

<b>Title:</b> Restricting checkout, end-of-aisle, and store entrance sales of food and drinks high in fat, salt, and sugar (HFSS)  <b>IA No:</b> 13012  <b>Lead department or agency:</b> Department of Health and Social Care (DHSC) <b>Other departments or agencies:</b> n/a	<b>Impact Assessment (IA)</b>		
	<b>Date:</b> 16/11/2018		
	<b>Stage:</b> Consultation		
	<b>Source of intervention:</b> Domestic		
	<b>Type of measure:</b> Secondary legislation		
<b>Contact for enquiries:</b> Childhood Obesity Team Email: <a href="mailto:Childhood.Obesity@dh.gsi.gov.uk">Childhood.Obesity@dh.gsi.gov.uk</a>			

<b>Summary: Intervention and Options</b>	<b>RPC Opinion:</b> Not Applicable
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Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANDCB on 2014 prices)	In scope of One-In, Three-Out? Measure qualifies as
£3,340m	-£1,180m	£77.3m	Yes   N/A

**What is the problem under consideration? Why is government intervention necessary?**  
 Childhood obesity is one of the biggest health problems this country faces. Obesity is a major cause of ill health in the UK, causing heart disease, stroke, type II diabetes and cancer, imposing a substantial burden on the NHS. Evidence increasingly suggests that even when individuals are attempting to make healthy choices, basic environmental factors can encourage consumption of products high in fat, sugar, and salt (HFSS). Government intervention is necessary to ensure that retailers and out-of-home food outlets establish shopping environments that do not encourage excess consumption of HFSS products.

**What are the policy objectives and the intended effects?**  
 The policy is intended to reduce impulse purchases of products likely to lead to excess weight gain while minimising the distortionary effect on purchases that do not contribute to obesity. By increasing the likelihood that stores provide healthier options in key selling locations further improvements in diets may be experienced. Mandating consistent sales 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)**  
 This document includes modelling of a range of options. Through this modelling we established the best option to pursue and seek stakeholder's views on. As a result, we are only consulting on Option 3.  
**Option 1:** Do nothing  
**Option 2:** End placement of HFSS food and drink items at store entrances, checkouts and end-of-aisles (including gondola ends) in retailers and out-of-home food outlets.  
**Option 3:** End placement of HFSS products included in Public Health England's sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL) at store entrances, checkouts and end-of-aisles in retailers and out-of-home food outlets.  
 For the purposes of this impact assessment, Option 3 is presented as the preferred option, but it's important to note that the final policy proposal is subject to the feedback received during this consultation. Furthermore, as part of the consultation, we are open to alternative suggestions from stakeholders on the best way to implement this policy to achieve these aims.

<b>Will the policy be reviewed?</b> It will be reviewed. <b>If applicable, set review date:</b> Before 2023					
Does implementation go beyond minimum EU requirements?				N/A	
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.		<b>Micro</b> No	<b>&lt; 20</b> Yes	<b>Small</b> Yes	<b>Medium</b> Yes
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions? (Million tonnes CO <sub>2</sub> equivalent)				<b>Traded:</b>	
				<b>Non-traded:</b>	

***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  
 SELECT SIGNATORY:

 Date: 16/11/18

# Summary: Analysis & Evidence

Policy Option 1

Description:

## FULL ECONOMIC ASSESSMENT

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

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

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

These are defined to be 0

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

These are defined to be 0

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'

These are defined to be 0

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

These are defined to be 0

Key assumptions/sensitivities/risks N/A	Discount rate	
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## BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs:	Benefits:	Net:	Yes/No

# Summary: Analysis & Evidence

# Policy Option 2

**Description:** Restrict placement of products high in fat, salt, and sugar at store entrances, checkouts and ends of aisles.

## FULL ECONOMIC ASSESSMENT

Price Base Year 2018	PV Base Year 2018	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low: -53	High: 11,570	Best Estimate: 6,920

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	35	76	1,330

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

Over 25 years costs include lost retailer profits of £0.8bn, lost profits for the out-of-home food sector of £0.4bn and lost profits of £0.6bn for UK business activity of manufacturers of HFSS products– although the latter is offset by an equivalent increase in the profits for other food manufacturers. In addition, retailers and out-of-home food businesses would face transitional costs of around £30m and £5m respectively. The opportunity cost to DHSC of enforcing these regulations is estimated to be around £18m.

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

Retailers, out-of-home food outlets and manufacturers would face additional losses in profits from reduced sales of HFSS items located at store entrances. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for the preferential location of their items.

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			8,250

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

Expected benefits are the health benefits that would accrue because of lower calorie consumption amongst overweight and obese people – equivalent to £4.5bn over the 25-year assessment period. There would be additional health benefits to the population from reinvesting cost savings back into the NHS, these are estimated to be worth around £3bn. Social care savings would amount to £0.6bn and reduced premature mortality would be expected to deliver an additional £0.1bn economic output.

