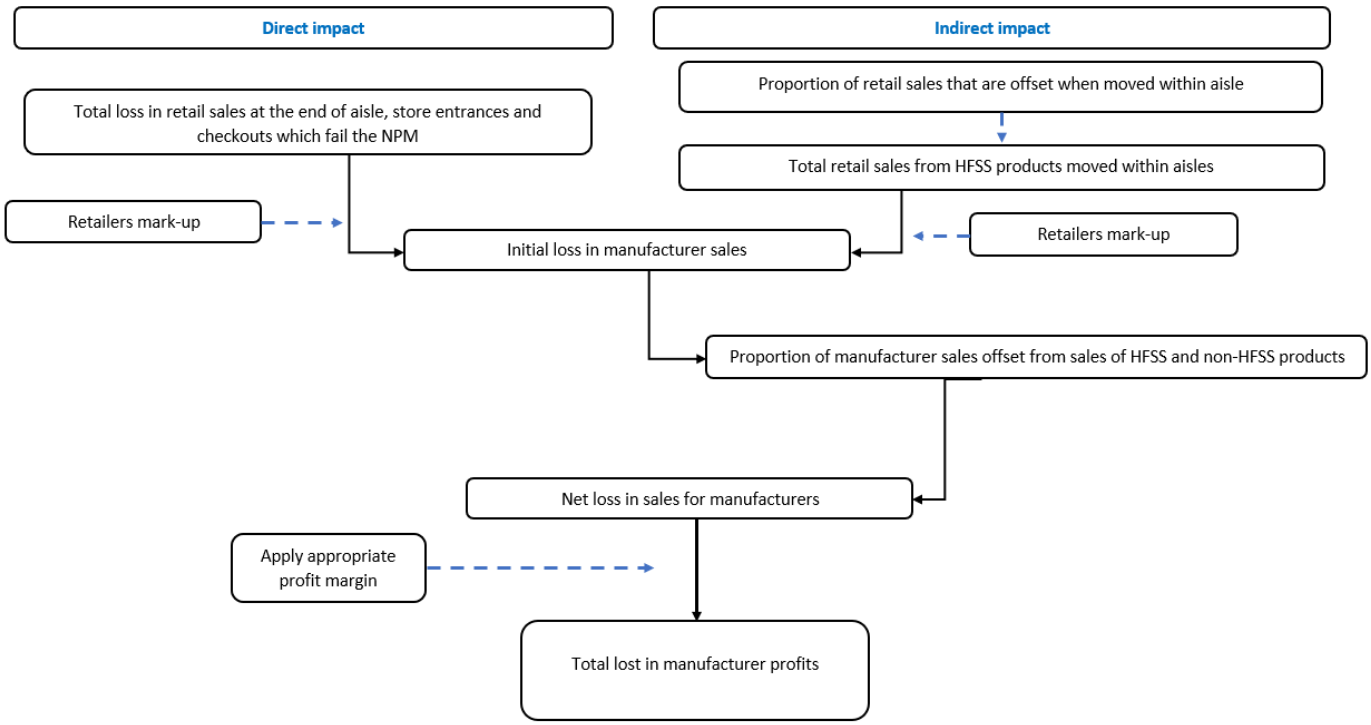
223. To estimate the impact on manufacturers' of HFSS products profits we follow a three-stage process outlined in Figure 4 below. We estimate the manufacturers lost revenue by applying an assumption for the retailers' mark up to the reduction in retail sales. Using the manufacturer's profit margin, we can then estimate the change in profits.

224. The lost profit for ingredient suppliers and other manufacturers involved in the supply chain has not been monetised as it is a second order effect and not in scope of IAs but has been captured as a non-monetised cost.

225. Figure 4 outlines the methodology used to calculate the impact on manufacturer profits. Similar to retailers, we assume that some of the direct loss of profit to manufacturers will be offset from the continuation sale of HFSS products that move from checkouts, store entrance and end of aisle to within aisles.

226. In addition, manufacturers of HFSS and non-HFSS products will gain through additional sales of these products as consumers compensate for the lost calories and businesses use alternative marketing strategies to drive sales. We adjust our calculations to factor in this similarly to retailers outlined in paragraph 181. These are indirect impacts and are therefore not included in the EANDCB.

Figure 4: Impact on manufacturers sales and profit



Text-only description:

Step 1: First, we estimate the manufacturers lost revenue by applying an assumption for the retailers mark up to the reduction in retail sales.

Step 2: To calculate the net loss in manufactures sales, we assume some of the loss in sales is offset through consumers buying HFSS and non-HFSS products.

Step 3: The manufacturer's profit margin is then applied to the net loss in manufacturer sales to calculate the total loss in manufacturers profits.

227. In order to calculate lost sales to manufacturers, a mark-up is applied. UK supermarket mark-ups are estimated to be between 35% and 70%[134]. We take the midpoint of this range to calculate the loss in manufacturer sales.

228. Over the past decade or so, food and drink producers' profit margins have ranged between 5 and 7%[135]. Evidence from OC&C that the average net profit margin for manufacturers is around 6% [136]. Consultation did not provide further evidence on the difference in profit margins of manufacturers selling HFSS and non-HFSS products nor were we able to get any further information through stakeholder engagement, due to the commercially sensitive nature of the data. Due to this, we apply a 6% net profit margin to both the loss in manufacturer sales and any sales that have been offset. The net profit margin takes into account fixed costs and given that we are appraising the policy over a 25-year appraisal period, it is possible that fixed costs would be impacted if there is a reduction in sales. In addition, we did not receive any evidence through the consultation or further stakeholder engagement on what the gross profit margin is for manufacturers in order to take the midpoint between the two.

229. It is possible that manufacturers of HFSS products generate a significantly different profit margin than manufacturers of non-HFSS products. If this were the case, then there would be an overall change in profit levels for this section of the food and drink industry.

[134] USDA Foreign Agricultural Service (2011) Retailers http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Retail%20Foods_London_United%20Kingdom_2-3-2011.pdf

[135] OC&C/ The Grocer Food and Drink 150 (2018) 150 2018 Infographic, https://www.occstrategy.com/en/news-and-media/2018/09/occ-and-the-grocer-food-and-drink-150-2018 (accessed 23/10/2018)

[136] https://www.occstrategy.com/media/1700/food-and-drink-150-infographic-2018-3.pdf

Adjusting for change in consumer and retailer responses

230. As highlighted earlier, it is possible, for example, that consumers might adjust their consumption behaviour in response to consuming fewer calories, shift their purchasing to other goods not influenced by location promotions captured in this policy. The choice of which goods are purchased might be influenced by alternative marketing strategies from the same businesses who would otherwise lose out from the promotion restrictions. This type of behaviour change is a significant source of uncertainty in our analysis and as such could have a significant impact on individual businesses' sales, and on the estimated total net present value.

231. The evidence on compensating behaviour in the literature is mixed. Several experiments investigating the impact of adjusting the energy density of specific meals have found no evidence of calorie compensation at subsequent meals or during the short time period covered by the study[137,138,139]. In contrast, other investigations have found that subjects completely compensated for a change in calorie intake.[140,141] Furthermore, two other studies have found imprecise levels of calorie compensation, with subjects adjusting their food intake to compensate for 40%[142] and 35%[143] of the calories removed from their diets.

232. The rate of compensation is also likely to depend on the foods that are removed from peoples' diets, with some evidence suggesting people are less likely to compensate for changes in calorie intake from beverages than solid food[144]. Furthermore, with many of these studies taking place in laboratory conditions or over relatively short periods of time, it is unclear how people might adjust their behaviour over time in real world conditions. Therefore, it is not obvious from the literature how consumers might adjust their behaviour in response to these regulations, if they do so at all.

233. As mentioned above, retailers and manufacturers are likely to use multiple approaches to offset the loss in profits due to restrictions to location promotions.

234. Consultation responses from stakeholders argued that a 40%[145] offset was an underestimation and that some evidence[113,146,147]has suggested that this figure could be closer to 100%, however, this does vary from person to person. It is also possible that level of compensation could vary depending on the purpose of a consumers shopping trip. The likeliness of consumers compensating for the loss calories would be dependent on whether they pick up non-HFSS items in these locations as part of an impulse purchase during a quick trip, or whether during a longer shop, consumers pick up other items throughout the store to replace the loss calories.

235. Due to the considerable amount of uncertainty surrounding the rate of offset, we have applied a 40%[148] compensation rate in the central scenario to our cost estimates and have adjusted for different levels of compensation in the sensitivity analysis.

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[137] Anton SD, Martin CK, Han H, Coulon S, Cefalu WT, Geiselman P, Williamson DA. (2010) Effects of stevia, aspartame, and sucrose on food intake, satiety, and postprandial glucose and insulin levels. Appetite. 2010 Aug 31;55(1):37-43.

[138] Rolls BJ, Roe LS, Meengs JS. (2006) Reductions in portion size and energy density of foods are additive and lead to sustained decreases in energy intake. The American journal of clinical nutrition. 2006 Jan 1;83(1):11-7.

[139] Kelly MT, Wallace JM, Robson PJ, Rennie KL, Welch RW, Hannon-Fletcher MP, Brennan S, Fletcher A, Livingstone MB. (2009) Increased portion size leads to a sustained increase in energy intake over 4 d in normal-weight and overweight men and women. British journal of nutrition. 2009 Feb;102(3):470-7.

[140] Foltin RW, Fischman MW, Emurian CS, Rachlinski JJ. (1988) Compensation for caloric dilution in humans given unrestricted access to food in a residential laboratory. Appetite. 1988 Feb 29;10(1):13-24.

[141] Foltin RW, Fischman MW, Moran TH, Rolls BJ, Kelly TH. (1990) Caloric compensation for lunches varying in fat and carbohydrate content by humans in a residential laboratory. The American journal of clinical nutrition. 1990 Dec 1;52(6):969-80.

[142] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300.

[143] Kendall A, Levitsky DA, Strupp BJ, Lissner L. (1991) Weight loss on a low-fat diet: consequence of the imprecision of the control of food intake in humans. The American journal of clinical nutrition. 1991 May 1;53(5):1124-9.

[144] Mourao DM, Bressan J, Campbell WW, Mattes RD. (2007) Effects of food form on appetite and energy intake in lean and obese young adults. International journal of obesity. 2007 Nov 1;31(11):1688-95.

[145] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300.

[146]Werle. C. et al (2011). 'Just thinking about exercise makes me serve more food. Physical activity and calorie compensation'. Appetite 56(2).

[147] Mccrickerd, K., Salleh, N.B. & Forde, C.G. (2016). 'Removing energy from a beverage influences later food intake more than the same energy addition'. Appetite 105.

[148] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300.

Costs and benefits of options

236. In this section we focus on the cost and benefits of this regulation.

237. The regulation on ending volume promotions of HFSS food and drink items also captures costs to businesses similar to this policy. Many businesses captured under this policy are also in scope of the volume promotion restrictions, and therefore may incur similar costs such as product assessment costs. Given the potential overlap we have calculated the cost for this policy separately, and then deducted the cost of product assessment occurred in this IA from the calculations in the volume restriction IA to ensure the cost to businesses is not double counted.

238. The table below outlines the costs and benefits captured in the analysis for each option.

Table 15: Costs and benefits of location restrictions

Monetised costs	Transition costs associated with businesses familiarising themselves with the new regulations.
	Transition costs associated with assessing if products are in scope of the regulation.
	Transition costs associated with distributing familiarisation and product assessment information to stores.
	Transition costs associated with the reorganisation of stores to replace HFSS items located in restricted locations.
	Transition costs associated with online only businesses or businesses with an online offering distributing familiarisation information to IT professionals.
	Transition costs associated with making changes to websites to replace HFSS items located in restricted locations.
	On-going cost associated with assessing new or reformulated products.
	Loss in profit to retailers because of reduced sales of HFSS food and drinks.
	Profit offset to retailers and manufacturers from consumers purchasing HFSS products within aisles and in other locations within the store.
	Profit offset to retailers and manufacturers from consumers purchasing HFSS products within aisles and in other locations within the store.
	Profit offset to retailers and manufacturers from consumers purchasing non-HFSS products.
Non-monetised costs	Reformulation cost to manufacturers
	Impact on retailer and manufacturer relationship
	The impact on wholesalers from reduction in sales of HFSS products
Monetised benefits	A reduction in excess purchases of HFSS products and therefore calorie overconsumption, with a consequent reduction in childhood obesity prevalence

	A reduction in obesity-related morbidity and mortality, resulting in NHS and social care savings, and an increase in economic output.
	A potential increase in consumption of healthier items, contributing to further health benefits.
Non-monetised benefits	Impact on consumers
	Benefits to consumers as a result of reformulation
	Impact on productivity from preventing obesity related ill health
	Reinvested cost savings to the NHS

239. The magnitude of the costs and benefits could be significantly influenced by wider factors such as the proportion of sales offset from moving HFSS products within aisles, consumers compensating behaviour and businesses using alternative marketing strategies to promote products. These have been factored into the calculations to an extent and assumptions have been varied in the sensitivity analysis.

240. The net present value of the options are assessed over a 25 year appraisal period. We believe the default period of 10 years is inadequate in this case because it fails to capture the typically later life health conditions that this policy targets. This six obesity-related conditions that are modelled are: type 2 diabetes, breast cancer, coronary heart disease, colorectal cancer, liver disease and stroke[149]. Even a 25 year period does not allow sufficient time to capture the future impact on today's children's, which only really starts to impact later in life. However, the significant benefits that are seen within 25 years are the impact on today's adults, which are, within 25 years, at a high risk of the six obesity-related conditions. A longer appraisal period would have allowed us to fully capture the lifetime benefits on today's children. However, long appraisal periods also introduce increased uncertainty as assumptions need to be made over longer timelines. Therefore, 25 years was considered an optimum appraisal period.

Option 0

241. Option 0 is the do-nothing scenario against which all other options are compared. As such, the costs and benefits are zero.

242. The implicit assumptions in the calculations is that the counterfactual assumes no growth in the food retail sector and no change to the types of products that would otherwise be promoted, purchased and consumed.

243. It is worth acknowledging that there are other actions being taken by Government and others to reduce childhood obesity, alongside this intended action. Further discussion of the interactions is provided in the 'Interaction of policy effects' section. No explicit quantitative adjustments have been made for these.

Option 1

Costs to business

Transition costs

244. Transition costs are expected to fall within four categories:

- Familiarisation;

[149] Reference: https://www.diabetes.org.uk/resources-s3/2017-11/diabetes-key-stats-guidelines-april2014.pdf (last accessed 31/01/19), https://www.diabetes.org.uk/resources-s3/2017-11/diabetes_in_the_uk_2010.pdf (last accessed 20/11/2019) https://diabetes-resources-production.s3-eu-west-1.amazonaws.com/diabetes-storage/migration/pdf/DiabetesUK_Facts_Stats_Oct16.pdf (last accessed 20/11/19) https://www.bhf.org.uk/-/media/files/research/heart-statistics/bhf-cvd-statistics-compendium-2017.pdf?la=en (tables 2.8a and 2.8b; last accessed 31/01/19), https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/breast-cancer#heading-Zero (last accessed 31/01/19), https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/bowel-cancer/incidence#heading-One (last accessed 31/01/19)

- Distributing information;
- Product assessment;
- Store planning and adjustment
- Planning and adjustment to websites

245. It is important to note that the transition costs estimated here are based on a number of assumptions covering the time it will take for businesses to familiarise themselves with the regulations, assess products, and reorganise stores. These costs are considered as direct costs and captured in the EANDCB.

Familiarisation

246. We assume that each business will have one manager who is responsible for understanding the regulations and making their stores aware of the changes, we assume this will take 10 hours. We have revised our assumption about the time taken for a manager to familiarise themselves with the regulation following consultation feedback. We assume that businesses with an online offering will take an additional 2 hours. This is a unevidenced assumption.

247. The median hourly wage rate for a manager is £21.00 according to the 2019 Annual Survey of Hours and Earnings (ASHE)[150]. This is uprated by 30% to £27.30 to account for non-wage labour costs such as national insurance and pensions[151]. This wage rate has been increased post consultation in response to stakeholder engagement. The wage rate, in practice, will vary by business depending on the size and scale of the organisation. Sensitivity analysis using the maximum and minimum wage rate percentiles has been conducted to consider some of this uncertainty, the results of which are outlined below.

248. We estimate that there are around 367 businesses in scope of this option in England and therefore our central estimate using the median average wage indicates that familiarisation cost to business will be £112k.

249. As we assume that familiarisation of the regulation is done at a head office level, there would be an additional cost of this information being passed store managers. We assume that one manager at the head office will take one hour to share this information with store manager. Taking uplifted wage of the manager at head office (£27.30) and the uplifted wage of a manger in retail or wholesale (£17.10), the cost of sharing this information would be £203k.

250. Similarly, we also assume that for online only retailers and retailers with an online offering, there would be an additional cost of information at the head office level being passed to IT professional who would be responsible of making these changes to the websites. Taking the uplifted wage of the manager at head office (£27.30) and the uplifted wage of an IT professional (£29.10) [152], the cost of sharing this information would be £12k. We have assumed that information on what products to promote in the key locations (following product assessment at a head office level) will also be shared at the same time.

Product assessment

251. To comply with the regulations retailers will need to assess whether each of the products they stock is within the categories in scope of the restrictions and, if yes, they will need to assess whether it is considered HFSS by calculating its NPM score.

252. To assist retailers and minimise the burden of this assessment, DHSC will provide guidance to help businesses implement the restrictions.

253. We assume that the assessment of products will occur at a business rather than store level, with chain retailers able to distribute centrally calculated lists. The time taken to assess products will depend greatly on the form and content of the information currently held by stores. If electronic information on the nutritional content of products is present, then simple rules could be applied to this data to generate a flag for HFSS products. Consultation responses highlighted that in many cases retailers may need to ask manufacturers to make this assessment or provide data for their products, given retailers do not

[150] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

[151] This is in accordance with standard practice set out in The Green Book: appraisal and evaluation in central government https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent (accessed 29/06/2018)

[152] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

have all the nutrient information needed to calculate the NPM score for branded products. However, the consultation did not provide evidence on the number of manufacturers providing HFSS products to retailers and therefore we have not been able to calculate the cost to manufacturers in making this assessment.

254. We have assumed that it would take 30 minutes per product to assess and record the outcome. This assumption was not questioned during consultation and has been used to estimate the costs. We considered the possibility of this assessment requiring more time in the sensitivity analysis.

255. In order to assess whether a product is in scope of the regulation, an individual assessment is required. The cost will depend on the number of products stocked by each business. Evidence from the global Agricultural Information Network[153] shows that Tesco will stock 25,000 products that are food and beverages. Analysis from Kantar data[154] highlights that around 30% of these products fall into categories subject to this regulation, we use this assumption to calculate from all food and drink products which categories need to be assessed. It is possible that other products not in these broad categories contain products that would fail NPM, and therefore have varied this assumption in the sensitivity analysis. We therefore assume Tesco would need to assess 7,500 products.

256. The report also highlights that a typical Asda supermarket carries about 35,000 product lines, 60 percent of which are food and beverage items, resulting in 21,000 food and drink products. It also states that Morrisons stocks about 24,000 products. Kantar's food specific GB estimate of total grocery sales is £88.5bn, but IGD estimated that total grocery sales including non-food items was around £193.6bn. This suggests that around half of UK grocery sales are for food and drink items. Multiplying 24,000 by 50% suggests that 12,000 products in a typical Morrisons store are food and drink items. We take the midpoint of these to calculations and apply the 30% estimate from the Kantar data and calculate that all other supermarkets will stock 4,950 products. For stores that aren't supermarkets, we assume they will stock 1,000 products. This assumption was not questioned in the consultation. Applying the 30% assumption to those products, as not all food and drink products will need to be assessed, we assume that 300 products will need to be assessed.

257. As we assume product assessment is conducted at a business level, we use the uplifted managers wage of £27.30[155] and calculate a cost per businesses of approximately £21k, or a total cost of £3.1m across the 147 businesses. We assume this information would be shared with individual stores at the same time as they are briefed about the regulation by the business manager. We have assumed that businesses whose primary function is not to sell food would not have to calculate the NPM score as it would be more apparent what is HFSS and what is not due to the limited range of food products.

Distributing information

258. We assume that every store will also have 1 manager and 2 employees responsible for understanding the regulations. We assume that, on average, this will take one hour.

259. The average hourly wage for a stock control clerks and assistant is £10.72[156], and uplifted by 30% to £13.94[157]. By multiplying this and the hourly wage of manager or director in retail and wholesale with the number of stores, the central estimate is £510k.

Store planning & adjustment

260. Once products have been assessed, retailers need to re-plan store layouts so HFSS items are no longer placed at checkouts, ends-of-aisles and store entrances. Due to the range of possible store designs, we assume that this planning occurs at store rather than firm level.

261. Stores often use the ends-of-aisles, store entrances and checkouts to display seasonal items (e.g. chocolates at Easter and Christmas), many of which are likely to be HFSS. There may be additional costs incurred in planning new approaches for these events that are not considered in this IA. The

[153] https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=UK%20Supermarket%20Chain%20Profiles%202016_London_United%20Kingdom_12-13-2016.pdf

[154] Kantar panel data of 30,000 housholds

[155] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

[156] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

[157] This is in accordance with standard practice set out in The Green Book.

consultation did not provide evidence to make these adjustments, and due to the commercially sensitive nature of the data we were not able to gather it through further stakeholder engagement.

262. Once these new layouts have been planned, it will be necessary to reallocate goods. For stores above 2,000 sq. ft, we assume that planning would require the involvement of at least one retail manager and one stock control clerk. Furthermore, it is possible that general design principles would be created centrally within chain retailers, simplifying the process for their individual stores.

263. For the 1,806 stores that are between 2,000 sq. ft and 3,000 sq. ft, we assume planning would take three full 8-hour days for a stock control clerk and retail manager. This results in a per-store cost of £1k and a total cost of £1.3m. Feedback through the consultation suggested that it may take stores longer than 3 days, and therefore have applied a sensitivity analysis to this assumption. We have not changed our central estimate as no alternative evidence on how long it will take to make these adjustments was given through the consultation or further stakeholder engagement.

264. To implement the new layout, we assume it will take 2 'sales assistant and retail cashiers' 12 hours, at £11.44 per hour including on-costs. This results in a cost of £275 per store, or £500k in total.

265. IGD define convenience stores as having an area of up to 3,000 sq. Ft, small supermarkets of having an area between 3,000-25,000 sq. ft, superstores 25,000-60,000 sq. ft and hypermarkets greater than 60,000 sq. ft. If we assume the average size of stores between 2,000 and 3,000 square feet is 2,500 square feet, and the average of supermarkets and hypermarkets to be 30,000 square feet, we might expect the time taken plan new layouts to scale accordingly, however this does not take into account economies of scale. Consultation responses highlighted that re-designing stores could cost between £50k-100k. For stores in England that are above 3,000 sq. ft (8,499 store), we therefore assume that the time taken for planning will be 6 times greater than stores between 2,000 and 3,000 sq. ft, in order to capture that larger stores will have higher costs. This results in a cost of planning for these 8,499 stores of £37.9m.

266. Therefore, the estimated total cost for planning is £39.2m and re-arranging will be £2.8m.

Changes to online offering

267. For online only businesses and those with an online offering, retailers need to re-plan website layouts so HFSS items are no longer placed at the online equivalent to checkouts, ends-of-aisles and store entrances. As businesses may use these locations to promote seasonal products, there may be additional costs incurred in planning new approaches for these events that are not considered in this IA. The consultation did not provide evidence to make these adjustments, and due to the commercially sensitive nature of the data we were not able to gather it through further stakeholder engagement.

268. Stakeholder engagement identified that it could take an IT professional 20-30 days to make these changes and implement them across their online system. We therefore have assumed that in the central scenario it would take 25 days (200 hours based on 8 hours working days) for an IT professional to make these changes at an uplifted wage of £29.10[158], giving a central estimate of £1.3m. The time taken to make these changes may vary by businesses and therefore these assumptions have been adjusted in the sensitivity analysis.

On-going costs

269. The on-going costs are expected to fall under these three main categories:
    - Product assessment cost
    - Loss in retailer profit
    - Loss in manufacturer profit

270. These costs will occur throughout the 25 year appraisal period.

Product assessment cost

271. Consultation responses highlighted that there would be additional on-going cost to business as a result of this regulation. As new products come into the market or products are reformulated, in order to comply with the regulations, retailers will need to assess whether each of the products they stock is within the

[158] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

categories in scope of the restrictions and, if yes, they will need to assess whether it is considered HFSS by calculating its NPM score.

272. Stakeholder engagement has highlighted that products have a general reformulation cycle, where reformulation occurs between every 6 months to 3 years (see paragraph 315 for further information). In order to capture the on-going product assessment costs, in the central scenario we have assumed that products will be reformulated every 2 years.

273. Further costs would then be incurred from sharing this information with individual stores. Assuming it takes 1 manager at the head office 1 hour to pass the information to the store manager. The average hourly wage rate for a 'manager or director in retail and wholesale' is £13.12[159] uplifted by 30% to £17.10[160] and the uplifted wage rate for a 'manager or director' is £27.30. There would also be an additional cost from sharing the information with IT professionals. It is assumed that it takes 1 manager at the head office with an hourly wage of £27.30, 1 hour to pass the information to the IT professional with a wage of £29.10.

274. In the central estimate we assume that product assessment cost and the cost of sharing this information with individual stores and employees will occur every 2 years, we estimate this will cost £17.2m over the 25-year appraisal period.

275. Wages are grown in real terms over time by projected GDP per capita growth which represents an increase in productivity and therefore opportunity cost[161].

Impact on retailers sales and profit

Checkout sales

276. We first consider the impact of removing HFSS products from checkouts. Table 16 uses retailer's approaches to the placement of HFSS products at checkouts outlined in Table 3 to estimate the proportion of goods sold through checkouts displaying HFSS products.

Table 16: Estimated retail sales through checkouts with HFSS food and drink products present

Retailer	Market share	Percentage of sales through relevant checkouts
Tesco	27.3%	0%
Sainsbury's	15.7%	12%[162]
Asda	14.6%	33%
Morrison's	10.1%	30%[163]
Aldi	8.0%	0%
The Co-Operative	6.3%	0%
Waitrose	4.8%	0%
Lidl	6.1%	0%
Iceland	2.2%	20%[164]
Symbols & Independent	1.7%[165]	100%
Other Outlets	3.1%	100%

[159] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

[160] This is in accordance with standard practice set out in The Green Book.

[161] Office for Budget Responsibility (2017, November). Retrieved from http://cdn.budgetresponsibility.org.uk/Nov2017EFOwebversion-2.pdf, Up to 2022 and Web TAG 2022-2066 from OBR FSR Jan 17, table 1.1, published 17/01/2017 (adjustment made to convert from FY to CY), from 2023-2027

[162] Due to Sainsbury's differing approaches to convenience and supermarket stores, this has been estimated based on the relative market share of Sainsbury's different store types, as identified in IGD data

[163] Due to the different approach taken to self-service and main checkouts by Morrison's we have assumed that 30% of transactions are done through self-service tills.

[164] Based on the information in Table 3 and implicitly assumes an average of 5 checkouts per store for Iceland

[165] Data from ACS highlights that 37.6% of the sales in the coviance store market is from symbols. This is used as a proxy to calculate the poroption of the conviance store market that is in scope of this option.

277. By multiplying the relevant market share and the proportion of sales through relevant checkouts, we estimate that 15.11% of food retail sales take place through checkouts where HFSS products are displayed.

278. Applying this 15.11% proportion to the £100.5bn GB food retail market (taking into account the proportion of turnover in scope of this regulation, 84.33%), suggests that total annual food sales worth £12.8bn per annum occur through checkouts where HFSS products are available.

279. Applying our estimate of 7.1% for the share of sales accounted for by checkout locations, suggests total checkout sales of £909m per annum. As stated previously, it is estimated that around 80% of products under this option would be classified as HFSS and fail the 2004/05 Nutrient Profile Model, restricting the product being sold in checkouts. Applying this adjustment suggests that checkout sales of HFSS food amount to £727m per annum. This would be the direct loss in sales to retailers as a result of the policy and therefore captured in the EANDCB.

280. There is considerable uncertainty around the portion of checkout sales which are HFSS items. Our 80% figure is estimated using data on food and drink sales and as a result does not consider the fact that a variety of non-food products may also be placed at checkouts. Furthermore, the types of products located at checkouts and other prominent locations is likely to vary depending on the type and size of the store, with smaller convenience stores being likely to locate items differently to larger supermarkets even if they are part of the same chain.

281. We also assume that 30% of the loss in sales will be offset as we move the HFSS products from the checkout to within aisle, resulting in an offset of sales by £218m per annum.

282. In addition, we assume that 40%[166] of the remaining loss in sales will be offset from consumers buying more products to compensate for the loss in calories, and to factor in that businesses will use alternative marketing strategies to offset sales. These sales could be from either HFSS and non-HFSS products, and results in a further offset in sales of £204m per annum. The offset in sales are indirect impacts and are not captured in the EANDCB.

Checkout profit

283. Findings from the EHI Retail Institute study show that average confectionary profit margins are substantially higher than other products sold at checkouts and therefore we use a profit margin of 31.5% as a central approach[167]. Applying this to the £727m per annum reduction in sales, results in direct lost profits to retailers of £229m per annum.

284. As stated previously, we would expect a partial offsetting of this loss through increased sales of HFSS and non-HFSS products. If we assume that products achieve an average profit margin of 3% and apply this to the £204m per annum in sales the indirect increase in profit will be £6.1m per annum.

285. The loss in profits could be further offset if retailers move the HFSS items previously at checkouts into aisles. Assuming HFSS items removed from checkouts and moved within aisles offset sales by £218m per annum and applying this to the difference in profit margins of confectionary and other products (19.1%), the additional profit from HFSS aisle sales would be £41.7m profit per annum.

286. Table 16 outlines the total impact on sales and profit, through restriction of promotions of HFSS products at checkouts. The calculations consider the impact of the policy on Great Britain and therefore have been reduced in proportion with England's 86.7% share of the GB population.

Table 17: Summary of impact on annual sales and profit from promotion restrictions at checkouts.

Impact	Loss or gain in sales	Profit margins	Total loss or offset in profit	England adjustment
Direct loss in sales from removing HFSS products at checkouts	-£727m	31.5%	-£229m	-£199m

[166] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

[167] Explaination of 31.5% is in paragraph 135.

Indirect gain in sales from consumers buying HFSS and non-HFSS products	£204m	3%	£6m	£5m
Indirect gain in sales from moving HFSS items within aisles	£218m	19.1%	£42m	£36m

End-of-aisle sales

287. We assume that all retailers display at least some HFSS products on the ends of aisles, an assumption that was not questioned at consultation. As mention above, the types of products located on the end of aisles are likely to vary depending on the type and size of the store.

288. Previously we estimate the proportion of food sales included in this option is 38% and 80% of those products would fail the NPM, outlined in Table 14. In order to calculate the loss in sales, we combine this with the proportion of products sold at the end-of-aisle, 20%, and apply these proportions to the £100.5bn GB food retail market (taking into account the proportion of turnover in scope of this regulation, 84.33%). This leads to a loss in sales of £5.1bn per annum.

289. Using the Nakamura et al.[168] study we previously estimated that an end-of-aisle location provides a 55% sales uplift. Displaying all current end-of-aisle HFSS products within aisles would therefore offset 64.5% of the reduction in sales – offsetting sales by £3.28bn per annum.

290. In addition, we assume that 40%[169] of the remaining loss in sales will be offset from consumers buying more products to compensate for the loss in calories, and to factor in that businesses will use alternative marketing strategies to offset sales. These sales could be from either HFSS and non-HFSS products, and results in a further offset in sales of £721m. The offset in sales are indirect impacts and will not be captured in the EANDCB.

End of aisle profits

291. End-of-aisle displays contain a far wider range of products than checkouts, so it would not be appropriate to apply the estimated confectionary profit margin to these sales as done previously. We therefore apply the 3% profit margin as highlighted in paragraph 204.

292. Applying the 3% profit margin, the direct profit loss would be £152m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles and replacing products in end of aisles with non-HFSS products, resulting in a profit loss of £32m per annum. The calculations consider the impact of the policy on Great Britain and therefore have been reduced in proportion with England's 86.7% share of the GB population.

Table 18: Summary of annual impact on sales and profit from promotion restrictions at end of aisle.

Impact	Loss or gain in sales	Profit margins	Total loss or offset in profit	England adjustment
Direct loss in sales from removing HFSS products at end of aisle	-£5.1bn	3%	-£152m	-£132m
Indirect gain in sales from consumers buying HFSS and non-HFSS products	£721m	3%	£22m	£19m

[168] Nakamura et al (2014) Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Social Science & Medicine, https://www.ncbi.nlm.nih.gov/pubmed/24632050 (accessed 23/10/2018)

[169] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

Indirect gain in sales from moving HFSS items within aisles	£3.3bn	3%	£98m	£85m

Store entrances

293. Retailers display at least some HFSS products at store entrances, though the type of products located at store entrances is likely to vary depending on a number of factors, such as the season, type and size of the store. As highlighted earlier, we have assumed that the impact on sales as a result of restrictions at store entrances will be the same as the impact on sales from end of aisle restrictions.

294. Previously we estimate the proportion of food sales included in this option is 38% and 80% of those products would fail the NPM, outlined in table 13. In order to calculate the loss in sales, we combine this with the proportion of products sold at store entrances, 20%, and apply these proportions to the £100.5bn GB food retail market (taking into account the proportion of turnover in scope of this regulation, 84.33%). This leads to a loss in sales of £5.1bn per annum.

295. Using the Nakamura et al.[170] study we previously estimated that an end-of-aisle location provides a 55% sales uplift. As highlighted earlier, we assume the same sales uplift will apply to products at store entrances. Displaying all current HFSS products at store entrances to within aisles would therefore offset 64.5% of the reduction in sales – offsetting sales by £3.28bn per annum.

296. In addition, we assume that 40%[171] of the remaining loss in sales will be offset from consumers buying more products to compensate for the loss in calories, and to factor in that businesses will use alternative marketing strategies to offset sales. These sales could be from either HFSS and non-HFSS products, and results in a further offset in sales of £721m. The offset in sales are indirect impacts and will not be captured in the EANDCB.

Store entrance profits

297. Store entrances contain a far wider range of products than checkouts, so it would not be appropriate to apply the estimated confectionary profit margin to these sales as done previously. We therefore apply the 3% profit margin as highlighted in paragraph 204.

298. Applying the 3% profit margin, the direct profit loss would be £152m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles and replacing products at store entrances with non-HFSS products, resulting in a profit loss of £32m per annum. The calculations consider the impact of the policy on Great Britain and therefore have been reduced in proportion with England's 86.7% share of the GB population.

Table 19: Summary of annual impact on sales and profit from promotion restrictions at store entrances.

Impact	Loss or gain in sales	Profit margins	Total loss or offset in profit	England adjustment
Direct loss in sales from removing HFSS products at store entrances	-£5.1bn	3%	-£152m	-£132m
Indirect gain in sales from consumers buying HFSS and non-HFSS products	£721m	3%	£22m	£19m

[170] Nakamura et al (2014) Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Social Science & Medicine, https://www.ncbi.nlm.nih.gov/pubmed/24632050 (accessed 23/10/2018)

[171] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

Indirect gain in sales from moving HFSS items within aisles	£3.3bn	3%	£98m	£85m

Summary table

299. Table 18 below outlines the expected impact of the policy on retailer profits, with the calculations at each stage of the methodology split out.

Table 20: Option 1: Summary of the reduction in annual profits for retailers in England

Direct loss in sales	-£9.44bn
Indirect gain in sales from consumers buying HFSS and non-HFSS products	£1.4bn
Indirect gain in sales from moving HFSS items within aisles	£5.8bn
Direct loss in profit	-£463m
Indirect gain in profit	£249m
Net impact on profit	-£213m

Impact on Manufacturers sales and profit

300. The calculations above provide estimates of the possible shifts in consumption resulting from the legislation. While all retailers will experience offsetting increases in sales of other products, there will be clear distributional impacts for manufacturers of HFSS products.

301. In order to calculate the loss in sales to manufacturers, we apply a supermarket mark-up to the total direct and indirect sales outlined in table 18. This results in a direct net loss of manufacturer sales of £7.1bn

302. The above calculations do not form a full general equilibrium assessment of the impact of these restrictions. Money no longer spent by consumers on promoted products will be distributed to other areas of the economy.

303. Therefore, we assume that manufacturers will gain through additional sales of HFSS and non-HFSS products from consumers buying more products to compensate for the loss in calories, and to factor in that businesses will use alternative marketing strategies to offset sales. We would assume that offsetting in sales in the retail sector will feed into the manufacture sector. By applying the supermarket mark-up to the additional sales in the retail sector, results in sales being offset by £1.1bn.

304. A proportion of loss sales will also be offset as retailers move HFSS items from end of aisles, store entrances and checkout to within aisles. Applying the supermarket mark-up to the additional sales of HFSS items within aisles in the retail sector, results in sales being offset by £4.4bn.

Loss in profit to manufacturers

305. Evidence from OC&C indicates that the average net profit margin for manufacturers is around 6% [172]. Applying a profit margin of 6%, implies direct lost profits of around £428m per annum for manufacturers of HFSS products.

306. Applying the same average net profit margin to the indirect sales from HFSS and non-HFSS products, results in loss profit being off set of £65m. Final summary table outlines the loss profit to HFSS and non-HFSS manufacturers separately.

307. In addition, as a proportion of the sales will be offset as HFSS products will continue to generate sales within aisles, and with a 6% profit margin, loss in sales will be further off-set by £266m.

308. It is possible that manufacturers of HFSS products generate higher (or lower) profit margins than manufacturers of other goods. If this were the case, then there would be an overall change in profit levels for this section of the food and drink industry.

[172] https://www.occstrategy.com/media/1700/food-and-drink-150-infographic-2018-3.pdf

Table 21: Option 1: Summary of the reduction in annual profits for manufacturers in England

	Total
Direct loss in profit	-£371.2m
Indirect gain in profit	£287.1m
Net impact on profit	-£84.2m

309. It is possible that some small and micro manufacturers who work with larger retailers will be affected by the policy. Evidence on the proportion of smaller manufacturers working with larger retailers is limited, with the potential impact outlined in the 'Cost to small and micro manufacturers, ' section.

Non-Monetised cost to business

Reformulation

310. Some manufacturers might respond to these restrictions by reformulating their products in order to be able to promote them in restricted locations. Feedback from the consultation highlighted that products where the NPM scores are far from the threshold should be excluded from the policy, as there would be little incentive for manufacturers to reformulate products. There may be an incentive to reformulate products that are close to the NPM threshold, but for products such as confectionery, which are inherently HFSS, reformulation will be more challenging.

311. Business may be able to adopt innovative technology, opening up the possibility to reformulate historically unhealthy products. However, it is recognised that it may not always be possible to achieve an NPM score that would allow them to be promoted in restricted locations.

312. There are other voluntary programmes in place which are designed to encourage manufacturers to meet their corporate social responsibilities and reformulate their products to reduce calories, sugar and salt. Public Health England's sugar reduction programme has seen a 13% reduction in the average sugar content of breakfast cereals and yoghurts.

313. Polling shows there is consumer demand for healthier products with fewer calories[173]. In addition, the Nutrition and Health Claims Regulation (EU) No. 1924/2006 permits nutrition claims such as "less sugar" or "reduced fat" on pack subject to certain criteria being met, which may offer an alternative incentive for businesses to reformulate.

314. This demonstrates that although this policy may not incentivise the reformulation of some products that are significantly above the NPM threshold, there are other factors, including consumer demand, which will encourage further reformulation, even if it will not mean they can promote their products using location promotions. Therefore, we do not consider that this policy will disincentivise reformulation of these types of products.

315. The frequency in which manufacturers may reformulate their products will also vary substantially from one product and manufacturer to another. Previous industry engagement suggests that reformulation occurs on a regular basis. Stakeholder engagement revealed this can be anywhere from every 6 months to every 3 years depending on the product in question.

316. Having a live reformulation programme for a particular nutrient or ingredient which is present in a food or drink may also mean that some products are reviewed and reformulated more (including changes to portion size) than would be the case if there wasn't a live programme. Manufacturers introducing a 'reduced' product would also make changes to the standard product and introduction of other new products to a company's portfolio may also lead them to review and reformulate an existing product.

317. The costs of any reformulation will likely vary substantially from one product to another, depending on the amount of changes that need to be made, the cost of alternative ingredients, the time taken to

[173] Public Health England (2016). *Attitudes to obesity: Findings from the 2015 British Social Attitudes survey*. Avaiable at: http://www.bsa.natcen.ac.uk/latest-report/british-social-attitudes-33/obesity.aspx (accesed: 23/10/2020)

reformulate the products and the cost associated with revising labels and advertising reformulated products. Due to the uncertainties surrounding these costs and the lack of evidence from consultation responses we have not been able estimate the cost of any potential reformulation.

318. In addition, the commercially sensitive nature of this information meant that we have not gathered any further estimates through further stakeholder engagement. Furthermore, any effort by manufacturers to reformulate their products would only be pursued if the expected returns were greater than not doing so. As such, we would expect the benefits of reformulation to outweigh the costs to retailers and manufacturers. The cost reformulation would also be considered as indirect cost, as there is no requirement under this policy for manufacturers to reformulate.

319. There are also other policies in place to encourage reformulation, and therefore cost of reformulation could be driven as a result of this policy or other policies outlined in the 'Interaction of policy effects' section.

Retailer-manufacturer relationship

320. The estimates above take a somewhat simplistic view of the relationship between manufacturers and retailers. Decisions about the timings and types of promotions which are offered during any given week will be the result of a series of negotiations between retailers and manufacturers.

321. Stakeholder engagement identified that manufacturers of products are willing to pay a premium to retailers to ensure their products receive prominent positioning within stores. Restricting the placement of HFSS products within certain locations would clearly have substantial implications for this relationship. Manufacturers of HFSS food and drink may experience some savings from no longer paying for prime locations. However, some of this might be offset by increased competition for the prominent locations not covered by this legislation or increasing the level of other promotions. Further information was not available through the consultation or through further stakeholder engagement due to the commercially sensitive nature of the data. Evidence from the US suggests that the premium may be equivalent to 8% of the value of goods sold by retailers[174]. Without any further evidence it is not possible to assess whether there would be a similar level of premium in the UK, but the evidence has been presented to provide context. One stakeholder highlighted that the premium does vary by retailer and by season, with seasonality premium being much higher. Given the limited evidence, we have not been able to explore revenue raised from the prime locations any further.

322. We have not quantified the impact to retailers and manufacturers internal market as any changes to the revenue generated from these locations would be captured in businesses profits. In order to avoid double counting, we have not accounted for this impact separately. We have adjusted the profit margins in the sensitivity analysis which would account for any change in revenue to businesses as a result of the policy.