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

#### Key assumptions/sensitivities/risks

Key assumptions in the analysis include that HFSS products in prominent locations are replaced with other food and drink items, other food and drink items achieve the same sales as HFSS products in these store locations and losses to manufacturers of HFSS products are offset by an equivalent increase in profits for other manufacturers. Health benefits require the direct impacts of the intervention not to be offset and costs to industry are based on limited data on profit margins and single academic studies. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts. There are likely to be various complexities in defining and implementing restrictions on location promotions. Our considerations in the following assume that these are successfully overcome.

#### Discount rate

1.5/3.5

## BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs:97	Benefits: 0	Net: -97	487

# Summary: Analysis & Evidence

# Policy Option 3

**Description:** Restrict placement of products high in fat, salt, and sugar included in Public Health England's sugar and calorie reduction programmes and the Soft Drinks Industry Levy at store entrances, checkouts and end-of-aisles.

## FULL ECONOMIC ASSESSMENT

Price Base Year 2018	PV Base Year 2018	Time Period Years 25	Net Benefit (Present Value (PV)) (£m)		
			Low: -53	High: 5,605	Best Estimate: 3,340

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	35	68	1,195

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

Over 25 years costs include lost retailer profits of £0.7bn, lost profits for the out-of-home food sector of £0.4bn and lost profits of £0.4bn for UK business activity of manufacturers of HFSS products – although the latter is offset by an equivalent increase in the profits for other food manufacturers. In addition, retailers and out-of-home food businesses would face transitional costs of around £30m and £5m respectively. The opportunity cost to DHSC of enforcing these regulations is estimated to be around £18m.

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

Retailers, out-of-home food outlets and manufacturers would face additional losses in profits from reduced sales of HFSS items located at store entrances. Retailers would experience reduced revenue from manufacturers of HFSS products no longer paying for the preferential location of their items.

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			4,535

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

Expected benefits are the health benefits that would accrue because of lower calorie consumption amongst overweight and obese people – equivalent to £2.5bn over the 25-year assessment period. There would be additional health benefits to the population from reinvesting cost savings back into the NHS, estimated to be worth around £1.7bn. Social care savings would amount to £0.3bn and reduced premature mortality would be expected to deliver an additional £0.1bn of economic output.

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

Key assumptions/sensitivities/risks	Discount rate	1.5/3.5
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Key assumptions in the analysis include that HFSS products in prominent locations are replaced with other food and drink items, other food and drink items achieve the same sales as HFSS products in these store locations and losses to manufacturers of HFSS products are offset by an equivalent increase in profits for other manufacturers. Health benefits require the direct impacts of the intervention not to be offset and costs to industry are based on limited data on profit margins and single academic studies. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts. There are likely to be various complexities in defining and implementing restrictions on location promotions. Our considerations in the following assume that these are successfully overcome.

## BUSINESS ASSESSMENT (Option 3)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: 77	Benefits: 0	Net: -77	387

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# Executive Summary

## Problem and justification for action

1. Childhood obesity is one of the biggest health problems this country faces. Nearly a quarter of children in England are obese or overweight by the time they start primary school aged five, and this rises to one third by the time they leave aged 11<sup>1</sup>.
2. Obesity is a major determinant of ill health<sup>2</sup>. This imposes a substantial burden on the NHS, with overweight and obesity costing the health service in England £5.1bn in 2014/15<sup>3</sup>. Obesity causes further costs to society through premature mortality, increased sickness absence, and additional benefit payments.
3. Evidence suggests that basic environmental factors, such as the location of products within stores, can affect sales<sup>4</sup> <sup>5</sup>. Government intervention is necessary to ensure businesses establish shopping environments that do not encourage excess calorie consumption.

## Policy Objective

4. Ending the placement of HFSS food and drink at store entrances, checkouts and on the end-of-aisles is intended to reduce impulse purchases of these products and encourage stores to provide healthier options in key selling locations.

## Policy Options

5. This impact assessment includes modelling of a range of options restricting the placement of HFSS products in prominent locations. Through this modelling we established the best option to pursue and seek stakeholder's views on. As a result, we are only consulting on Option 3 in this document. The options analysed in this document are:
  - Option 1 – Do nothing
  - Option 2 – End placement of HFSS food and drink items at store entrances, checkouts and end-of-aisles (including gondola ends) in retailers and out-of-home food outlets.
  - Option 3 – End placement of HFSS foods included in Public Health England's sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL) at store entrances, checkouts and end-of-aisles (including gondola ends) in retailers and out-of-home food outlets.
6. For the purposes of this impact assessment, Option 3 is presented as the preferred option, but it's important to note that the final policy proposal is subject to the feedback received during this consultation. Furthermore, as part of the consultation, we are open to alternative suggestions from stakeholders on the best way to implement this policy. It is helpful to point out that Option 3 is better targeted at the products that contribute the most sugar and calories to children's diets. Furthermore, ensuring the policy is as targeted as possible minimises the costs to business and the distortionary impact of regulation on the market.