323. Our calculations have assumed that the costs of adjusting to these restrictions would be felt by retailers. It is possible that retailers would attempt to pass this cost on to manufacturers. Retailers may need nutrition information from manufacturers to understand whether a product is in scope, and if may pass the task of assessing a product to manufacturers. We have not been able to quantify this impact as it is unclear whether retailers will pass the cost manufacturers and no further evidence was provided through the consultation.

The impact on wholesalers

324. In addition to the impact on manufacturers and retailers, there could be an impact on wholesalers as the reduction in sale of HFSS products would reduce their profits. This would be a direct cost as a result of the policy, but would only apply if small and micro businesses are in scope. We assume that larger retailers work directly with manufacturers, and therefore wholesalers are not usually part of the supply chain for large retailers. However, if smaller manufacturers do supply larger supermarkets it is possible that there could be a potential cost to wholesalers. The impact to small and micro wholesalers is outlined in the 'Cost to small and micro manufacturers, ' section.

The impact on ingredient suppliers

325. The lost profit for ingredient suppliers involved in the supply chain has not been monetised as it is a second order effect. We do not think its proportionate to monetise this impact as the impact on profit

[174] Simpson (2014) The hidden world of supplying a supermarket, BBC, http://www.bbc.co.uk/news/business-29629742 (accessed 10/11/2017)

to these businesses could be due to a number of other factors (e.g. reformulation programmes) and therefore it is difficult to understand the impact on their profits as a result of this policy alone. In addition, we currently do not have data on the number of ingredient suppliers working with manufacturers affected by this policy and this information was not possible to gather from stakeholders. It is possible that ingredient suppliers are small and micro businesses who may be disproportionally impacted by the policy, however without any further data this impact has been captured as a non-monetised cost. This is discussed in further detail in the 'Cost to small and micro manufacturers, ' section.

Wider economic impacts

326. We recognise that the loss in profits for retailers, manufacturers, wholesalers and ingredient suppliers could have wider economic impacts.

327. For example, lower profits for these types of businesses could lead to them decreasing investment in new machinery or premises and/or reducing the number of staff they employ. This would have a negative knock-on impact on the aggregate demand and employment in the economy. It is also possible that this policy creates an opportunity for non-HFSS manufactures, who may see an increase in demand if locations in scope of this policy are used to promote non-HFSS products, which could increase employment and investment.

328. These types of wider economic impacts have not been monetised. We do not think it is proportionate to monetise them as investment and employment decisions by retailers, manufacturers, wholesalers and ingredient suppliers is likely to be influenced by a wide range of factors (e.g. interest rates, wage costs and implications on trade). This means it would be very difficult to identify the specific wider economic impact restrictions on location promotions of HFSS products would have.

Costs to Government

Enforcement costs

329. To enforce the legislation, the promotion of these products will need to be checked as part of normal inspection visits. These are the primary method of enforcement used by local authorities and are carried out on the basis of a combination of risk and intelligence, which was highlighted through consultation. Given the difficulty in estimating the cost of enforcement if visits are done on an ad-hoc basis, we have assumed that a visit will be done once every 3.5 years[175].

330. There will be one-off transition costs to local authorities as trading standards officers familiarise themselves with the new regulations. According to the National Careers Service, a trading standards officer works around 38 to 40 hours per week and earns between £19k and £90k a year[176]. Using the midpoint of this range we estimate an hourly salary assuming a 39-hour working week, 5 weeks holiday and 8 days of bank holidays. Uplifting this hourly wage for 30% on cost implies the hourly cost of Trading Standards Office is £40.01. Assuming familiarisation and dissemination of information to other TSOs will take a total of three hours per Local Authority, we estimate that familiarisation costs for all 326 Local Authorities would be around £39,134.

331. We have previously estimated, using ACS and IGD data, that there are approximately 11,343 relevant retail stores within in England under this option, and 221 online retail buisnesess (this includes online only buisnessess and those with a online offering).

332. Assuming retail outlets are visited once every 3.5 years, we estimate there will be 4,646 visits (including both in store and online) per year. We estimate the additional time required at each outlet for paperwork-based checks is 15 minutes per inspection. By multiplying visits by time required and the uprated hourly wage of £40.01, we estimate that total staff costs for enforcement in retail stores would be £33,052 per annum. Wages are grown in real terms over time by projected GDP per capita growth which represents an increase in productivity and therefore opportunity cost[177]. The Department will

[175] This is a plausible assumptions based on several webpages http://www.tradingstandardswales.org.uk/help/foodinspect.cfm and http://www.hullcc.gov.uk/portal/page?_pageid=221,52448&_dad=portal&_schema=PORTAL (all accessed 13/06/2018)

[176] National Careers Service (ND) Trading standards officer, https://nationalcareersservice.direct.gov.uk/job-profiles/trading-standards-officer (accessed 10/12/19)

[177] Office for Budget Responsibility (2017, November). Retrieved from http://cdn.budgetresponsibility.org.uk/Nov2017EFOwebversion-2.pdf, Up to 2022 and WebTAG 2022-2066 from OBR FSR Jan 17, table 1.1, published 17/01/2017 (adjustment made to convert from FY to CY), from 2023-2027

reimburse Local Authorities for the cost of enforcing this policy and would budget accordingly. Here we consider the monetary costs to DHSC, using the standard discount rate of 3.5%. However, it is the Department's policy to consider the opportunity cost of the spending, as this could represent a displacement from the fixed NHS health budget and therefore, we have included this potential cost as part of our sensitivity analysis.

333. We acknowledge that there will also be an additional burden on businesses in order to accommodate extra time during inspections. However, given the workload will fall predominantly on the TSO rather than an employee at the business, we have chosen not to monetise this potential cost to businesses.

334. Since ongoing enforcement costs are based on the number of stores subject to this regulation, any change to this number will impact on costs to local authorities. Furthermore, if businesses fail to comply with the regulation, then there may be additional costs through the issuing of sanctions. We assume full compliance with the regulations for the purposes of these costs. This is an unevidenced assumption as we are unable to determine the level of non-compliance in advance of the regulations being in place.

335. These costs were tested through the consultation and have been revised appropriately. Responses were limited but highlighted that the cost to local authorities should be reimbursed by the Government.

336. The Government will further consult on the detailed enforcement provisions for this policy in due course, to ensure a fair and proportionate enforcement regime is in place. This means the specific legislative apparatus and penalties for non-compliance will be tested with stakeholders. However, it is envisaged that this will not alter the estimated burden on enforcement officers as the general inspection requirements will remain. We will invite views through the enforcement consultation as to whether our estimates represent a fair assessment of the costs local authorities face. We will revise the IA and return to the RPC should we need to change the enforcement costs as a result.

337. The enforcement regime will be finalised when the Regulations are laid.

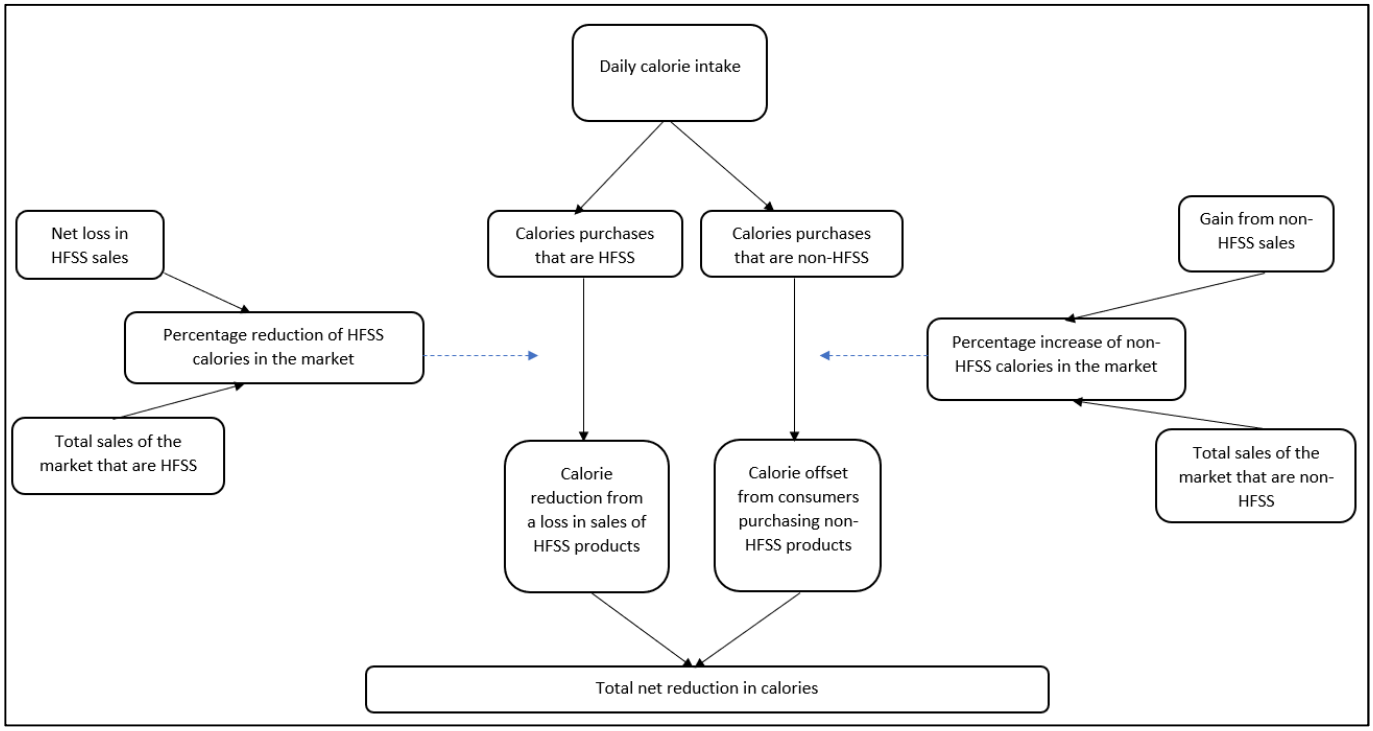
Monetised benefits

Health benefits consequent upon reduced consumption

338. The calculations of the quantified benefits (including QALYs) are done within the "DHSC Calorie Model". This model simulates a "control" group of would-be overweight and obese adult population, compared with an "intervention" group. The "intervention" group has a lower average BMI, as calculated from the reduced daily calorie intake. The simulation is over 25 years.

339. The average BMI determines the likelihood of the following six conditions associated with obesity, which in turn have a fatality rate and a reduced quality of life: type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer. The savings to the NHS are calculated from the reduced treatment of each disease. Reductions in mortality are used to calculate the impact on economic output from an increased workforce. The costs of social care savings are calculated due to a reduced proportion of overweight, obese, and morbidly obese individuals and hence fewer people needing social care in the treatment scenario. Changes in QALYs are calculated from the reduced number of deaths and the reduction of people living with the diseases. These are then converted into monetised QALY using a conversion of how much society values a QALY. For a full description of the calculations and the set of assumptions see Annex A – DHSC Calorie Model and the DHSC Calorie Model Technical Consultation Document published alongside this document.

Figure 5 Estimating the health benefits of restricting location promotions.



Text-only description:
Step 1: The daily calorie intake is split into the proportion of calories purchased that are HFSS and non-HFSS.
Step 2: The loss in HFSS and non-HFSS sales is applied to the total sales of HFSS and non-HFSS products in the market, to calculate the percentage reduction in HFSS and non-HFSS calories.
Step 3: The percentage reduction in HFSS and non-HFSS calories is applied to the HFSS and non-HFSS calories purchased products to calculate the calorie reduction from reduction is sales of HFSS products and the calories that are offset from consumers purchasing non-HFSS products, to get the net reduction in calories.

340. In the sections above, we estimate the net loss in sales, taking into account the sales that are offset due to HFSS items moving within aisles and changes in consumer behaviour and marketing techniques used by retailers. We can split this by HFSS sales and non-HFSS sales, resulting in a net loss in HFSS sales (taking into account offsetting) of £2.43bn and an increase in non-HFSS sales £0.29bn per annum. The impact on sales and profit include both products bought in store and online, however a breakdown is not available in the data.

341. Using Kantar data, we calculated that the proportion of calories purchased that are HFSS and non-HFSS food and drink is 57% and 43% respectively. As explained in paragraph 163, these proportions have been adjusted in the sensitivity analysis. These proportions can then be applied to the total GB expenditure on take home food and drink (adjusted for England to get £87.15bn) to get the number of sales that are HFSS (£49.7bn) and non HFSS (£37.4bn). We then divide the net loss in HFSS sales by the value of the market that is HFSS to get the percentage reduction in the HFSS market of 4.9%. Similar calculation is done for sales gain from non-HFSS products to get a percentage increase of 0.7%.

342. Using the proportion of calories purchased that are HFSS and non-HFSS we assume that 57% of an individual's calories consumed are HFSS, and 43% are non-HFSS. We then assume a 4.9% reduction to the HFSS calories consumed and a 0.7% increase in non-HFSS calories consumed, given an overall net reduction in calories consumed. This proportions are the same across age-gender subgroups.

343. The calculation uses mean daily calorie consumptions reported in the National Diet and Nutrition Survey (NDNS). The data suggests, for example, that most age-gender subgroups are not meeting the recommended number of calories per day. Given current obesity levels in the UK, it is evident that energy consumed must be under-reported in the survey. This is a common problem in all dietary surveys

relying on self-reported food intake and therefore an adjustment of 32%[178] has been applied to the final calorie reduction.

344. The impacts for specific age-gender groups are displayed in Table 22. The expected reductions are as a result of restrictions at checkouts, end of aisle and store entrance. It has not been possible to make any adjustments to consumers calorie intake if a product is promoted under the restricted locations and is on volume promotion. Evidence on where volume promotions occur in a store is not available and we did not receive any evidence through the consultation or further stakeholder engagement. This is an area we are trying to explore as part of the PIR, with the use of innovative primary research which will be piloted as part of the PIR. Given it has not been possible to understand what proportion of volume promotions are sold in the key locations in scope of this policy, a level of double counting is present however without any further evidence of what the overlap could be, an adjustment has not been made to the estimates below.

Table 22 Current calorie consumption and expected reductions[179]

	Males				Females			
	4-10	11-18	19-64	65+	4-10	11-18	19-64	65+
Adjusted daily calorie intake	2008	2552	2781	2426	1849	2134	2107	1968
Calories that are used for HFSS products	1146	1456	1587	1385	1055	1218	1202	1123
Reduction in HFSS calories	56	71	77	68	51	59	59	55
Calories that are used for non-HFSS products	862	1,095	1,194	1,042	794	916	904	845
Reduction in non-HFSS calories	-7	-8	-9	-8	-6	-7	-7	-6
Net calorie reduction	49	63	68	60	45	52	52	48

345. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 1,056,000 QALYS, or at £60,000 per QALY. Reduced morbidity would also result in reduced cost pressures to the NHS, resulting in NHS savings of £3,785m over the 25-year assessment period[180]. The health benefits to the population are estimated to be worth around £49,980m. Social care savings would amount to £4,275m and reduced premature mortality would be expected to deliver an additional £5,983m economic output through additional labour force participation. Further information on what is captured when calculating the different types of benefits in outlined in Annex A.

Non-monetised benefits

346. There are a number of additional health benefits which we have either not been able to monetise and/or include in our assessment of the overall net present value of the policy. These are outlined in turn below:

Impact on consumers

[178] This adjustment factor of 32% is the mean value from 221 data points where the doubly-labelled water test was used to determine the difference between actual calorie intake and recorded calorie intake. Source: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/methodologies/agovernmentstatisticalserviceperspectiveonofficialestimatesofcalorieconsumption2019update

[179] Current mean daily calorie consumption is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey. As discussed below, self-reported data such as the NDNS suffer from considerable underreporting.

[180] To calculate the additional health benefits to the population from reinvesting savings back into the NHS we adjust the estimates produced by the modelling process in the senisitivity analysis.

347. We do not expect there to be an impact on consumer surplus, the 'benefit' consumers gain from having a personal valuation of the product that is greater than the price they paid. However, there may be some positive impact on consumer health, as detailed above.

348. There is some uncertainty regarding the effect of the policy on individuals, with some people possibly losing out if businesses pass on the cost of the regulation to consumers through increased prices. The impact of this is likely to be greater for lower income households who tend to spend a greater proportion of their incomes on food and drink than average[181].

349. Due to the competitive pressures faced by retailers and manufacturers we consider it unlikely that they would pass any costs of the regulation to consumers. However, the Department acknowledges that there is little evidence available to support this and we did not receive any through the consultation or further stakeholder engagement. The ongoing costs to medium and large businesses represent 2% of total turnover for medium and large businesses[182]. If some businesses do pass on the cost to consumers, this would have a distributional effect but the overall NPV would remain the same, with the costs of implementing the policy being transferred from retail businesses to consumers. If this happens, the EANDCB would be an over-estimate in this regard. There is a possibility that there are other unforeseen costs to the consumer as a result of this policy which we have not been able to monetise.

Reformulation

350. As mentioned above, some manufacturers might respond to these restrictions by reformulating. If businesses were to reformulate or create new healthier products, this would lead to further indirect health benefits for consumers, however as the decision for a business to reformulate could be dependent on a number of factors including other active reformulation programmes, organisational strategy or ingredient availability. Therefore, the benefits to consumers from reformulation could be as a result of a number of factors, not this policy alone.

351. However, due to the uncertainties surrounding how much reformulation might take place we have not estimated the impact of any potential reformulation. Consequently, it is possible that the health benefits presented above are an underestimate.

Productivity

352. The economic output benefits are derived only from additional economic output from having a larger population in the treatment group, due to fewer obesity related deaths. However, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive, take fewer sick days and reduce illness related to early retirement. This impact is not estimated quantitatively in the model due to the difficulties in putting in parameters to quantify this improvement in productivity. We currently do not have strong evidence to justify these parameters and as a result remains unmonetised.

Reinvesting NHS savings back into the health service

353. As highlighted earlier, lower levels of obesity related ill health are expected to reduce demand for NHS healthcare compared to the counterfactual, generating cost savings for the health service and additional resources which can be used to treat patients. Given there are waiting lists for NHS treatments and demand for care overall is expected to continue to increase as the population ages, it seems likely that any spare capacity in the system would be backfilled with additional treatments. The estimated monetised value of the additional health benefits these treatments would generate is outlined in the sensitivity analysis section below. This would be an indirect benefit and be contingent on government spending decisions.

Summary of costs and benefits

354. It has not been possible to quantify every aspect of the proposed policy. The table below outlines expected impact of the policy, with quantifications where currently possible. These impacts have been estimated over a 25-year assessment period.

[181] Family Food 2016/17, DEFRA: https://www.gov.uk/government/publications/family-food-201617/summary

[182] This percentage is derived using the on-going costs of £200m per annum compared to the total turnover of £180bn per annum.

Table 23: Summary of costs and benefits – Option 1 (£m)

Group affected	Impact	Central estimate (£m)
Retailers	Transition – Familiarisation	-0.1
	Transition – Product assessment	-3.1
	Transition – Distributing information	-0.2
	Transition – Sharing information with staff	-0.5
	Transition – Store Planning & adjustment	-42.1
	Transition- Changes to IT systems	-1.3
	Transition- Sharing information with staff (online businesses)	-0.01
	Ongoing – Product assessment	-17.3
	Net lost profit	-4,040.9
Total retailer impact		**-4,105.5**
HFSS manufacturers	Net lost profit	-1807
Total HFSS manufacturer impact		**-1,807**
Non-HFSS manufacturers	Gained Profit	213
Total non-HFSS manufacturer impact		**213**
Government	NHS savings	3,785
	Social care savings	4,275
	Enforcement	-0.6
Total Government impact		**8,059**
Wider society	Health benefits	49,980
	Economic output	5,893
Total wider society impact		**55,873**
NPV		**58,233**

Option 2

Cost to businesses

Transition Costs

355. Familiarisation costs to retailers are the same as calculated under Option 1, giving a central cost estimate of £328k. This includes the cost of briefing individual outlets and the cost of sharing information with IT professionals. It is possible that more than one person at the head office level will need to familiarise themselves with the regulation, and therefore have adjusted for this in the sensitivity analysis.

356. The cost of individual store managers sharing information with staff members in store is the same as option 1, giving a central cost estimate of £510k.

357. The costs to retailers of assessing the nutritional content of products are unchanged from those estimated under Option 1. This suggests transition product assessment costs of around £3.1m. The cost is unchanged as we assume, they would assess all products in categories subject to this regulation, so the number of products in scope of the restrictions doesn't affect the amount of time it takes. We have not been able to calculate what proportion of products need to be assessed by option due to how categories are organised in the Kantar data, and therefore have adjusted for this in the sensitivity analysis.

358. The number of stores and businesses in scope are the same as those outlined in option 1. Therefore, cost of planning and adjustment is the same as option 1, giving a central cost estimate of £42m. The cost to online only businesses and those with an online offering in replanning website layouts and implementing this change to their online system will also be the same as option 1, giving a central estimate of £1.3m.

On-going costs

359. The on-going cost to retailers of assessing the nutritional content of products as they are reformulated is unchanged from those estimated under Option 1. This suggests on-going product assessment costs of around £17.3m over a 25-year appraisal period. We adjust the wage rates and the length of the reformulation cycle in the sensitivity analysis.

Loss in retailer profit

360. A potential loss in profit for retailers resulting from the end of location promotions for all HFSS products as defined by the 2004/05 Nutrient Profile Model (NPM) was estimated under option 1. As option 2 focuses on more products the impact will be greater.

361. Evidence is not available to assess if consumer responses to promotions offered on HFSS products differ systematically in response to promotions on this subset of products. Therefore, the percentage impact on sales of these restrictions is assumed to be the same regardless of food and drink categories within HFSS products.

Checkout loss profit

362. The methodology to calculate the loss in sales from checkouts is the same as outlined in option 1, however it takes into account the increase in products in scope under this option (see Table 14), resulting in an annual direct loss in sales of £563m and annual net loss in sales of £327m. This results in a direct loss of profit to retailers is £177m with a net impact of £140m per annum. The profit margins, sales uplifts from products in prime locations and the compensation rate have been adjusted in the sensitivity analysis.

363. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in the net loss in retailer profits, of £122m per year. The direct loss profit from England would be £154m per year, which will be included in the EANDCB.

End of aisle loss profit

364. DHSC analysis of 2014 Kantar data suggests that around 58% of GB food sales would be considered HFSS by the 2004/05 Nutrient Profile Model, and 62% of these products would fail the NPM, outlined in Table 14.

365. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.13bn. Applying the 3% profit margin, the direct profit loss would be £184m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products, resulting in a net loss profit of £39.2m.

366. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £33.9m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £159.6m per year.

Store entrance profit

367. As outlined above, and in Table 14, the Kantar data suggests that around 58% of GB food sales would be considered HFSS, and 62% of these products would fail the NPM.

368. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.13bn. Applying the 3% profit margin, the direct profit loss would be £184m per annum (this is included in the EANDCB). As stated previously, we would expect a

partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products, resulting in a net loss profit of £39.2m.

369. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £33.9m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £159.6m per year.

Summary table

370. Table 22 outlines the change in HFSS sales from restrictions in checkout, end of aisle and store entrances. The loss change in HFSS and non-HFSS sales is used to calculated the health benefits.

Table 24: Option 2: Summary of the reduction in annual profits for retailers in England

Location	Total (£m)
Direct loss in sales	-11,126
Indirect gain in sales from consumers buying HFSS and non-HFSS products	1,647
Indirect gain in sales from moving HFSS items within aisles	7,009
Direct loss in profit	-473
Indirect gain in profit	283
Net impact on profit	-190

Loss in manufacturer profit

371. The methodology to calculate the loss in profit to manufacturers is the same as outlined in option 1, however as it applies a supermarket mark-up to the loss in sales in the retail sector, the sales in the retail sector have increased compared to option 1 as more products are in scope under this option (see Table 14). By applying the same profit margins outlined in option 1, this results in a direct loss of profit to manufacturers of £660m with a net impact of £267.3m. The profit margins, sales uplifts from products in prime locations and the compensation rate have been adjusted in the sensitivity analysis.

372. The above calculations consider the impact of the policy on Great Britain and have reduced the costs in proportion with England's 86.7% share of the GB population in the table below, which will be included in the EANDCB.

Table 25: Option 2: Summary of the reduction in annual profits for manufacturers in England

	Total
Direct loss in profit	-£572.3m
Indirect gain in profit	£340.6m
Net impact on profit	-£231.8m

Non-monetised cost to businesses

373. Non-monetised cost to businesses are the same as those outlined in option 1.

Costs to Government

Enforcement costs

374. The cost from DHSC covering the enforcement costs generated by this policy are considered equal to those estimated under Option 1, at £33.1k per year, with transition costs of £40k.

Monetised benefits

Health benefits consequent upon reduced consumption

375. Similar to option 1, we can split the figures above by HFSS sales and non HFSS sales, resulting in a net loss in HFSS sales (taking into account offsetting) of £3.1bn and an increase in non-HFSS sales £0.62bn per annum. These take into account the sales that are offset due to HFSS items moving within aisles and changes in consumer behaviour and marketing techniques used by retailers.

376. Using the same methodology as option 1, we use the proportion of calories purchased that are HFSS and non-HFSS food and drink is 57% and 43% respectively. As explained in paragraph 163, these proportions have been adjusted in the sensitivity analysis. These proportions can then be applied the total GB expenditure on take home food and drink (adjusted for England to get £87.2bn) to get the number of sales that are HFSS (£49.7bn) and non HFSS (£37.4bn). We then divide the net loss in hfss sales by the value of the market that is HFSS to get the percentage reduction in the HFSS market of 6.2%. A similar calculation is done for sales gain from non-HFSS products to get a percentage increase of 1.7%.

377. Using the proportion of calories purchased that are HFSS and non-HFSS we assume that 57% of an individual's calories consumed are HFSS, and 43% is non-HFSS. We then assume a 6.2% reduction to the HFSS calories consumed and a 1.7% increase in non-HFSS calories consumed, given an overall net reduction in calories consumed. This proportions are the same across age-gender subgroups. The impacts for specific age-gender groups are displayed in Table 26.

Table 26: Current calorie consumption and expected reductions[183]

	Males				Females			
	4-10	11-18	19-64	65+	4-10	11-18	19-64	65+
Adjusted daily calorie intake	2008	2552	2781	2426	1849	2134	2107	1968
Calories that are used for HFSS products	1146	1456	1587	1385	1055	1218	1202	1123
Reduction in HFSS calories	71	91	99	86	66	76	75	70
Calories that are used for non-HFSS products	862	1,095	1,194	1,042	794	916	904	845
Reduction in non-HFSS calories	-14	-18	-20	-17	-13	-15	-15	-14
Net calorie reduction	57	72	79	69	52	60	60	56

378. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 1,217,000 QALYS, or at £60,000 per QALY. Reduced morbidity would also result in reduced cost pressures to the NHS, resulting in NHS savings of £4,364m over the 25-year assessment period[184]. The health benefits to the population are estimated to be worth around £57,600m. Social care savings would amount to £4,896m and reduced premature mortality would be expected to deliver an additional £6,788m economic output through additional labour force participation. Further information on what is captured when calculating the different types of benefits in outlined in Annex A.

[183] Current mean daily calorie consumption is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey. As discussed below, self-reported data such as the NDNS suffer from considerable underreporting.

[184] To calculate the additional health benefits to the population from reinvesting savings back into the NHS we adjust the estimates produced by the modelling process in the senisitivity analysis.

Non monetised benefits

379. The additional health benefits which we have either not been able to monetise and/or include in our assessment are the same as those highlighted in option 1.

Summary of costs and benefits

380. It has not been possible to quantify every aspect of the proposed policy. The table below outlines the expected impact of the policy, with quantifications where currently possible. These impacts have been estimated over a 25-year assessment period.

Table 27: Summary of costs and benefits – Option 2 (£m)

Group affected	Impact	Central estimate (£m)
Retailers	Transition – Familiarisation	-0.1
	Transition – Product assessment	-3.1
	Transition – Distributing information	-0.2
	Transition – Sharing information with staff	-0.5
	Transition – Store Planning &adjustment	-42.1
	Transition – Changes to IT systems	-1.3
	Transition – Sharing information with staff (online businesses)	-0.01
	Ongoing – Product assessment	-17.3
	Net lost profit	-3,591.1
Total retailer impact		**-3,656**
HFSS manufacturers	Net lost profit	-2,307
Total HFSS manufacturer impact		**-2,307**
Non-HFSS manufacturers	Gained Profit	467
Total non HFSS manufacturer impact		**467**
Government	NHS savings	4,364
	Social care savings	4,896
	Enforcement	-0.6
Total Government impact		**9,259**
Wider society	Health benefits	57,600
	Economic output	6,788
Total wider society impact		**64,388**
NPV		**68,152**

Equivalent annual net direct cost to business (EANDCB)

381. The direct costs have been included in the EANDCB, and only captures the activity occurring in the UK. These include:

- Familiarisation costs (includes cost of sharing information about the regulation with stores and cost of sharing information with IT professionals)
- Product assessment cost (initial and on-going cost)
- Sharing product assessment with individual stores (initial and on-going cost)
- Store planning and adjustment

- Changes to IT systems
- Loss of sales and profit to retailers from removing HFSS products at checkouts, store entrances and end of aisles.
- Loss of sales and profit to manufacturers of HFSS products

382. It has not been possible to quantify all direct impacts to businesses, and therefore the EANDCB does not include:

- Loss in revenue to retailers from HFSS manufacturers paying a premium to promote products in key locations
- Loss in sales and profit to small and micro manufactures and wholesalers working with larger retailers in scope of this policy

383. The costs to Government have not been included in these calculations as they are not a direct cost to business. Our assessment of EANDCB is £1,067m per year in 2019 prices and 2020 present value base year.

Option 3

Cost to businesses

Transition Costs

384. Familiarisation costs to retailers are the same as calculated under option 2 but only excludes micro businesses compared to option 2 which excludes both small and micro businesses. We estimate that there are around 2,032 businesses in England under this option, giving a central cost estimate of £1.35m. This includes the cost of briefing individual outlets and the cost of sharing information with IT professionals.

385. The cost of individual store managers sharing information with staff members in store is calculated the same way option 2, however is larger as there are more businesses in scope, giving a central cost estimate of £695k.

386. The costs to retailers of assessing the nutritional content of products is calculated similarly to option 2 but with a greater number of businesses in scope. This suggests transition product assessment costs of around £4.6m.

387. As this option has a greater number of stores and businesses in scope than option 2, the cost of planning and adjustment would be £57.6m. The cost to online only businesses and those with an online offering in replanning website layouts and implementing this change to their online system will also be higher than option 2 as more businesses are in scope, giving a central estimate of £4.6m.

On-going costs

388. The on-going cost to retailers of assessing the nutritional content of products as they are reformulated is calculated similar to option 2 but with a greater number of businesses in scope. This suggests on-going product assessment costs of around £25.6m over a 25-year appraisal period.

Loss in retailer profit

389. A potential loss in profit for retailers and manufacturers resulting from the end of location promotions for all HFSS products as defined by the 2004/05 Nutrient Profile Model (NPM) was estimated under option 2. Although option 3 has the same number of products in scope as option 2, this option only excludes micro businesses, therefore impact will be greater.

390. Evidence is not available to assess if consumer responses to promotions offered on HFSS products differ systematically in response to promotions on this subset of products. Therefore, that the percentage impact on sales of these restrictions is assumed to be the same regardless of food and drink categories within HFSS products.

Checkout loss profit

391. The methodology to calculate the loss in sales from checkouts is the same as outlined in option 1, however it takes into account a larger proportion of the market, resulting in an annual direct loss in sales of £564m and annual net loss in sales of £237m. This results in a direct loss of profit to retailers is £178m with a net impact of £141m per annum.

392. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in the net loss in retailer profits, of £121.9m per year. The direct loss profit from England would be £154.1m per annum, which will be included in the EANDCB.

End of aisle loss profit

393. DHSC analysis of 2014 Kantar data suggests that around 58% of GB food sales would be considered HFSS by the 2004/05 Nutrient Profile Model, and 62% of these products would fail the NPM, outlined in Table 14.

394. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.15bn. Applying the 3% profit margin, the direct profit loss would be £184.4m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products and retailers using alternative marketing strategies to drive sales, resulting in a net loss profit of £39.3m.

395. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £34m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £159.9m per year.

Store entrance loss profit

396. As outlined above, and in Table 14, the Kantar data suggests that around 58% of GB food sales would be considered HFSS, and 62% of these products would fail the NPM.

397. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.15bn. Applying the 3% profit margin, the direct profit loss would be £184.4m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products, resulting in a net loss profit of £39.3m.

398. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £34m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £159.9m per year.

Summary table

399. Table 28 outlines the change in HFSS sales from restrictions in checkout, end of aisle and store entrances. The loss change in HFSS and non-HFSS sales is used to calculated the health benefits.

Table 28 Option 3: Summary of the reduction in annual profits for retailers in England

Location	Total (£m)
Direct loss in sales	-11,150
Indirect gain in sales from consumers buying HFSS and non-HFSS products	1,650
Indirect gain in sales from moving HFSS items within aisles	7,024
Direct loss in profit	-474
Indirect gain in profit	284

Net impact on profit	-190

Loss in manufacturer profit

400. The methodology to calculate the loss in profit to manufacturers is the same as outlined in option 1, however as it applies a supermarket mark-up to the loss in sales in the retail sector, the sales in the retail sector have increased compared to option 2 as there are more businesses in scope. By applying the same profit margins outlined in option 1, this results in a direct loss of profit to manufacturers of £439m with a net impact of £97.3m. The profit margins, sales uplifts from products in prime locations and the compensation rate have been adjusted in the sensitivity analysis.

401. The above calculations consider the impact of the policy on Great Britain and have reduced the costs in proportion with England's 86.7% share of the GB population in the table below, which will be included in the EANDCB.

Table 29 Option 3: Summary of the reduction in annual profits for manufacturers in England

	Total
Direct loss in profit	-£438.7m
Indirect gain in profit	£341.3m
Net impact on profit	-£97.4m

Non-monetised cost to businesses

402. Non-monetised cost to businesses are the same as those outlined in option 1 and 2. All assumptions regarding business costs have been applied to all businesses due to a lack of evidence on whether these would vary by size of business. It is possible that the costs experienced by small businesses will be proportionately different to those costs experienced by medium and large businesses.

Costs to Government

Enforcement costs

403. The cost from DHSC covering the enforcement costs generated by this policy is estimated at £46.5k per year, with transition costs of £40k. The methodology to calculate this cost is the same as outlined in option 1, however there are 15,471 stores in scope under this option compared to option 2 which have 11,343 stores in scope and 789 online retail buisnesess (this includes online only buisnessess and those with a online offering).

Monetised benefits

Health benefits consequent upon reduced consumption

404. Similar to option 1 and 2, we can split the figures above by HFSS sales and non HFSS sales, resulting in a net loss in HFSS sales (taking into account offsetting) of £3.1bn and an increase in non-HFSS sales £0.63bn per annum. These take into account the sales that are offset due to HFSS items moving within aisles and changes in consumer behaviour and marketing techniques used by retailers.

405. Using the same methodology as option 1 and 2, we use the proportion of calories purchased that are HFSS and non-HFSS food and drink is 57% and 43% respectively. These proportions can then be applied the total GB expenditure on take home food and drink (adjusted for England to get £87.2bn) to get the number of sales that are HFSS (£49.7bn) and non HFSS (£37.4bn). We then divide the net loss in hfss sales by the value of the market that is HFSS to get the percentage reduction in the HFSS market

of 6.2%. A similar calculation is done for sales gain from non-HFSS products to get a percentage increase of 1.7%.

406. Using the proportion of calories purchased that are HFSS and non-HFSS we assume that 57% of an individual's calories consumed are HFSS, and 43% is non-HFSS. We then assume a 6.2% reduction to the HFSS calories consumed and a 1.7% increase in non-HFSS calories consumed, given an overall net reduction in calories consumed. This proportions are the same across age-gender subgroups. The impacts for specific age-gender groups are displayed in Table 30.

Table 30: Current calorie consumption and expected reductions[185]

	Males				Females			
	4-10	11-18	19-64	65+	4-10	11-18	19-64	65+
Adjusted daily calorie intake	2008	2552	2781	2426	1849	2134	2107	1968
Calories that are used for HFSS products	1146	1456	1587	1385	1055	1218	1202	1123
Reduction in HFSS calories	71	91	99	86	66	76	75	70
Calories that are used for non-HFSS products	862	1,095	1,194	1,042	794	916	904	845
Reduction in non-HFSS calories	-14	-18	-20	-17	-13	-15	-15	-14
Net calorie reduction	57	72	79	69	53	61	60	56

407. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 1,220,000 QALYS, or at £60,000 per QALY. Reduced morbidity would also result in reduced cost pressures to the NHS, resulting in NHS savings of £4,374m over the 25-year assessment period[186]. The health benefits to the population are estimated to be worth around £57,726m. Social care savings would amount to £4,907m and reduced premature mortality would be expected to deliver an additional £6,803m economic output through additional labour force participation. Further information on what is captured when calculating the different types of benefits in outlined in Annex A.

Non monetised benefits

408. There additional health benefits which we have either not been able to monetise and/or include in our assessment are the same as those highlighted in option 1.

Summary of costs and benefits

409. It has not been possible to quantify every aspect of the proposed policy. The table below outlines the expected impact of the policy, with quantifications where currently possible. These impacts have been estimated over a 25-year assessment period.

Table 25: Summary of costs and benefits – Option 3 (£m)

Group affected	Impact	Central estimate (£m)
Retailers	Transition – Familiarisation	-0.6
	Transition – Product assessment	-4.6
	Transition – Distributing information	-0.3
	Transition – Sharing information with staff	-0.7

[185] Current mean daily calorie consumption is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey. As discussed below, self-reported data such as the NDNS suffer from considerable underreporting.

[186] To calculate the additional health benefits to the population from reinvesting savings back into the NHS we adjust the estimates produced by the modelling process in the senisitivity analysis.

	Transition – Store Planning &adjustment	-57.7
	Transition – Changes to IT systems	-4.6
	Transition – Sharing information with staff (online businesses)	-0.04
	Ongoing – Product assessment	-25.6
	Net lost profit	-3,599
Total retailer impact		**-3,693**
HFSS manufacturers	Net lost profit	-2,312
Total HFSS manufacturer impact		**-2,312**
Non-HFSS manufacturers	Gained Profit	468
Total non HFSS manufacturer impact		**468**
Government	NHS savings	4,374
	Social care savings	4,907
	Enforcement	-0.8
Total Government impact		**9,280**
Wider society	Health benefits	57,726
	Economic output	6,803
Total wider society impact		**64,529**
NPV		**68,272**

Option 4

Cost to businesses

Transition Costs

410. Familiarisation costs to retailers are the same as calculated under Option 1 and 2, giving a central cost estimate of £328k. This includes the cost of briefing individual outlets and the cost of sharing information with IT professionals.

411. The cost of individual store managers sharing information with staff members in store is the same as option 1 and 2, giving a central cost estimate of £510k.

412. The costs to retailers of assessing the nutritional content of products are unchanged from those estimated under Option 1 and 2. This suggests transition product assessment costs of around £3.1m. The cost is unchanged as we assume, they would assess all products in categories subject to this regulation, so the number of products in scope of the restrictions doesn't affect the amount of time it takes. We have not been able to calculate what proportion of products need to be assessed by option due to how categories are organised in the Kantar data, and therefore have adjusted for this in the sensitivity analysis.

413. The number of stores and businesses in scope are the same as those outlined in option 1 and 2. Therefore, cost of planning and adjustment is the same, giving a central cost estimate of £42m. The cost to online only businesses and those with an online offering in replanning website layouts and implementing this change to their online system will also be the same as option 1 and 2, giving a central estimate of £1.3m.

On-going costs

414. The on-going cost to retailers of assessing the nutritional content of products as they are reformulated is unchanged from those estimated under option 1 and 2. This suggests on-going product assessment costs of around £17.3m over a 25-year appraisal period.

Loss in retailer profit

415. A potential loss in profit for retailers resulting from the end of location promotions for all HFSS products as defined by the 2004/05 Nutrient Profile Model (NPM) was estimated under all earlier options. As option 4 focuses on more products the impact will be greater.

416. Evidence is not available to assess if consumer responses to promotions offered on HFSS products differ systematically in response to promotions on this subset of products. Therefore, the percentage impact on sales of these restrictions is assumed to be the same regardless of food and drink categories within HFSS products.

Checkout loss profit

417. The methodology to calculate the loss in sales from checkouts is the same as outlined in option 1 and 2, however it takes into account the increase in products in scope under this option (see Table 14), resulting in an annual direct loss in sales of £567m and annual net loss in sales of £238m. This results in a direct loss of profit to retailers is £179m with a net impact of £141m per annum. The profit margins, sales uplifts from products in prime locations and the compensation rate have been adjusted in the sensitivity analysis.

418. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in the net loss in retailer profits, of £122.5m per year. The direct loss profit from England would be £154.8m per year, which will be included in the EANDCB.

End of aisle loss profit

419. DHSC analysis of 2014 Kantar data suggests that around 65% of GB food sales would be considered HFSS by the 2004/05 Nutrient Profile Model, and 62% of these products would fail the NPM, outlined in Table 14.

420. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.86bn. Applying the 3% profit margin, the direct profit loss would be £205.8m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products, resulting in a net loss profit of £43.8m.

421. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £37.9m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £178.4m per year.

Store entrance loss profit

422. As outlined above, and in Table 14, the Kantar data suggests that around 65% of GB food sales would be considered HFSS, and 62% of these products would fail the NPM.

423. Using these figures and following the same methodology as outlined previously implies a reduction in sales from restrictions at end of aisle of £6.86bn. Applying the 3% profit margin, the direct profit loss would be £205.8m per annum (this is included in the EANDCB). As stated previously, we would expect a partial offsetting of this loss through moving products within aisles, and consumers compensating through buying additional HFSS and non-HFSS products, resulting in a net loss profit of £43.8m.

424. The above calculations consider the impact of the policy on Great Britain. Reducing the costs in proportion with England's 86.7% share of the GB population, results in lost retailer profits, of £37.9m per year. This includes both direct and indirect impact to retailers. The direct loss of retailer profit as a result of the regulation is estimated at £178.4m per year.

Summary table

425. Table 31 outlines the change in HFSS sales from restrictions in checkout, end of aisle and store entrance. The loss change in HFSS and non-HFSS sales is used to calculated the health benefits.

Table 31: Option 4: Summary of the reduction in annual profits for retailers in England

Location	Total (m)
Direct loss in sales	-£12,388
Indirect gain in sales from consumers buying HFSS and non-HFSS products	£1,826
Indirect gain in sales from moving HFSS items within aisles	£7,822
Direct loss in profit	-£511
Indirect gain in profit	£313
Net impact on profit	-£198

Loss in manufacturer profit

426. The methodology to calculate the loss in profit to manufacturers is the same as outlined in option 1, however as it applies a supermarket mark-up to the loss in sales in the retail sector, the sales in the retail sector have increased compared to option 1 and 2 as more products are in scope under this option (see Table 14). By applying the same profit margins outlined in option 1, this results in a direct loss of profit to manufacturers of £562m with a net impact of £124.3m. The profit margins, sales uplifts from products in prime locations and the compensation rate have been adjusted in the sensitivity analysis.

427. The above calculations consider the impact of the policy on Great Britain and have reduced the costs in proportion with England's 86.7% share of the GB population in the table below, which will be included in the EANDCB.

Table 32: Option 4: Summary of the reduction in annual profits for manufacturers in England

	Total (m)
Direct loss in profit	-£487.3
Indirect gain in profit	£379.6
Net impact on profit	-£107.7

Non-monetised cost to businesses

428. Non-monetised cost to businesses are the same as those outlined in option 1,2 and 3.

Costs to Government

Enforcement costs

429. The cost from DHSC covering the enforcement costs generated by this policy are considered equal to those estimated under Option 1 and 2, at £33.1k per year, with transition costs of £40k.

Monetised benefits

Health benefits consequent upon reduced consumption

430. Similar to earlier options, we can split the figures above by HFSS sales and non HFSS sales, resulting in a net loss in HFSS sales (taking into account offsetting) of £3.43bn and an increase in non-HFSS sales £0.69bn per annum. These take into account the sales that are offset due to HFSS items moving within aisles and changes in consumer behaviour and marketing techniques used by retailers.

431. Using the same methodology as option 1, we use the proportion of calories purchased that are HFSS and non-HFSS food and drink is 57% and 43% respectively. As explained in paragraph 163, these proportions have been adjusted in the sensitivity analysis. These proportions can then be applied the total GB expenditure on take home food and drink (adjusted for England to get £87.2bn) to get the number of sales that are HFSS (£49.7bn) and non HFSS (£37.4bn). We then divide the net loss in hfss sales by the value of the market that is HFSS to get the percentage reduction in the HFSS market of 6.9%. A similar calculation is done for sales gain from non-HFSS products to get a percentage increase of 1.8%.

432. Using the proportion of calories purchased that are HFSS and non-HFSS we assume that 57% of an individual's calories consumed are HFSS, and 43% is non-HFSS. We then assume a 6.9% reduction to the HFSS calories consumed and a 1.8% increase in non-HFSS calories consumed, given an overall net reduction in calories consumed. This proportions are the same across age-gender subgroups. The impacts for specific age-gender groups are displayed in Table 33.

Table 33: Current calorie consumption and expected reductions[187]

	Males				Females			
	4-10	11-18	19-64	65+	4-10	11-18	19-64	65+
Adjusted daily calorie intake	2008	2552	2781	2426	1849	2134	2107	1968
Calories that are used for HFSS products	1146	1456	1587	1385	1055	1218	1202	1123
Reduction in HFSS calories	79	100	109	95	73	84	83	77
Calories that are used for non-HFSS products	862	1,095	1,194	1,042	794	916	904	845
Reduction in non-HFSS calories	-16	-20	-22	-19	-15	-17	-17	-16
Net calorie reduction	63	80	87	76	58	67	66	62

433. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 1,348,000 QALYS, or at £60,000 per QALY. Reduced morbidity would also result in reduced cost pressures to the NHS, resulting in NHS savings of £4,836m over the 25-year assessment period[188]. The health benefits to the population are estimated to be worth around £63,795m. Social care savings would amount to £5,396m and reduced premature mortality would be expected to deliver an additional £7,515m economic output through additional labour force participation. Further information on what is captured when calculating the different types of benefits in outlined in Annex A.

Non monetised benefits

434. There additional health benefits which we have either not been able to monetise and/or include in our assessment are the same as those highlighted in option 1.

[187] Current mean daily calorie consumption is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey. As discussed below, self-reported data such as the NDNS suffer from considerable underreporting.

[188] To calculate the additional health benefits to the population from reinvesting savings back into the NHS we adjust the estimates produced by the modelling process in the senisitivity analysis.

Summary of costs and benefits

435. It has not been possible to quantify every aspect of the proposed policy. The table below outlines the expected impact of the policy, with quantifications where currently possible. These impacts have been estimated over a 25-year assessment period.

Table 34: Summary of costs and benefits – Option 4 (£m)

Group affected	Impact	Central estimate (£m)
Retailers	Transition – Familiarisation	-0.1
	Transition – Product assessment	-3.1
	Transition – Distributing information	-0.2
	Transition – Sharing information with staff	-0.5
	Transition – Store Planning &adjustment	-42.1
	Transition – Changes to IT systems	-1.3
	Transition – Sharing information with staff (online businesses)	-0.01
	Ongoing – Product assessment	-17.3
	Net lost profit	-3,759
Total retailer impact		**-3,824**
HFSS manufacturers	Net lost profit	-2,553
Total HFSS manufacturer impact		**-2,553**
Non-HFSS manufacturers	Gained Profit	512
Total non HFSS manufacturer impact		**512**
Government	NHS savings	4,836
	Social care savings	5,396
	Enforcement	-0.6
Total Government impact		**10,231**
Wider society	Health benefits	63,795
	Economic output	7,515
Total wider society impact		**71,310**
NPV		**75,677**

Sensitivity and risk analysis

436. It is recognised that many of the calculations within this Impact Assessment currently only generate illustrative costs based on plausible assumptions. The specific choices of these assumptions can have a substantial impact on the final estimates. We have selected a few variables for sensitivity analysis based on the degree to which they are uncertain, and the extent to which they determine the direction and magnitude of the policy's NPV. These variables are:

- The number of retail businesses and stores whose primary function isn't to sell food and drink
- The various factors underlying the transition costs,
- Consumers compensation behaviour
- The various factors underlying the lost profit calculations,
- The proportion of calories from included products.

437. The calculations performed below are for the costs and benefits of the preferred Option 2. Similar uncertainties exist around the figures calculated for all other options. As the same methodology has been used across each option, we would expect the impact of variables differing from our central assumptions to be similar for all options.

Costs to businesses

438. Transitional costs to retailers have been identified as one-off initial costs due to the need to assess whether products are considered HFSS and are included in the policy or not. These costs are defined as familiarisation, distribution of knowledge, store planning and arrangement costs, IT costs and initial product assessment costs (on-going product assessment costs are outlined in Table 38).

439. Familiarisation costs are calculated by multiplying the number of businesses in the retail sector by the average wage for a manager with the time taken to familiarise themselves with the regulation. We have used the median, maximum and minimum percentiles for a manager's wage as detailed in the Annual Survey of Hours and Earnings[189] uprated for on-costs to perform sensitivity analysis on our estimates. We have also adjusted the number of people at the head office who will familiarise themselves with the regulation.

440. In order to calculate the cost of distributing the knowledge from the business to the store, we have used the median, maximum and minimum percentiles for a manager's wage at head office and store level as detailed in ASHE[190], uplifted by 30%, and adjusted for the time taken to share this information. Similar approach is used to calculate the cost of information being shared within stores. Table 33 outlines the impact the changes have to the total familiarisation cost and distribution of knowledge.

441. To calculate the number of medium and large businesses with an online offering, we have assumed that 60% of these businesses would have an online offering. This assumption is based on stakeholder engagement with 5 retailers and therefore is not a conclusive estimate representing the whole sector and has been adjusted in the table below. In the high scenario, we assume that 70% of retailers would have an online offering and in the low scenario 30%.

442. IT costs are calculated by multiplying the number of online only retailers and retailers with an online offering by the average wage of an IT professional and the time taken to make these changes. We have used the median, maximum and minimum percentiles for an IT professional's wage as detailed in the Annual Survey of Hours and Earnings[191] uprated for on-costs to perform sensitivity analysis on our estimates. Stakeholder engagement identified that it could take an IT professional 20-30 days to make these changes and implement them across their online system. We therefore have assumed that in the low scenario it would take 20 days (160 hours based on 8 hours working days) and in the high scenario 30 days (240 hours based on 8 hours working days) for an IT professional to make these changes.

443. Additionally, we also consider the uncertainty in the number of businesses whose primary function is not to sell food. We assume in the low and central scenario; we capture all businesses in scope. Under the high scenario, we acknowledge that there may be some additional businesses whose primary function is not to sell food, but there is a possibility they do sell food in the key locations. Given the likely nature that many of these businesses do not sell food or drink we have captured these businesses in the high scenario and down weighted the number of businesses by 50%. These businesses include retail sale of hardware, paints and glass in specialised stores (47.52), retail sale of music and video recordings in specialised stores (47.63) and retail sale of games and toys in specialised stores (47.65). The additional businesses in the high scenario have not been factored into the cost to businesses with an online presence, as it is less likely that these businesses will sell food and drink on their online websites.

444. It is possible that some of these stores may have vending machines at checkouts or store entrances selling HFSS product. We do not have data on how many of these stores have vending machines in these locations and therefore have not been able to capture the impact on stores

[189] ONS (2018) Annual Survey of Hours and Earnings , Table 14.5 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14 (last accessed 07/01/2019)

[190] ONS (2018) Annual Survey of Hours and Earnings , Table 14.5 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14 (last accessed 07/01/2019)

[191] ONS (2018) Annual Survey of Hours and Earnings , Table 14.5 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14 (last accessed 07/01/2019)

following this policy. It can be assumed that there would be a cost to businesses in moving these vending machines if the products sold through the machine are not swapped with non-HFSS products. Additionally, there could be a further cost asking vending machine providers to change the range of products sold through the machine.

Table 35 Varying assumptions for familiarisation cost and distribution of knowledge

	Low	Central	High
Input: Number of businesses whose prime function isn't to sell food and drink	220	220	255
Input: Number of stores whose prime function isn't to sell food and drink	1038	1038	1293
Input: Uplifted wage of Manager at head office per hour	£13.18	£27.30	£64.73
Input: Uplifted wage of Manager at store per hour	£11.60	£17.10	£36.50
Input: Number of people that need to familiarise with the regulation	1	1	2
Input: Time taken to share information from businesses to stores	30 mins	1 hour	2 hours
Input: Time taken to share information within stores	30 mins	1 hour	2 hours
Input: Proportion of retailers with an online offering	30%	60%	70%
Input: Time taken to make changes to IT systems	160 hours	200 hours	240 hours
Input: Uplifted wage of IT professional	£17.30	£29.10	£47.50
Total familiarisation cost and sharing information from head office to stores and to IT professionals	£152k	£322k	£1.2m
Total cost of distributing knowledge within stores	£190k	£510k	£3.6m

Total cost of making changes to IT systems	£308k	£1.3m	£2.9m

445. When calculating the cost to businesses in assessing the products, we consider the number of products, the wage of the person conducting the product assessment and how long it will take. This cost is calculated at a business level and information is shared with stores. We have used the median, maximum and minimum percentiles for a manager's wage at head office using ASHE[192] outlined in Table 36, uplifted by 30%[193], in addition to varying the time taken to conduct this assessment. The number of products has also been doubled in the sensitivity analysis as in the central estimate we assumed that 50% of products would be food and drink outlined in paragraph 256. In the high case scenario, this assumption has been removed. If retailers do not have nutritional information at hand, they may ask this from the manufacturers. As discussed earlier, it is possible that manufacturers would assess the products and inform retailers, however as we do not know how many manufacturers work with the different retailers, we have not monetised this impact.

Table 36 Varying assumptions for product assessment costs

	Low	Central	High
Input: Uplifted wage of Manager at head office per hour	£13.18	£27.30	£64.73
Input: Number of products	12,750	12,750	25,500
Input: Time taken to assess products	30 mins	30 mins	1hr
Input: Number of managers	1	1	2
Total product assessment cost	£1.5m	£3.1m	£29.2m

446. There would also be an additional cost to retailers on planning and making changes to the layout of the store, which considers the time taken and the number of employees to plan and carry out these changes. This could vary depending on the size of the store, and therefore inputs have been varied in the table below.

Table 37: Varying assumptions for store planning and rearranging stores

	Low	Central	High
Input: Uplifted wage of Manager at store per hour	£11.60	£17.10	£36.50
Input: Uplifted wage of stock control clerk and assistant in stores	£10.14	£11.44	£15.28
Input: Number of people needed to plan new layout	2	2	4
Input: Time taken to plan new layout	24hr	24hr	48hr
Input: Number of people needed to relocate products	2	2	4

[192] ONS (2018) Annual Survey of Hours and Earnings , Table 14.5 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14 (last accessed 07/01/2019)

[193] This is in accordance with standard practice set out in The Green Book.

Input: Time taken to relocate products	6hr	12hr	24hr
Total cost for store planning and adjustment	£29.9m	£42.1m	£160.6m

447. Businesses would also need to assess new products that come into the market or products that are reformulated, in order to comply with the regulations. In the main analysis we assume that product assessment of goods in unhealthy categories will be conducted every two years. The evidence from stakeholders suggests that reformulation occurs between every 6 months to 3 years (see paragraph 315 for further information), and have adjusted how often products would need to be assessed, with an assumption in the high scenario that they'll be assessment every other year and in the high scenario, every 3 years. The total on-going cost in Table 38 includes cost of distributing information to stores, staff members in stores and to IT professionals for those making changes on online platforms.

Table 38: On-going product assessment cost 25 year appraisal period

	Low	Central	High
Input: Reformulation cycle	3 year	2 years	1 years
Input: Number of products	12,750	12,750	25,500
Input: Uplifted wage of Manager conducting the product assessment	£13.18	£27.30	£64.73
Input: Time taken to assess products	0.5hr	0.5hr	1hr
Input: Uplifted wage of Manager at store per hour	£11.60	£17.10	£36.50
Input: Uplifted wage of IT professional	£17.30	£29.10	£47.50
Total on-going product assessment cost	£6.3m	£17.3m	£238.9m

Proportion of products which fails the NPM

448. In the central estimate, we assume that 62% of products would fail the NPM and 58% of sales are from end of aisle. This is done by taking a subset of Kantar dataset of 2,500 products[194] and working with PHE to identify what proportion of these products failed the NPM. We outline in paragraph 163 this database is of the top selling products may not be a true representation of the market and therefore adjusted for this in the table below.

449. It seems reasonable to continue to assume that the majority of HFSS products located at checkouts are confectionary and therefore do not include the proportion of products under each option for checkouts, and this is not varied in the sensitivity analysis.

Table 39: Varying the proportion of products that fail NPM

	Low	Central	High
Proportion of food sales for end of aisle	40%	58%	70%
Proportion of sales included in the option that fails the NPM	50%	62%	70%

Adjusting for change in consumer and retailer responses

450. Our high NPV scenario assumes that consumers do not compensate for the loss calories by consuming other HFSS or non-HFSS products and businesses do not use alternative marketing

[194] Some of these products were removed due to lack of nutritional content.

strategies to offset sales, therefore loss in sales would not be offset through buying other products. The central and low scenarios assume behaviour adjusts to offset for 40% and 100% of the loss in sales. This corresponds to the findings discussed above.

451. We expect the proportion of lost sales (this is loss of sales once they have been offset from moving the products within aisles) to be offset in proportion with the level of compensation. For the central scenario, we use a 40%[195] consumption rate. Similarly, the low NPV, which assumes a 100% offset, means the loss in sales will be completely offset and therefore no impact on sales to businesses. This offset only applies to a proportion of the direct loss in sales, as earlier we assume that a proportion of sales will be offset from the products being moved from these locations to within aisles.

Proportion of sales at checkouts

452. The central estimates assume that 7.1% of sales occur at checkouts. We consider scenarios in which checkouts account for only 5% or up to 15% of sales. In addition, the proportion of checkout sales generated in aisles has been adjusted to assume only 10% and 90% of sales are generated from moving HFSS items to within aisles.The 90% is based on the study highlighted in paragraph 40, which shows that a year after restrictions at checkouts were introduced, the reduction in sugary confectionery, chocolate, and potato crisps that were bought and taken home from supermarkets fell by 16%. This therefore has been used as an upper estimate.

453. This sensitivity analysis is not intended to examine the uncertainty around the sales uplift generated by checkouts, but the uncertainty around the percentage of store space that is accounted for by key locations. As such, uplifts are kept equal to the values used under the base case.

454. The loss in retailer sales is used to calculate the calorie reductions expected from the policy, and therefore changes to assumptions on sales will impact the benefits from this policy. The updated benefits as a result of the changes below are outlined in Table 44.

455. The total loss in sales for retailers and manufacturers in Table 40 is adjusted to take into account further offsetting in sales from retailers responding to the regulation by using alternative marketing strategies and consumers compensating for the loss in calories.

Table 40: Varying assumptions on the impact on sales from restrictions at checkouts

	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Input: Checkout sales share	5%	7.1%	15%
Input: Proportion of checkout sales generated in aisle locations	10%	30%	84%
Total loss in sales to retailers	0	£236m	£215m
Total loss in sales to manufacturers	0	£155m	£141m

Proportion of sales at ends of aisles and store entrances

456. The central estimates assume that 20% of sales occur at the ends of aisles. Estimates based on plausible calculations or other data sources suggest that the end-of-aisle share of sales may vary between 10% and 30%.

457. Evidence from Nakamura et al. estimates that end-of-aisle locations increase sales of alcoholic beverages by 23.2% - 46.1%, and non-alcoholic beverages by 51.7% to 113.8%[9] and a central estimated uplift of 55% is used. To calculate the sales uplift in the low scenario, we take the central

[195] Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300. See 'Adjusting for changein consumer and retailer responses' for how this estimate has been derived.

estimate of the range for alcoholic beverages, of 35% and the central estimate of the range of non-alcoholic beverages of 83%.

458. As highlighted earlier, retailers display at least some HFSS products at store entrances, however we are not aware of any information on the proportion of sales occurring from goods located in store entrances, nor of the relative composition of food on these displays. We have therefore assumed that the impact on sales as a result of restrictions at store entrances will be the same as the impact on sales from end of aisle restrictions. This assumption was tested with stakeholders; however, responses were limited. One stakeholder did highlight that this would be an underestimate, but no further evidence was provided to support this justification. An argument could also be made that this assumption is an overestimate, as a consumer would usually visit a store entrance when entering a store, however, would pass numerous ends of aisles during their shop, which would impact the number of products they pick from these locations. Given the uncertainties and the absence of better evidence on the impact on sales, we have assumed that store entrance share of sales may vary between 10% and 40%.

459. The loss in retailer sales is used to calculate the calorie reductions expected from the policy, and therefore changes to assumptions on sales will impact the benefits from this policy. The updated benefits as a result of the changes below are outlined in Table 44.

460. The total loss in sales for retailers and manufacturers in Table 41 is adjusted to take into account further offsetting in sales from retailers responding to the regulation by using alternative marketing strategies and consumers compensating for the loss in calories.

Table 41: Varying assumptions on the impact on sales from restrictions at end of aisle and store entrances

	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Input: End of aisle sales share	10%	20%	30%
Input: Store entrance sales share	10%	20%	40%
Input: Sales uplift from placing items at end of aisle	35%	55%	83%
Total loss in retailer sales from end of aisle restrictions	0	£1,305m	£5,651m
Total loss in retailer sales from store entrance restrictions	0	£1,305m	£7,535m
Total loss in manufacturer sales due to end of aisle and store entrance restrictions	0	£1,713	£8,646m

Relative profit margins

461. Our central estimates assume that HFSS products sold at checkouts achieve a profit margin of 31.5%, compared to 12.4% for other items at checkouts. This 19.1 percentage point difference in profit margins is substantial, and suggests profit margins much higher than average. Given the single non-UK source for this estimate, we also consider a lower possible difference in profit margins of 5%.

462. The base case modelling has assumed a 3% profit margin of HFSS products and other products placed at the ends of aisles and store entrances. With average profits varying by retailer, we vary the profit margins between 1% and 5% below.

Table 42: Varying profit margins for retailers

	Low	Central	High

Checkout profit margin difference	5%	19.1%	19.1%
End of aisle and store entrance profit margin difference	1%	3%	5%
Net loss in retailers profit	£96.4m	£218.7m	£867.1m

463. Our central estimates assume that manufacturers of HFSS and non HFSS products achieve the same profit margins. However, it is possible that manufacturers of HFSS products generate higher or lower profit margins than manufacturers of other goods.

464. Below we consider a high and a low-cost scenario where HFSS manufacturers have a 1-percentage point higher and lower profit margin.

Table 43: Varying profit margins for manufacturers

	Low	Central	High
General manufacturer profit margin	5%	6%	7%
HFSS manufacturer profit margin difference	-1%	0%	1%
Net loss in profit for manufacturers	0	£112.1m	£615.1m

465. As Table 43 shows, modifying the difference in profit margins between HFSS and non HFSS manufacturers changes the overall impact on this section of the food and drink industry. However, restricting the placement of HFSS products would still results in substantially higher health gains than profit losses under the high cost scenario.

Benefits

466. The key assumptions made when calculating the benefits are:

- The proportion of products categorised as HFSS and non-HFSS
- The estimated NHS cost savings are not reinvested back into the health service.

467. In our calculations for Option 2 we estimate the proportion of calories purchased that are HFSS and non-HFSS food and drink is 57% and 43% respectively. As explained in paragraph 163, the calorie reductions are sensitive to these estimates and are based on market data of the top selling products. Given this, the data may overestimate the number of HFSS products and therefore a sensitivity analysis has been applied.

Table 44 Varying the calorie purchased that are HFSS and non-HFSS

Option 3, £m	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Proportion of HFSS calories purchased	40%	57%	70%
Proportion of non-HFSS calories purchased	60%	43%	30%
NHS savings	0	4,364	18,381
Social care savings	0	4,896	18,237
Health Benefits	0	57,600	240,313
Economic output	0	6,788	27,510

468. It seems likely that any spare capacity in the NHS generated by lower levels of obesity related ill health would be backfilled with additional health treatments. This would be an indirect benefit and be contingent on government spending decisions.

469. To calculate the health benefits to the population from reinvesting savings back into the NHS we adjust the NHS savings estimates produced by the modelling process outlined in Annex A. At the margin, it is estimated that the NHS can purchase a QALY for £15,000, which in turn is then valued at £60,000 by society. Therefore, dividing the yearly NHS savings by this figure and multiplying by society's valuation of a QALY allows us to estimate the additional health benefits these savings would generate. The additional health benefits are then discounted at 1.5% in accordance with the standard practice outlined in the HMT Green Book. It is the Department's policy to consider the opportunity cost of the spending, as this could represent a displacement from the fixed NHS health budget and therefore has been captured in the sensitivity analysis.

470. The potential benefits of reinvesting these health costs compared with the base scenario of no reinvestment, are shown in Table 45.

Table 45: Varying the key paraments in the health benefit calculations

	Base Case (monetary value of NHS savings)	**High Scenario** **(value of NHS savings assuming they are reinvested in health care)**
NHS Cost Savings (£m)	4,364	22,848

NPV

471. By varying the key assumptions in calculating the costs and benefits detailed above simultaneously, we can estimate a range for the Net Present Value (NPV).

472. It's not thought likely that these situations would occur, but they can give some indication as to the extremes of the expected outcomes. The table below presents the range of estimates for the NPV for Option 2, as estimated over a 25-year assessment period, on an England only basis.

473. The table shows that if we assume high costs (high scenario) and medium impact (central scenario benefits), the policy will still generate a positive NPV of £48,996m. In the high cost (high scenario), low impact (low scenario) there would be a negative NPV of -£24,652m.

Table 46 Summary of costs and benefits – Option 2 (£m)

		Scenario Present value, £m		
Group affected	Impact	Low	Central	High
Retailers	Transition – Familiarisation	-0.1	-0.1	-0.3
	Transition – Product assessment	-1.5	-3.1	-29.2
	Transition – Sharing information with staff	-0.2	-0.5	-3.6
	Transition – Distributing information	-0.1	-0.2	-0.9
	Transition – Store Planning & adjustment	-29.9	-42.1	-160.6
	Transition – Changes to IT systems	-0.3	-1.3	-2.9
	Transition – Sharing information with staff (online businesses)	-0.002	-0.01	-0.05
	Ongoing – Product assessment	-6.3	-17.3	-239
	Lost profit – Checkout restrictions	-1582.4	-2304.7	-3,412.7
	Lost profit – EOA restrictions	0.00	-643.2	-4,639.0

	Lost profit – store entrance restrictions	0.00	-643.2	-6,185.3
Total retailer impact		**-1,621**	**-3,656**	**-14,673**
HFSS manufacturers	Lost profit – Checkout restrictions	-81.0	-191.5	-40.5
	Lost profit – End of Aisle and store entrance restrictions	-236.6	-2,115.4	-9,937.1
Total HFSS manufacturer impact		**-318**	**-2,307**	**-9,978**
Non-HFSS manufacturers	Additional profit – Checkout restrictions	77.6	38.8	0.00
	Additional profit – End of Aisle and store entrance restrictions	236.6	428.3	0.00
Total non-HFSS manufacturer impact		**314**	**467**	**0.00**
Government	Trading Standards - Familiarisation	-0.04	-0.04	-0.04
	Trading Standards - Enforcement	-0.6	-0.6	-0.6
	NHS savings	0	4,364	18,381
	Social Care Savings	0	4,896	18,237
Total Government impact		**-1**	**9,259**	**36,617**
Wider society	Health Benefits	0	57,600	240,313
	Economic output	0	6,788	27,510
Total wider society impact		**0**	**64,388**	**267,823**
NPV		**-1,625**	**68,152**	**279,789**

Impacts of store entrance restrictions

474. As outlined in the 'Impact on sales and profits' section, we were not aware of any information on the proportion of sales occurring from goods located in store entrances, nor of the relative composition of food on these displays. In the absence of evidence related specifically to store entrances, we assume the additional sales generated by placing products at store entrances would be the same as end of aisles.

475. Given the uncertainties and the absence of better evidence on the impact on sales of promotions at store entrance. Table *47* presents a scenario of what the total costs and benefits would be if the impacts of store entrances were not monetised. Although this highlights a significant reduction in the impacts, the NPV remains high and the policy is estimated to generate large societal benefits. The total cost fall from £5,496m to £4,009m, and total benefits fall from £73,648m to £40,147m.

Table 47 Summary of costs and benefits – Option 2 if store entrances were not monetised (£m)

		Scenario Present value, £m
Group affected	Impact	Central
Retailers	Transition – Familiarisation	-0.1
	Transition – Product assessment	-3.1
	Transition – Sharing information with staff	-0.5
	Transition – Distributing information	-0.2
	Transition – Store Planning & adjustment	-42.1
	Transition – Changes to IT systems	-1.3
	Transition – Sharing information with staff (online businesses)	-0.01
	Ongoing – Product assessment	-17.3
	Lost profit – Checkout restrictions	-2304.7
	Lost profit – EOA restrictions	-643.2
Total retailer impact		**-3,013**
HFSS manufacturers	Lost profit – Checkout restrictions	-191.5
	Lost profit – End of Aisle restrictions	-1057.7

Total HFSS manufacturer impact		**-1,249**
Non-HFSS manufacturers	Additional profit – Checkout restrictions	38.8
	Additional profit – End of Aisle restrictions	214.1
Total non-HFSS manufacturer impact		**253**
Government	Trading Standards - Familiarisation	-0.04
	Trading Standards - Enforcement	-0.6
	NHS savings	2,371
	Social Care Savings	2,722
Total Government impact		**5,092**
Wider society	Health Benefits	31,354
	Economic output	3,701
Total wider society impact		**35,055**
NPV		**36,138**

Optimism Bias

476. We did consider including an optimism bias to our calculation of the costs for each option. However, the generic optimism bias adjustment percentages included in the HMT Green Book do not include a spending category that is closely related to the costs for this policy. In addition, we did not receive anything in response to the consultation to suggest an appropriate optimism bias adjustment percentage.

477. As a result, we have not adjusted the costs of each option to account for optimism bias, but, as set out above, we have considered several the costs in our sensitivity analysis to reflect the uncertainty around our assumptions.

Interaction of policy effects

478. As mentioned previously, the estimates presented above consider the impact of restricting the placement of HFSS products in isolation to the other policies announced as part of the *Childhood obesity: a plan for action* or any possible future actions by government. Due to the substantial number of policies that are part of the announcement, the potential interactions between options have not been quantified. The central estimates above consider the impact of location restriction in isolation to the other policies that have been announced, or any possible future actions by government. We recognise that there will be interactive effects between this policy and others being proposed or already enacted. This section considers what form these interactive effects are likely to take, and what impact this will have on reducing childhood obesity and on imposing costs to the food industry; and whether there is a case for adjusting these calculations to take them into account. We will continue to look at how these policies interact going forward.

479. The interactive effects with other policies are considered in turn below.

Interaction with the Sugar Drinks Levy (SDIL)

480. The Soft Drinks Industry Levy (SDIL)[196] was introduced in 2018 and is a levy on manufacturers of soft drinks with added sugar. Many soft drinks have already been reformulated and sales shifted to lower-sugar soft drinks as a result of the levy and the average sugar content of drinks subject to the SDIL decreased by 28.8% between 2015 and 2018[197]

481. We considered whether this warrants explicit adjustment within the estimate of calorie reduction from the location promotion restrictions. We decided it does not warrant explicit adjustment. From initial calculations based on a subset of Kantar data of 2,500 products showed that for our preferred option, only 2% of the products in option 2 are part of SDIL. Given that calories in products have reduced 25%

[196] The Sugar Drink Industry Levy is a levy on soft drinks that are high in sugar. More information on the levy can be found here https://www.gov.uk/government/news/soft-drinks-industry-levy-12-things-you-should-know

[197] Public Heath England, *Sugar reduction: Report on progress between 2015 and 2018.*(Accessed 08/01/2020). Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839756/Sugar_reduction_yr2_progress_report.pdf

as a result of SDIL, the impact on calorie reduction would be less than 1%. We therefore have not adjusted for it in the main estimates, so that the modelling is streamlined.

Interaction with the Sugar Reduction Programme and Calorie Reduction Programme

482. As part of the *Childhood obesity – a plan for action* Public Health England are responsible for delivered voluntary sugar and calorie reduction and reformulation programmes with industry. These programmes aim to encourage food manufacturers to remove 20% of the sugar and calories in certain products. These are both 5 year programmes, and the outcome of these programmes is yet to come about: at the time of publishing this IA, the Calorie Reduction Programme has only just published its guideline for industry including the products in scope and the Sugar Reduction Programme only has Year 2 results published.

483. These showed a 2.9% reduction in the sales weighted average sugar content of the products in home however the overall consumption of the products in scope only reduced by 0.4%[198]. The results are significantly below the target improvements expected at this time point, and as overall consumption of these products reduced by less than 1%, further points to the uncertainty in the impact of these programmes.

484. If successful, these schemes will make some HFSS products that are in scope of this policy healthier. If this happens it will mean the estimates of the benefits from this policy will be over-estimated. However, as these are voluntary policies and that we are awaiting outcomes of these programmes, we have not adjusted the calculations here to account for this.

Interaction with ban on sales of Energy Drinks to Under 16s

485. Chapter 3 of the Government's Childhood Obesity Strategy announced it will end the sale of energy drinks to under 16s. Ending the sale of energy drinks will have a very modest interaction with this policy. This is because it is assumed that most children will replace their purchases of energy drinks with soft drinks or spend it on other items in the economy. There is a small calorie decrease assumed from children switching from energy drinks to soft drinks; however, the overlap between this policy and the location restrictions is not considered to be significant; and any attempt to adjust for it would be disproportionate given the large number of assumptions that would be needed.

Interaction with restrictions on HFSS advertising

486. Promotions and advertising are two marketing strategies, and there will inevitably be some interaction. For example, one potential outcome of further advertising restrictions could be more investment in in-store promotions; including volume and location promotions. As part of the Tackling Obesity Strategy published in July 2020, Government announced that a 9pm watershed on TV for products high in fat, sugar or salt (HFSS) will be introduced and that we will consult on how to go further online and introduce a total online ban. Government committed to introducing TV and online restrictions together by the end of 2022. A Government response and final IA to the consultation is due to be published. This IA will consider the potential interaction between volume and location promotions. .

487. This logic also applies to any future related regulatory policies, such as Front of Pack labelling, which was announced in the Government's Prevention Green Paper[199]

[198] Public Heath England, *Sugar reduction: Report on progress between 2015 and 2018.*(Accessed 08/01/2020). Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839756/Sugar_reduction_yr2_progress_report.pdf

[199] https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document

Specific Impact Tests

Small and Micro Business Assessment

488. This section considers the estimated impact specifically on small and micro businesses in Option 2. There are three parts to this section:
    - costs to symbols
    - costs to manufacturers, wholesalers and ingredient suppliers
    - costs to small and micro businesses out of scope.

489. The first part of this section considers the estimated impact specifically on small and micro businesses under option 2. Small and micro businesses captured in this option would be symbol stores (see 'Current composition of the market' section). It is possible that small and micro manufacturers, wholesalers and ingredient suppliers are captured in this option, and potential impact to these businesses are outlined in the second part of this section.

490. The third part of this section considers what the impact would have been on small and micro businesses who are currently out of scope of Option 2 and why they have been excluded.

Cost to small and micro businesses that belong to Symbols groups

491. Small and micro retailers are excluded from the proposed regulations, with the exception of symbols who represent 3% of the market. Following further engagement with stakeholders, symbol groups have been identified as businesses who provide a support function to stores, often on promotions and what products to stock, similar to supermarkets. Hence, it has been identified that the regulation would be less burdensome on stores who are part of a symbol group compared to other small and micro stores in the sector, who would not get any additional support.

492. If symbol stores were to be excluded, we would be excluding 38% of the convenience sector (in terms of sales). The table below outlines the number of stores that are part of a symbol group and proportion of turnover.

Table 48: Breakdown of Symbols in England

Size of store	Number of stores that are part of symbol groups	Proportion of turnover in the market that part of symbol groups.
Micro	7,800	2%
Small	5,252	1%
Total	13,052	3%

493. Given that symbol stores are expected to receive support similar to stores belonging to the large retailers, and because they represent a significant proportion of the food retail market in terms of number of stores, it was decided that they should be within scope. Stores that are below 2,000 sq. ft, regardless of the size of the businesses, will be excluded from the regulation, and therefore only 1,566 stores would be in scope of the policy.

494. The calculations below consider the costs under our central estimate and our preferred option 2:

    - Transition costs to retailers associated with familiarisation, the assessment of products and store planning.
    - Retailer profits arising from the sale of HFSS products
    - Profits for manufacturers of HFSS products

Transition costs

495. Transition costs fall on both the symbols business and the individual store. On average we assume that each of the 15 symbol businesses have 104 individual stores, so a total of 1,566 symbol stores in scope of the policy.

496. The transition costs falling on a symbol business are a familiarisation cost, product assessment cost and a distribution of information cost, costing each symbol businesses £4k.The cost of store planning and arrangement and sharing information within staff in stores falls on the individual store, costing each store part of a symbol £1k.

497. The summarised total transition costs to both symbol businesses and their individual stores are above in Table 49.

On-going product assessment cost

498. The on-going cost of product assessment, following new products that come into the market or products that are reformulated, also falls on the symbol business itself rather than the store. This would cost each symbol businesses £19k every two years.

Retailer profits

499. For symbol stores, promotional guidance and support is accessible to stores through their symbol group's 'head office' mitigating some of the costs of policy implementation for these businesses.

500. From the 365 businesses in scope of this policy, only 4% are symbols. Assuming a proportionate use of promotions across retailers, we might expect the loss in retailer profits from this restriction to fall proportionately on symbols in scope of this regulation. This would suggest stores over 2,000 sq. ft that are part of a symbol group in England could experience a reduction in direct profits of £8.5m per year and a net reduction in profits of £4.1m per year.

Table 49 Summary of costs

Option 2	Cost per symbol group	Cost per individual businesses	Total cost over 25-year appraisal period
Transition costs	£4k	£1k	£2.2m
On-going product assessment costs	£19k	N/A	£467k
Lost retailer profit	£275k	N/A	£4.13m
Total	£299k	£1k	£6.6m

Cost to small and micro manufacturers, wholesalers and ingredient suppliers

Product assessment costs

501. Although in option 2, we highlight that our calculations have assumed that the costs of adjusting to these restrictions would be felt by retailers. It is possible that retailers would attempt to pass this cost on to manufacturers. Retailers may need nutrition information from manufacturers to understand whether a product is in scope, and may pass the task of assessing a product to manufacturers. Any small or micro manufacturers working with retailers in scope of option 2 may be affected if costs of understanding whether a product is HFSS or not is passed to them. We have not been able to quantify this impact as it is unclear whether retailers will pass the cost manufacturers and no further evidence was provided through the consultation or further stakeholder engagement.

Loss in sales and profit

502. Stakeholder engagement identified that 37% of retailers work with 'smaller' suppliers. This estimate is based on the proportion of suppliers whose products generate less than £250k in sales. This definition of 'small' suppliers could include larger manufacturers as the size of the businesses is based on FTEs. This estimate is also based on feedback from one retailer, so it is not clear whether other larger retailers work with the same number of 'smaller' suppliers. Another retailer provided a similar estimate, but did highlight that their estimate included medium manufacturers. Given the uncertainties with this estimate and stakeholders not being able to share the number of small and micro manufacturers they work with, this assumption has been downweighed to 20% and has not been factored into the main analysis. The downweight is not based on any evidence but captures the limitations in the evidence. We do not have any evidence to suggest whether 20% is a realistic

assumption, however as the estimate provided by retailers included larger manufactures, a downweight seemed approporiate.

503. In option 2 we assume there are 367 businesses in scope of the policy, if we assume 20% of those work with small and micro manufacturers, the gives an estimate of 73 businesses. Following stakeholder engagement, we were not able to identify what proportion of loss profit would fall on small and micro manufacturers. In option 2, it is estimated that the net loss in profit to manufacturers is 1,840m across the 25-year appraisal period. We assume that majority of medium and large retailers work with larger manufacturers. Without any further evidence, we have assumed that 20% of loss profit to manufacturers could fall on small and micro manufacturers, given a net loss profit of £368m. This calculation assumes that the retailer mark-up and the profit margins would be the same for small and micro manufacturers as for medium and large manufacturers, as outlined in option 2.

504. As outlined earlier, there could be an impact on wholesalers as the reduction in sale of HFSS products would reduce their profits. This would be a direct cost as a result of the policy but would only apply if small and micro retailers are in scope. Stakeholders have highlighted that larger manufacturers will work directly with retailers, and therefore wholesalers are not usually part of the supply chain. However, if smaller manufacturers do supply larger supermarkets it is possible that there could be a potential cost to wholesalers. Stakeholder engagement highlighted that in instances where larger retailers work with small and micro manufacturers, the supply chain could vary from smaller manufacturers being part of active programmes to attract challenger brands or supply could be localised to a couple of stores. Due to commercial sensitivity of the data, stakeholders were not able to share information on the 1:1 business relationship. As we were not able to gather any further information, the impact on small and micro wholesalers has not been quantified.

505. There could also be an impact to small and micro ingredient suppliers who supply manufacturers affected by this policy, as the reduction in sale of HFSS products would reduce their profits. As outlined above, the impact on ingredient suppliers is a second order effect and we do not think its proportionate to monetise this impact. In addition, for small and micro ingredient suppliers we do not have data on the number of small and micro ingredient suppliers working with manufacturers affected by this policy. It is possible that these businesses may be disproportionally impacted by the policy, however, we do not have the data to quantify this impact.

Cost to small and micro businesses out of scope of option 2

506. Whilst consultation responses highlighted the need for an even playing field, those representing smaller businesses said that the policy could disproportionately impact small businesses which the estimate below highlight. Stakeholders explained that, compared to large businesses, the policy could be more burdensome for small and micro businesses to:

- familiarise themselves with the new regulation;
- assess which products are in scope of the restrictions;
- plan a new store layout; and
- implement the policy.

507. Following this consultation feedback, we recognise that the small businesses might find the requirement more challenging and burdensome and therefore are exempted from the restriction. The analysis below highlights the potential cost to small and micro businesses if they were in scope of option 2.

508. Small and micro businesses with the exception of symbols are excluded from the proposed regulations. These businesses represent 16% of the turnover of the market and consist of 23,456 micro businesses and 2,039 small businesses. In addition, using the same methodology as outlined in option 2, there would be an additional 10,523 micro businesses and 1,305 small businesses that are non-food retailers who HFSS products.

509. Table 11 outlines the number of stores that are small and micro and that are over 2,000 sq. ft. This shows that 3,715 micro stores and 4,128 small stores above 2,000sq ft would be in scope of this policy if not excluded.

Familiarisation

510. As with all other businesses in scope of option 2, we would assume that each small and micro business would take 10 hours to familiarise themselves with the regulations and businesses with an online offering will take an additional 2 hours.

511. Using the same methodology outlined in option 2, we estimate that there are around 6,599 small and micro businesses out of scope. We also assume that 17%[200] of these businesses would have an online offering and therefore our central estimate using the median average wage indicates that familiarisation cost to business will be £1.9m.

512. There would be additional cost to these businesses passing information to store managers and IT professionals. We estimate the cost of sharing this information to be £672k using the same methodology outlined in option 2. We have assumed that information on what products to promote in the key locations (following product assessment at a head office level) will also be shared at the same time.

Product assessment

513. In order to assess whether a product is in scope of the regulation, an individual assessment is required. In the main analysis, we have assumed that it would take 30 minutes per product to assess and record the outcome. The cost will depend on the number of products stocked by each business. For stores that aren't supermarkets, we assume they will stock 1,000 products. Applying the 30%[201] assumption to those products, as not all food and drink products will need to be assessed, we assume that 300 products will need to be assessed.

514. As we assume product assessment is conducted at a business level, we use the uplifted managers wage of £27.30[202] and calculate a cost per business of approximately £4k, or a total cost of £18.5m across 4,508 businesses out of scope (breakdown in Table 12) . We assume this information would be shared with individual stores at the same time as they are briefed about the regulation by the business manager. We have assumed that businesses whose primary function is not to sell food would not have to calculate the NPM score as it would be more apparent what is HFSS and what is not due to the limited range of food products.

Distributing information

515. We assume that every store will also have 1 manager and 2 employees responsible for understanding the regulations. We assume that, on average, this will take one hour. By multiplying the hourly wage for a 'stock control clerks and assistant' and the hourly wage of 'manager or director in retail and wholesale' with the number of stores out of scope (7,842 stores that are over 2,000 sq. ft), the central estimate is £352k.

Store planning & adjustment

516. Once products have been assessed, retailers need to re-plan store layouts so HFSS items are no longer placed at checkouts, ends-of-aisles and store entrances. As highlighted in option 2, we assume that this planning occurs at store rather than firm level.

517. For the 7,842 stores that are between 2,000 sq. ft and 3,000 sq. ft but are micro and small stores and therefore out of scope, we assume planning would take three full 8-hour days for a stock control clerk and retail manager. This results in a per-store cost of £744 and a total cost of £5.8m. To implement the new layout, we assume it will take 2 'sales assistant and retail cashiers' 12 hours, at £11.44 per hour including on-costs. This results in a cost of £275 per store, or £2.1m in total.

518. Therefore, the estimated total cost for store planning and adjustment will be £7.9m.

Changes to online offering

519. For businesses with an online offering, retailers need to re-plan website layouts so HFSS items are no longer placed at the online equivalent to checkouts, ends-of-aisles and store entrances. As highlighted in option to, in the central scenario we assume that it would take 25 days (200 hours based on 8 hour working days) for an IT professional to make these changes, giving an estimate of £6.5m,

[200] ACS (2020) *The Local shop report.* Available online: https://www.acs.org.uk/sites/default/files/acs_local_shop_report_2020.pdf (Accessed 08/10/2020)

[201] Kantar panel data of 30,000 housholds

[202] Annual Survey of Hours and Earnings, Provisional 2019 (provisional) data (https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashetable14)

across 1,122 businesses out of scope (assuming 17% of small and micro businesses have an online offering).

On-going product assessment cost

520. The on-going cost of product assessment, following new products that come into the market or products that are reformulated, also falls on the businesses rather than the individual store. This would cost £19m every two years to businesses out of scope, or £98.7m over the 25-year appraisal period.

Retailer profits

521. Small and micro retailers out of scope make up 16% of the turnover from the sector, but include 6,599 businesses and 7,842 stores above 2,000 sq. ft. Using the same methodology outlined in option 2, these businesses could experience a reduction in direct profits of £213m per year and a net reduction in profits of £131m per year.

Table 50 Summary of costs to small and micro businesses out of scope of option 2

Option 2	Total cost over 25-year appraisal period
Transition costs	£35.6m
On-going product assessment costs	£98.7m
Net lost retailer profit	£2,977m
Total	£3,111m

Equality Test

522. To assess the potential impact of the proposed polices against the governments duties under the Equality Act 2010 a separate Equality Analysis has been produced. This considers the effect of all the policies being considers as part of the second chapter of the governments childhood obesity plan[203]. An Equalities Assessment for this policy will be published alongside this final IA.

Inequalities Test

523. A consideration has been made to consider the Secretary for Health and Social Care's duty to reduce inequalities with respect to benefits from the health service (under section 1C of the NHS Act 2006).

524. Included in Childhood Obesity, a plan for action: Chapter 2, is a commitment to significantly reduce the gap in obesity between children from the most and least deprived areas. The best data source for inequalities in childhood obesity is the National Child Measurement Programme, which measures children in Reception and Year 6. The latest data shows us that obesity rates are significantly higher in more deprived areas of the UK at Reception and Year 6. Furthermore, the obesity rate inequality gap grows as children move from Reception to Year 6 and these gaps in prevalence have significantly increased over the last 12 years.

Table 51 Childhood obesity prevalence by deprivation[204]

Obesity Rate Prevalence by IMD2015 Decile				
		Most Deprived	Least Deprived	Gap
4-5 years old	2006/07	12.3%	7.1%	5.1%
	2018/19	12.9%	6.4%	6.5%
10-11 years old	2006/07	21.5%	12.1%	9.4%
	2018/19	26.9%	13.0%	13.9%

[203] Childhood obesity plan for action chapter 2: equality assessment: https://www.gov.uk/government/publications/childhood-obesity-plan-for-action-chapter-2-equality-assessment

[204] 2006/07 data based on PHE analysis of National Child Measurment Programme. 2018/19 data is available here: https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2018-19-school-year

525. The restriction of location promotions is a population level, structural change meaning its effect on inequalities will likely depend on how the consumption of restricted products varies by deprivation.

526. If those in lower socioeconomic groups consume more items in scope of the policy, we may expect the benefits of this policy to accrue disproportionately to those who are most deprived. This would reduce the inequalities gap.

527. However, as outlined above, here it is assumed that various businesses will be excluded from this policy. We do not know how the use of the excluded businesses varies by socioeconomic group. If such-businesses were used more by lower socioeconomic groups, excluding them from the intervention could mean the impacts of the policy are greater in the higher socioeconomic groups, worsening the inequality gap.

528. It is possible that the policy could have different impacts on different groups in society, not just based on socioeconomic status. Data from ACS[205] shows that around that 37% of convenience stores are in rural communities where the store is often providing the only shopping option for the local community. 4% of convenience stores are part of a symbol group, which are in scope of the policy, while convenience stores not part of a symbol group and below 2,000 sq. ft are excluded. Therefore, rural communities where symbol stores are present will benefit from these restrictions.

529. Evidence from the National Child Measurement Programme[206] highlights that obesity prevalence is higher in urban areas than rural areas outlined in Table 52. This highlights that although many convenience stores (those that are small or micro, or below 2,000 sq. ft) are excluded from the policy, and are stores which are often the only shopping option in rural areas, obesity prevalence is lower in rural communities. The enforcement consultation will further explore the impact the policy could have on urban and rural areas.

Table 52 Prevalence of obesity in children in Reception, by rural/urban classification[207] (based on the postcode of the child)

	Obese - Reception		**Obese – Year 6**	
Rural/urban classification	Number	**Prevalence**	Number	**Prevalence**
Total[2]	**57,869**	***9.7***	121,409	20.2
Village, Hamlet & Isolated Dwellings	3,729	*7.9*	7,686	15.0
Town and Fringe	4,014	*8.2*	8,217	16.6
Urban	50,040	*10.0*	105,231	21.1

530. As part of the commitment to reduce the gap in obesity between children from the most and least deprived areas by 2030, the post-implementation review will gather evidence of impact and will consider evidence of any differential impact by deprivation.

Competition Test

Does the proposal:

531. *Directly limit the number or range of suppliers?*

[205] ACS (2019) *The Local shop report.* Available online: https://www.acs.org.uk/sites/default/files/acs_local_shop_report_2019.pdf (Accessed 05/03/2019)

[206] National Child Measurement Programme (2019) *National Child Measurement Programme, England 2018/19 School Year.* Availabe at: https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2018-19-school-year (Accessed 13/10/2020)

[207] 1. The Office for National Statistics (ONS) produced the Rural and Urban Classification in consultation with the Department for Environment, Food and Rural Affairs (DEFRA), the Department for Communities and Local Government (DCLG) and the Countryside Agency.
Further details are available at: http://www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/rural-urban-definition-and-la/rural-and-urban-statistics-guidance-notes.pdf (Accessed 13/10/2020)

- The proposal places no direct limit on the number of retailers which can operate in the market.

532. *Indirectly limit the number or range of suppliers?*

- The preferred policy option applies to all medium and large food retailers equally. The costs to individual businesses may vary, for example depending on the layout of a store. These costs are unlikely to be prohibitively high for individual businesses. The level of competition is likely to be greatest between large retailers, and so the exclusion of micro and small businesses will not affect this.

533. *Limit the ability of suppliers to compete?*

- The proposal does not limit businesses ability to compete on grounds of quality, geographic location, absolute price, advertisement and many other aspects on which businesses frequently compete.
- Businesses will likely respond by placing alternative products in the areas of store restricted under this policy proposal.
- Manufacturers bringing new products to market may use placement to penetrate a market. This would no longer be possible under these proposals. All manufacturers would be affected in the same way, but incumbents would be at an advantage.
- However, currently manufacturers may pay for the privilege of placing products at checkouts/end-of-aisles and the payments demanded may be a barrier to entry for smaller manufacturers. By removing these barriers, it may be easier for new products to penetrate the market.

534. *Reduce suppliers' incentives to compete vigorously?*

- The proposal does not exempt suppliers from general competition law, introduce or amend intellectual property regime or increase the costs to customers of switching between suppliers.

Sustainability Test

535. There is no evidence to suggest that a restriction on the placement of HFSS products will have an impact on the sustainability of the market.

Environmental Test

536. There is no evidence to suggest that a restriction on the placement of HFSS products will have a significant impact on the environment. It is possible that retailers currently use high-profile locations to promote the sale of products that are close to expiry. There may therefore be a risk that a greater proportion of these go unsold, and are thus discarded as waste.

537. Restricting location promotions could also have an impact on the amount of plastic and packaging used in the food and drink industry. As explained above we expect the restrictions to location promotions to result in a decrease in the consumption of HFSS products, which will be partly offset by an increase in the consumption of non-HFSS products. We expect there to be less plastic and packaging for non-HFSS products, particularly products such as fruit and vegetables, compared to HFSS products. Therefore, this shift in expenditure from HFSS to non-HFSS products could lead to a reduction in the amount of plastic and packaging that is used, which would have a positive impact on the environment. However, we do not have evidence to quantify this impact.

Human Rights Assessment

538. We recognise that there may be an impact on businesses in terms of Articles 10, 14, and Article 1 of Protocol 1 of the European Convention on Human Rights.

Rural Proofing

539. There is no evidence to suggest that a restriction on the placement of HFSS products will have a significant impact on those living in rural areas. It is possible that a greater proportion of outlets located in rural areas belong to micro and small businesses that are excluded under the preferred option. As a

result, these restrictions might have a smaller impact on rural communities compared to those living in more urban areas.

Justice Impact Test

540. A full justice impact test for this proposal will be carried out after the consultation has been completed and the policy details have been finalised.

Annex A – DHSC Calorie Model

THE DHSC CALORIE MODEL

1. This annex explains what the Calorie Model is, how it works and how it supports policy development. It also provides a brief history of how the model has developed over time.

What is the Calorie Model?

2. The Calorie Model is a simulation model, written in R, developed by analysts within the Department of Health & Social Care (DHSC). It draws on earlier modelling work developed by Public Health England (PHE).

3. Its purpose is to model the long-term impacts of policies that affect calorie intake at a population level. It uses estimates of change in calorie intake, along with other assumptions, to estimate the effect on health outcomes, NHS treatment costs, social care costs and changes in economic output.

4. Typically, the model is used to quantify the benefits associated with reductions in calories, but it can also model increases.

5. The model is calibrated for the population in England[208] using 2016 data as the baseline[209].

How does the model work (in overview)?

6. The Calorie Model is a cohort-based Markov model[210]. That means that the population is divided into annual cohorts based on their year of birth, and the health of each cohort is modelled over time based on their expected body mass index (BMI) and the associated chances of acquiring an obesity-related condition. A change in calorie intake will affect BMI, which in turn affects the likelihood of ill health.

7. To track health over time, the members of each cohort are divided into one of several states: healthy, diagnosed with an obesity-related disease, or deceased. Each year, transitional probabilities are used to estimate how many people will change state, and new births are added in. The expected prevalence of obesity-related conditions, and associated impacts, can be estimated accordingly.

8. The effects of a policy intervention are modelled using a control and treatment approach, with a control scenario assuming no policy implementation, and a treatment scenario(s) assuming a change in calorie intake. The effects of the policy are measured by comparing the two scenarios over time.

What outputs does the model produce?

9. The main outputs for any given scenario are:

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[208] Model results can be applied to the rest of the UK by applying a pro-rata adjustment based on population size. This may not take full account of demographic and health-related differences but should suffice on an indicative basis.

[209] We use Health Survey for England (HSE) and Office for National Statistics (ONS) population data and projections.

[210] Further background information about this type of model is available at https://arxiv.org/abs/1702.03252.

- total net benefit (or cost) in net present value terms, likely to result from a calorie change, comprising:
    - monetised value of any net change in health (measured in QALYs);[211]
    - net change in NHS treatment costs;
    - net change in social care costs; and
    - net change in (some) economic productivity impacts.
- a timeline, showing when these effects are expected to occur.
- the number of premature (under age 75) deaths expected in the scenario and compared with the control.

10. The model also allows more detailed interrogation of (for example) different age groups or BMI changes, and it can also provide sensitivity analysis around input parameters.

How does the model work (in detail) and what assumptions are used?

11. The main input parameter is the expected **change in calorie intake** per person per day.[212]

12. This value (or range of values) must be created outside the model, using whatever research, analysis or estimation techniques are available. The calorie model can explore the effect of a calorie change and perform sensitivity analysis around any assumed figure. But it cannot identify the correct calorie value to use.

13. The calorie change can be varied according to the **age and gender of the population affected**. This allows (for example) policies that focus on children only to be assessed.

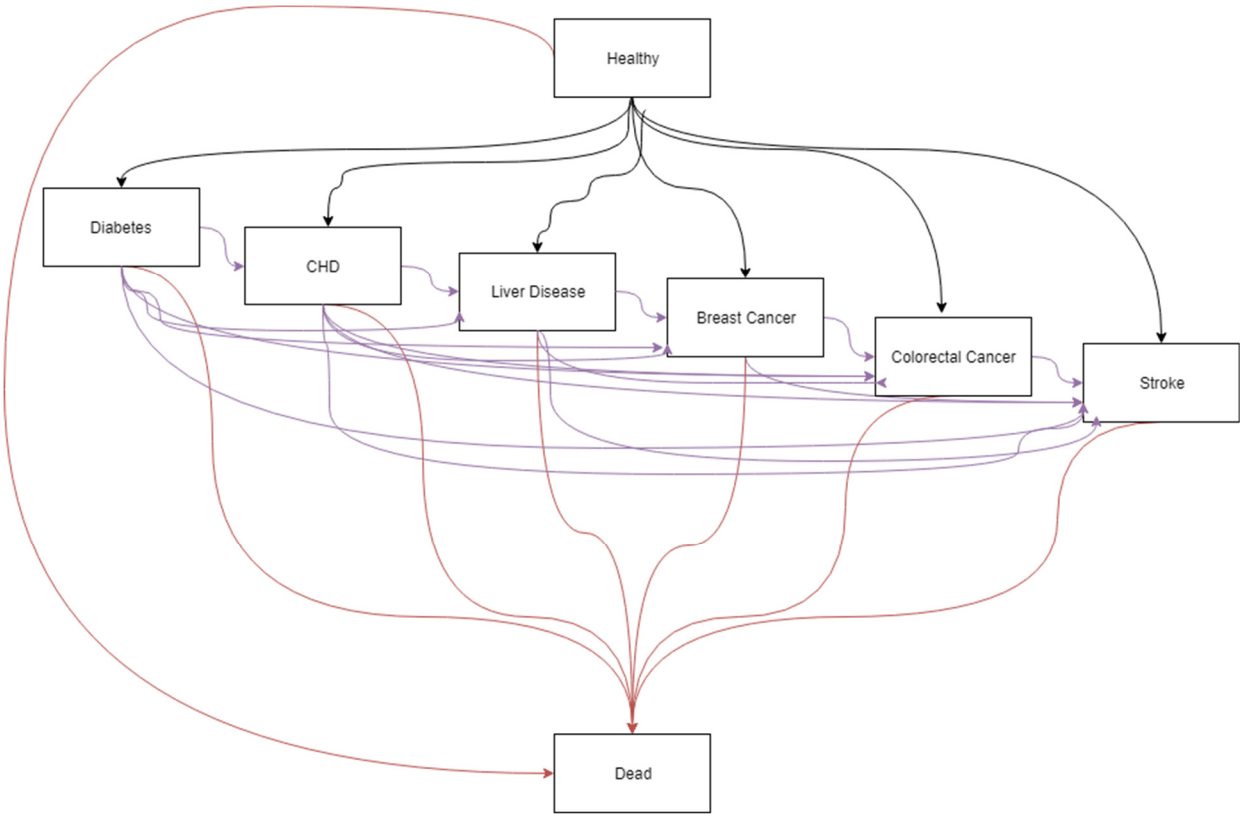
14. Changes in weight and BMI caused by the reduction in daily calories are calculated (see para 17 and footnote 6 for the methodology) and are used as a starting point for the remainder of the analysis within the model.

15. The model then considers the implications of the calorie imbalance reduction on six diseases associated with obesity: **type 2 diabetes, coronary heart disease, stroke, colorectal cancer, breast cancer and liver disease**. This is done by considering changes in prevalence and mortality rates for each disease caused by changes in BMI to calculate the number of deaths avoided in the treatment scenario.

16. The model makes some allowance for comorbidities. In previous versions, the only transition an individual in a disease state could make was to move to the dead state or else stay in the relevant disease state, the possibility of disease to disease transition has since been added to model comorbidities. However, the model has no state memory and so when an individual undergoes a disease to disease transition, they no longer incur the costs associated with their first disease. To reduce the impact of this lack of state memory disease to disease transitions are only allowed from less severe to more severe diseases. The order of severity is shown here, with severity increasing from left to right:

[211] Quality-adjusted life years (QALYs) are the standard currency used in health evaluations to measure the duration and quality of life combined. A value of 1.00 represents a year of life in perfect health. Someone living with an obesity-related condition is assumed on average to have a lower quality of life and/or a lower life expectancy than someone of similar age without that condition. The social value of QALYs (i.e. the value placed on them by the public) is £60,000 each. Further detail on how and why QALYs are used is provided in the Treasury Green Book (page 72) at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

[212] Equivalent inputs (such as an expected change in weight or BMI status) can also be used with appropriate conversion upfront.



Text-only description: The order of severity in the model is: type 2 diabetes, coronary heart disease, liver disease, breast cancer, colorectal cancer, stroke.

BMI analysis

17. Individual weights are modelled using the differential equations from Hall et al.[213] This approach assumes an individual's weight to consist of body fat, and fat-free mass (summed together to give the total body weight). The BMI projection through life is done by considering the imbalance between energy in and energy out, and by assuming that an individual will remain on the same BMI percentile through life. The model also draws on research from Ara et al.[214] to model how the BMI of the control group would change over time. This evidence was based on an overweight and obese population but is assumed in the absence of anything superior to provide a reasonable approximation for those with a healthy BMI.

18. Differential equations were implemented in the model using the deSolve[215] package in R. The original model predicted the same weight loss per kcal reduction regardless of original body weight, which was noted at the time as being a necessary simplification. This limitation has been removed and the use of the differential equations in the new model forecasts a greater reduction in body weight per kcal reduction in diet in individuals with more excess weight.

19. These updates allow us to model changes in weight that occur in childhood. The equations include a growth term which tends to zero at age 18, meaning the model naturally transitions from childhood into adulthood.

[213] Hall KD, Butte NF, Swinburn BA, Chow CC. Dynamics of childhood growth and obesity: development and validation of a quantitative mathematical model. The lancet Diabetes & endocrinology. 2013 Oct 1;1(2):97-105.

[214] Ara, R., L. Blake, L. Gray, M. Hernández, M. Crowther, A. Dunkley, F. Warren et al. "What is the clinical effectiveness and cost-effectiveness of using drugs in treating obese patients in primary care? A systematic review." Health technology assessment (Winchester, England) 16, no. 5 (2012)

[215] "deSolve: Solvers for Initial Value Problems of Differential Equations". [Online]. Available: https://cran.rproject.org/web/packages/deSolve/index.html 134

20. There is no evidence available to link excess weight to the modelled conditions during childhood and hence no health benefits have been modelled during childhood. If any undiscovered associations exist, this would imply our calculations underestimate the benefits.

Groups of people considered within the model

21. The model splits the population by age, sex, and 5 BMI categories: underweight, healthy weight, overweight, obese, and very obese. Age can be modelled in individual years or in grouped categories as desired. Age-specific parameters (such as mortality rate, or incidence of a condition) are applied at the correct time as required.

22. Some weight loss health benefits occur in adults that are not overweight but have a BMI greater than 22 kg/m^2. The risk of the six health conditions modelled increases linearly with a BMI level of 22 upwards, and so including a healthy weight group in the model allows the extra benefits to be modelled. Underweight is modelled as a separate group to avoid any bias.

23. The starting population is defined by the user, meaning a policy can be considered that only applies a calorie reduction to children, to children and adults, or only applies to adults.

24. The new model utilises Markov modelling to calculate the transitions of the population between states, where states are defined as healthy, having a condition (where each condition is a separate state), or deceased. The Markov modelling was handled by the heemod[216] package in R. The probabilities of being in a state are used as inputs into the heemod package, which can then simulate how the states will develop over time, starting the model with 100% of the population in the healthy state.

25. For every cycle of the Markov model (equivalent to one year), the model calculates what proportion of the population will be in each state using the predicted probabilities (which as in the original model, are BMI-dependent). This gives a trajectory of the proportion of the total population in each state every year.

26. The previous model considered the possibility of people living with one condition but dying of another. This version of the model has made the simplification that people have no more than one condition given there is currently a lack of evidence on the health effects of having several of these conditions.

Calculating results

27. **Savings to the NHS** are calculated from the reduced treatment requirements for each disease.

28. **Economic productivity effects** are assessed in two categories. First, reductions in mortality are used to calculate the impact of mortality on economic output from an increased workforce. This is done by considering everyone within a cohort to earn the median wage of a person of that age and gender, with a larger workforce present in the treatment scenario.

29. Secondly, the model calculates the impact of morbidity on economic output using an employment rate that varies with disease state. This change has been made to reflect the lower productivity and rates of employment seen for individuals with one of the six modelled diseases.

[216] "heemod: Markov Models for Health Economic Evaluations". [Online]. Available: https://cran.rproject.org/web/packages/heemod/index.html 135

30. **Costs of social care** savings are calculated due to a reduced proportion of overweight, obese, and morbidly obese individuals and hence fewer people needing social care in the treatment scenario. This assumes that the probability of requiring social care increases with BMI.

31. **Changes in QALYs** are calculated from the reduced number of deaths and the reduction of people living with the diseases. These are then converted into monetised QALY using a conversion of how much society values a QALY.

32. People who fall ill with an obesity-related illness in later life may already be in less than perfect health. Accordingly, the model does not assume a QALY value of one for individuals in the "healthy" state (which in model terms means they are free of obesity-related illness). Instead, an age detriment is applied to all QALY values. This is done to allow for the increased prevalence of diseases not explicitly included in the model at older ages.

33. The model uses a QALY disease detriment to calculate the QALY value for an individual in the disease state.

34. **Discount rates** are applied to monetary values to account for changes in the treatment of costs and benefits that arise over different periods of time. This allows future values to be considered at present value in line with Treasury Green Book principles.

35. Results can be modelled over a **user-defined timeframe**. For most analysis, a longer timescale is considered appropriate, as many of the health benefits do not arise until middle age or older. Equally, uncertainty increases as the forecast period widens. Typically, a timescale of between 20 and 50 years is considered reasonable.

36. The model can be run for a longer time-period and (based on ONS population projections) will add new children each year who will be born into the model. This means a policy that runs for multiple years can be modelled on children who will be born during the duration of the policy.

37. Once a policy has finished running, the model will stop adding new children to the population. However, it will continue to model benefits on the existing population for as long as the user defines. This allows the benefits that do not occur until much later in life to be modelled over the lifetime of the population.

How robust and reliable is the model?

38. The model has been developed and enhanced over several years, reflecting both changes in evidence and improvements in modelling capabilities. The model has been independently assured and the results have been used to support economic analysis in published Impact Assessments on a regular basis. The analysis is best available.

39. However, the model does have several significant limitations.

    - It predicts the effect of a given change in calorie intake. It cannot predict the effect of policy on calorie intake, and so is reliant on the external analysis used to produce such estimates.

- The model, of necessity is a simplified representation of real-world events. It does not consider all potential health conditions, all types of individual circumstances and all types of economic impact.
- The model assumes that past performance (in terms of treatment costs, transition probabilities, population profiles and many other parameters) are a reasonable basis from which to predict the future.
- Results will vary according to the evaluation period chosen.

40. Work continues over time to refine and improve the model and mitigate any limitations. Sensitivity analysis and optimism bias are both regularly used to ensure any model results are interpreted and used appropriately.

Developmental history of the model

41. PHE first developed a weight management economic assessment tool in 2014.[217]

42. This was used to support analysis on sugar reduction and later calorie reduction, and through a series of changes eventually became Version 1 of the Calorie Model, developed by DHSC and PHE working together.

43. The model and its assumptions were the subject of a Technical Consultation Document[218] which DHSC published in 2018.

44. The original model was developed in Microsoft Excel, but an upgraded version was developed in the "R" programming language, by DHSC analysts following the consultation. This "Version 2" of the model was more flexible and it allowed more accurate modelling of weight loss or gain, a longer evaluation period (if desired) and greater ability to model different groups of people. It became possible to model adults and children separately.

45. These "Version 2" changes were published in 'Further advertising restrictions for products high in fat, salt and sugar: impact assessment': Annex E[219].

46. Version 3 (the current model) was developed by DHSC analysts in late 2019 and is now in use. This version added liver disease to the model, added a limited capability for measuring comorbidities, extended the scope of the economic productivity analysis, and improved the accuracy of the QALY calculations, by reflecting the deterioration in health that naturally occurs as the population ages.

47. Quality assurance (QA) was carried out in line with the principles set out in the Government Aqua book. PHE provided independent assurance to complement the work within DHSC.

48. Further details on the history and development of the model can be found in the published documents mentioned (see footnotes).

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[217] https://www.gov.uk/government/news/phe-launch-weight-management-economic-assessment-tool

[218] DHSC, DHSC Calorie Model, August 2018. [Online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/736417/dhsc-calorie-model-technical-document.pdf

[219] DHSC/DCMS, March 2019 [Online]: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786554/advertising-consultation-impact-assessment.pdf

Annex B – HFSS Food Definition

1. There are a number of possible ways of assessing the nutritional content of food. For the purposes of this Impact Assessment, it has been assumed that the healthiness of products will be defined using the Food Standards Agency's 2004/05 Nutrient Profiling Model[220].
2. The Nutrient Profile Model was developed by the FSA to provide Ofcom, the broadcast regulator, with a tool to differentiate foods on the basis of their nutritional composition. Ofcom uses the outputs from the model to regulate the television advertising of foods to children.
3. It scores foods based on their nutritional content. The nutrients considered are split into two categories – A and C. The score for 'C' nutrients is subtracted from the score for 'A' nutrients to give the final score. A higher score indicates a more HFSS food.
4. 'A' nutrient consist of energy, saturated fat, total sugar and sodium. 'C' nutrients consist of fruit, vegetables and nut content, fibre and protein. Therefore, a food scoring highly on 'A' nutrients is not automatically classified as HFSS, only if it additionally scores little on 'C' nutrients.
5. Foods scoring 4 or more points, or drinks scoring 1 or more points, are classified as "less healthy". These 'less healthy' products provide the definition for HFSS food used here.
6. All food and drink are scored, there are no exemptions.

Calculations

7. There are three steps to working out the score: calculating 'A' points, calculating 'C' points and combining these into an overall score.

Calculating 'A' points

8. Total 'A' points are calculated by the following formula: (points for energy) + (points for saturated fat) + (points for sugars) + (points for sodium). The points for each nutrient are determined based on the amount of each per 100g of the food or drink, according to Table A.1 below.

Table A.1 Points scored by 'A' category nutrients per 100g

Points	Energy (kJ)	Sat Fat (g)	Total Sugar (g)	Sodium (mg)
0	≤335	≤1	≤4.5	≤90
1	>335	>1	>4.5	>90
2	>670	>2	>9.0	>180
3	>1005	>3	>13.5	>270
4	>1340	>4	>18.0	>360
5	>1675	>5	>22.5	>450
6	>2010	>6	>27.0	>540
7	>2345	>7	>31.0	>630
8	>2680	>8	>36.0	>720
9	>3015	>9	>40.0	>810
10	>3350	>10	>45.0	>900

9. A maximum of ten points can be awarded for each nutrient.

Calculating 'C' points

10. Total 'C' points are calculated by the formula: (points for % fruit, veg and nut content) + (points for fibre [either NSP or AOAC]) + (points for protein). The points for each nutrient are determined based on the amount of each nutrient per 100g/percentage nutrient component of the food or drink, according to Table A.2 below.

[220] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/216094/dh_123492.pdf Accessed 18/01/2018

Table A.2 Points scored by 'C' category nutrients per 100g

Points	Fruit Veg and Nuts (%)	NSP Fibre (g)	or AOAC Fibre[a] (g)	Protein[b] (g)
0	≤40	≤0.7	≤0.9	≤1.6
1	>40	>0.7	>0.9	>1.6
2	>60	>1.4	>1.9	>3.2
3	-	>2.1	>2.8	>4.8
4	-	>2.8	>3.7	>6.4
5	>80	>3.5	>4.7	>8.0

an NSP fibre information should be used if possible. However, if this is not available then AOAC fibre information should be used.

b If a food or drink scores 11 or more points for 'A' nutrients then it cannot score points for protein unless it also scores 5 points for fruit, vegetables and nuts.

11. A maximum of five points can be awarded for each nutrient/food component. Note the restrictions on points for protein.

Combining points into an overall score

12. Overall score for a food is dependent on how many 'A' points it scores and how many points for fruit, vegetables, and nuts it scores. There are three possible situations.

    Less than 11 'A' points

    If a food satisfies this criterion then the overall score is calculated as follows:

    Total 'A' points minus total 'C' points = (energy + sat fat + sugars + sodium) – (fruit, vegetables, and nuts + fibre + protein)

    11 or more 'A' points and 5 points for fruit, vegetables and nuts

    If a food satisfies this criterion then the overall score is calculated as the above case.

    11 or more 'A' points and less than 5 points for fruit, vegetables and nuts

    If a food satisfies this criterion then the overall score is calculated as follows:

    Total 'A' points minus points for fruit, veg and nuts and points for fibre = (energy + sat fat + sugars + sodium) – (fruit, vegetables, and nuts + fibre)

    Note that in this case foods are not allowed to score for protein.

Annex C – Products included in the Soft Drinks Industry Levy and the Calorie and Sugar Reduction Programmes

Soft Drinks Industry Levy

1. In 2016, the Government announced the introduction of the Soft Drinks Industry Levy to help reduce children's sugar intakes by encouraging manufacturers to reformulate their drinks. The Levy came into effect on the 6th of April 2018.
2. A drink is liable for the Soft Drinks Industry Levy if it meets all of the following conditions:
    a. It has had sugar added during production, or anything (other than fruit juice, vegetable juice and milk) that contains sugar, such as honey
    b. It contains at least 5 grams (g) of sugar per 100 millilitres (ml) in its ready to drink or diluted form
    c. It is either ready to drink, or to be drunk it must be diluted with water, mixed with crushed ice or processed to make crushed ice, mixed with carbon dioxide, or a combination of these
    d. It is bottled, canned or otherwise packaged so it is ready to drink or be diluted
    e. It has a content of 1.2% alcohol by volume (ABV) or less
3. A detailed list of what is classed as sugar for the purposes of the Levy can be found in the guidance published by HM Revenue & Customs[221].
4. The Levy does not apply to drinks that are:
    - At least 75% milk
    - A milk replacement, like soya or almond milk
    - An alcohol replacement, like de-alcoholised beer or wine
    - Made with fruit juice or vegetable juice and do not have any other added sugar
    - Liquid drink flavouring that's added to food or drinks like coffee or cocktails
    - Infant formula follow on formula or baby foods
    - Formulated food intended as a total diet replacement, or dietary food used for special medical purposes
5. Again, a more detailed explanation of the products excluded from the Levy can be found in the guidance published by HM Revenue & Customs.

Calorie Reduction Programme

6. On average both children and adults are consuming too many calories on a regular basis. Amongst the governments commitments in the 'Childhood obesity: A plan for action' was for Public Health England to lead a structured and closely monitored programme to improve every day food and drink. As part of this Public Health England developed the calorie Reduction Programme to encourage manufacturers to revise and reformulate their products to lower the number of calories they contain.
7. The list of product categories to be included within the calorie reduction programme will be confirmed after engagement with stakeholders. However, Public Health England have indicated that the following product categories will be included in the programme:

    - Bread with additions (e.g. olives, cheese etc.)
    - Crisps and savoury snacks
    - Savoury biscuits, crackers and crispbreads
    - Potato Products (e.g. chips, croquettes, mashed potato etc.)
    - Sausages (raw and cooked) and sausage meat products, frankfurters, hotdogs and burgers
    - Meat, fish and vegetarian pastry pies and other pastry products
    - Cooking sauces and pastes
    - Table sauces and dressings
    - Pasta/ rice/ noodles with added ingredients and flavours
    - Ready meals with carbohydrate accompaniment (potato, rice, noodles, pasta, etc.) – fish, meat and meat alternatives

[221] HM Revenue & Customs Check if your drink is liable for the Soft Drinks Industry Levy, https://www.gov.uk/guidance/check-if-your-drink-is-liable-for-the-soft-drinks-industry-levy (accessed 06/06/2018)

- Meal centres without carbohydrate accompaniment (potato, rice, noodles, pasta, etc.) – fish, meat and meat alternatives
- Prepared dips and composite salads as meal accompaniments (e.g. coleslaw, potato salad, guacamole, salsa etc.)
- Pizza
- Egg products/ dishes (e.g. quiche)
- Food to go e.g. sandwiches boxed main meal salads etc.

8. These products have been included because they contribute significantly to children's calorie intakes and there is scope for substantial reformulation and/ or portion size reduction. A more detailed list of the products included in the scheme and the reformulation targets can be found in the guidance published by Public Health England[222].

Sugar Reduction Programme

9. A further commitment in the 'Childhood obesity: a plan for action' was to launch a broad structured sugar reduction programme to remove sugar from everyday products. All groups of the population, particularly children, are consuming far too much sugar. This increases the risk of excess calorie consumption and weight gain, which, over time, can lead to obesity.

10. The sugar reduction programme challenges manufacturers to revise and reformulate their products to reduce the amount of sugar they contain. A list of product categories included in the programme is below:

    - Breakfast cereals
    - Yoghurt and fromage frais
    - Biscuits
    - Cakes
    - Morning goods
    - Puddings
    - Ice cream
    - Sweet confectionary
    - Chocolate confectionary
    - Sweet spreads
    - Milk-based drinks and fruit juices

11. These products have been included because they contribute significantly to children's sugar intakes. Again, a more detailed list of the products included in the scheme and the reformulation targets can be found in the guidance published by Public Health England[223].

[222] Public Health England (2018) Calorie reduction: the scope and ambition for action https://www.gov.uk/government/publications/calorie-reduction-the-scope-and-ambition-for-action (Accessed 21/06/208)

[223] Public Health England (2018) Sugar reduction: Achieving the 20% https://www.gov.uk/government/collections/sugar-reduction (Accessed 21/06/208)

Annex D – Revised product categories in scope post consultation

Table 31 below shows the product categories in scope of the location restrictions as presented in the consultation proposal and the revised categories in scope following consultation feedback. The revised categories are those of most concern to childhood obesity because they contribute significant sugar and calories to children's diets and are often heavily promoted. These are the categories in scope for Option 2, which is the preferred option in this IA.

Table 31: Products in scope of preferred option

Products in scope pre consultation	**Products in scope post consultation – now included in Option 2 and 3**
Soft drinks	Soft drinks
Chocolate confectionery	Chocolate confectionery
Sugar confectionery	Sugar confectionery
Cakes	Cakes
Ice cream	Ice cream
Morning goods (pastries)	Morning goods (pastries)
Puddings and dairy desserts	Puddings and dairy desserts
Sweet biscuits	Sweet biscuits
Breakfast cereals	Breakfast cereals
Yogurts	Yogurts
Milk based drinks with added sugar	Milk based drinks with added sugar
Juice based drinks with added sugar	Juice based drinks with added sugar
Pizza	Pizza
Crisps and savoury snacks	Crisps and savoury snacks
Ready meals and meal centres (e.g. burgers, chicken nuggets, breaded chicken/fish)	Ready meals and meal centres
Chips and potato products	Chips and potato products
Garlic bread	
Pies and quiches	
Bread with additions	
Savoury biscuits crackers and crispbreads	
Cooking sauces and pastes	
Table sauces and dressings	
Processed meat products	
Pasta /rice/ noodles with added ingredients and flavours	
Prepared dips and composite salads as meal accompaniments	
Egg products /dishes	
Sweet spreads	

The lists below outline the products in scope under option 1 and 4:

Option 1 :

- Confectionery (Sweets and Chocolate)
- Sweet biscuits
- Cakes
- Puddings
- Dairy desserts
- Crisps
- Savoury snacks
- Pastries

- Soft drinks with added sugar
- Ice-cream

Option 4:

Everything in option 2, plus

- Sweet spreads
- Processed Meat Products
- Pies and Quiches
- Garlic Bread
- Cooking and serving sauces
- Table sauces and dressings
- Savoury biscuits, crackers, crispbreads etc
- Starters, smaller dishes, sides etc

Annex E – Consultation Response Summary

Summary

In Chapter 2 of the Childhood Obesity Plan, published June 2018, Government set out its intention to ban promotions of HFSS products by location and by price and committed to consult on how this should be implemented. The consultation sought views on:

- which businesses, products and types of price and location promotions should be in scope of the restrictions
- how HFSS products should be defined
- how the proposal should be implemented

The consultation ran from January to April 2019 and received significant interest with 807 responses from individuals, businesses and organisations. 86% of responses were from individuals, 9% from organisations (NGOs, charities, public health bodies) and 3% from businesses (retailers, manufacturers, out of home businesses, food/drink industry trade bodies).

Overall, there was support for Government's proposal to introduce restrictions for promotions of HFSS products by location and by price, with around 60% of respondents agreeing that the restrictions should apply to all retail businesses that sell food and drink products in England. There were noticeable differences between views from individuals, business and organisations. 57% of individuals agreed with introducing restrictions and organisations were overwhelmingly supportive with 95% in agreement. Businesses were not supportive of the proposal with 26% saying that the restrictions should be introduced.

Having carefully considered all consultation responses and after conducting further stakeholder engagement, evidence gathering and data analysis, Government decided to introduce promotion restrictions through legislation, as per the initial consultation proposal, but made revised the businesses and products in scope.

Business in scope

Further data analysis and stakeholder engagement was conducted and as a result Government decided to exempt micro businesses (fewer than 10 employees) and small businesses (10 to 50 employees) from both the price and location restrictions.

With regard to specialist retailers who only sell a specific type of HFSS products (e.g. chocolate or sweets) we recognise the location restrictions would be impractical for them to implement and would likely lead to significant disruption to their business.

Having considered industry feedback and conducting further stakeholder engagement with regard to exemptions based on size of store, Government decided that stores 2,000 square ft or greater will be in scope of the location restrictions because they are expected to have distinct checkout and front of store areas and typically have multiple aisles and aisle ends.

Products in scope

We recognise the concerns raised about the wide scope of the consultation proposal and we appreciate the challenges that this may present for businesses. Having conducted further analysis and extensive stakeholder engagement, Government decided that the restrictions will apply to a revised, shorter list of product categories which are significant contributors to children's sugar and calorie intakes and are often heavily promoted, and are therefore the categories of most concern for childhood obesity.

Government decided that non-pre-packaged products should be out of scope because businesses may not be able to determine whether these products can or cannot be promoted due to the lack of nutritional information on pack.

The restrictions will therefore apply only to HFSS pre-packaged products in the following categories: soft drinks, cakes, chocolate confectionery, sugar confectionery, ice cream, morning goods (e.g. pastries), puddings, sweet biscuits, breakfast cereals, yogurts, milk-based drinks with added sugar, juice based drinks with added sugar, pizza, ready meals and meal centres (e.g. burgers, chicken nuggets, breaded chicken/fish), crisps and savoury snacks, chips and potato products.

Detailed consultation results are presented in the Government's response to the consultation.

Annex F – Post Implementation Review

1. Understanding the impact of any regulatory policy is a key responsibility for government and the Department of Health and Social Care will publish a comprehensive review of the policy within the first 5 years of the policy being enforced.

2. 5 years is considered appropriate to allow sufficient time to understand changes in industry practices and consumer behaviours and effectiveness and consequences of the regulations. The timescale for this review will also allow officials to take account of the impacts of the Covid-19 pandemic. A shorter timescale is not deemed appropriate because these impacts may be short-term and not reflective of the market overall or in the longer term.

3. The review period will be from when the Regulations apply therefore the enforcement regime will be finalised when the Regulations are laid. The proposed enforcement regime will be tested through the enforcement consultation and the outcome shared in advance of the Regulations being laid. In addition, Statutory Guidance[224] states that generally the deadline will be five years after the date when the measure came into force.

4. The aim of the PIR is to establish whether this regulation:

    a. Has achieved its original objectives
    b. Has objectives that remain appropriate
    c. Is still required and remains the best option for achieving those objectives, and
    d. Could be achieved in another way which involves less onerous regulatory provision to reduce the burden on business and/or increase overall societal welfare.

5. The objective of this policy is to:

- Restrict the placement of HFSS food and drink products at key selling locations such as store entrances, checkouts and aisle ends in England is intended to:
- Reduce overconsumption of HFSS products likely to lead to excess calorie intake and, over time, weight gain while minimising the impact on food purchases that do not contribute to childhood obesity;
- Reduce pester power for parents and impulse purchases of HFSS products resulting from placement at prominent locations;
- Shift the balance of promotions towards healthier options and maximising the availability of healthier products that are offered on promotion, to make it easier for parents to make healthier choices when shopping for their families;
- Assist the wider childhood obesity strategy to reduce circumstances currently contributing to the obesogenic environment;
- Create a level playing field in which businesses that have voluntarily made progress are no longer penalised.

6. A post implementation review would aim to establish if these objectives have been achieved.

7. We aim to explore the current levels of promotions in key locations (including compliance and accuracy) in medium and large retailers before and after legislation comes into force, in order to capture a baseline and monitor the use and scale of location promotions after the introduction of the regulation. This could be done through selecting a sample of businesses to whom the new rules apply, using this to generate a list of eligible stores operated by these businesses, and visiting these stores to assess the location promotions and how they are used before and after implementation. Under this approach we would include stores from urban, suburban and rural areas to help us understand if, and possibly how, the impact of restrictions has varied for people living in different areas of the country.

[224] Statutory Guidance under s.31 of the Small Business, Enterprise and Employment Act 2015 published by the Department of Business, Energy and Industrial Strategy.

8. We have also highlighted several wider points in this impact assessment which we would like to explore as part of a post implementation review. This includes:

- the alternative marketing techniques used to promote HFSS products in response to the restrictions on location promotions;
- what products are promoted in these locations;
- what products are promoted in these locations and promoted using volume promotions;
- whether businesses are complying with the policy;
- any change to the products or marketing techniques used by micro and small businesses;
- any specific impact on symbol businesses;
- any specific impact on any particular medium or large businesses; and
- whether it has a different impact on rural and urban communities.

9. We also intend to re-engage with key stakeholders following the introduction of the ban to better understand the costs that businesses incur on adopting the regulations.