## Costs and benefits of options

7. The benefits from restricting the placement of HFSS products are expected to be a reduction in obesity prevalence and obesity related morbidity and mortality.
8. The main categories of costs are transition costs associated with the reorganisation of stores and lost profits to industry due to reduced sales of HFSS products.

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<sup>1</sup> NHS Digital. (2017). National Child Measurement Programme 2016/17

<sup>2</sup> Guh et al. (2009) The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis, BMC Public Health

<sup>3</sup> 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. It has been assumed England costs account for around 85% of UK costs.

<sup>4</sup> 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)

<sup>5</sup> 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)

9. The figures presented below are taken from our central estimates, which assume that compensating behaviour by consumers and industry means that 40% of the calories removed from people's diets are replaced. High and low, estimates based on different levels of compensation are included in the cost and benefit of options section in the main text.

### Option 2

10. Our central estimates of the total England only transition costs to retailers and out-of-home food businesses are around £30m and £5m respectively.
11. Businesses organise stores to maximise profits, therefore any restriction on their ability to do this is likely to reduce profits. Our central estimates of the England only cost suggest that retailers and out-of-home food outlets will see their profits reduce by around £49m and £26m per year respectively.
12. It is estimated that manufacturers of HFSS food will see their profits fall by around £37m per year, with this being wholly offset by an increase in profits for manufacturers of other goods.
13. The health benefits from Option 2 over the 25-year assessment period are estimated to be around 98,000 Quality Adjusted Life Years, or a present value of £4.5bn when monetised. There would be additional health benefits to the population from reinvesting cost savings back into the NHS; these are estimated to be worth around £3bn. Social care savings would amount to £0.6bn and reduced premature mortality would be expected to deliver an additional £0.1bn of economic output.

### Option 3

14. Under Option 3, our central estimates of the total England only transition costs to retailers and out-of-home food businesses are around £30m and £5m, respectively.
15. Furthermore, our central estimates suggest that retailers and out-of-home food outlets in England will see their profits reduce by £41m and £26m per year respectively.
16. We estimate that manufacturers of HFSS food will see their profits fall by around £22m per year, again with this being wholly offset by higher profits for other food manufacturers.
17. The health benefits from Option 3 are estimated to be around 54,000 Quality Adjusted Life Years, or a present value of £2.5bn when monetised. There would be additional health benefits to the population from reinvesting cost savings back into the NHS, these are estimated to be worth around £1.7bn. Social care savings would amount to £0.3bn and reduced premature mortality would be expected to deliver an additional £0.1bn of economic output.

### Critical Value Analysis

18. It is possible that wider factors, such as changes to consumer behaviour, could offset 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.
19. Any offset would depend on additional consumption, and thus further profits to industry. As a result, most of the costs and benefits of the policy tend to vary together. Considering this suggests that around 99% of the benefits of the policy would need to be offset for it not to be deemed socially beneficial.

### Net present value summary

20. The table below outlines the expected impacts of the different policy options over the 25-year assessment period. Option 1 represents the do-nothing scenario against which the other options are compared. As such, the costs and benefits of this option are zero by definition.

Summary of the central estimates for the policy options

Option	Total cost	Total benefit	Net present value
1	0	0	0
2	£1,330m	£8,250m	£6,920m
3	£1,195m	£4,535m	£3,340m



## Problem under consideration

1. Childhood obesity is one of the biggest health problems this country faces. Nearly a quarter of children in England are obese or overweight by the time they start primary school aged five, and this rises to one third by the time they leave aged 11<sup>1</sup>.
2. Obesity is a major determinant of ill health in the UK, causing heart disease, stroke, type II diabetes and cancer<sup>6</sup>. Obese females are over ten times more likely to develop type II diabetes than their healthy weight counterparts are, with obese males over five times more likely<sup>7</sup>. This imposes a substantial burden on the NHS, with overweight and obesity costing the English health system £5.1bn in 2014/15<sup>8</sup>. Obesity causes further costs to society and government through premature mortality, increased sickness absence, and additional benefit payments.
3. In 2016, 61% of adults in England were classified as overweight or obese, with 26% being obese. Amongst children, the equivalent figures were 28% and 16%, respectively<sup>9</sup>. Without action, the burdens of obesity and its related conditions are expected to grow substantially over time. Projections suggest that the proportion of the UK adult population who are obese will increase significantly over the coming decades<sup>10 11</sup>.
4. Childhood obesity is a complex problem with many drivers, including our behaviour, environment, genetics and culture. Therefore, the government is committed to pursuing a wide set of actions to target obesity. Despite the complexity of its drivers, at its root, obesity is caused by consistently consuming more calories than are used to maintain our bodies and through activity. It is estimated that on average, compared with those of ideal body weights, overweight and obese children consume between 140 and 500 excess calories per day for boys and between 160 and 290 for girls, depending of their age<sup>12</sup>. Taking action to help reduce this excess calorie consumption will decrease obesity prevalence and obesity-related ill health.

## Rationale for intervention

5. 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 excess calorie consumption are passed on to society and are not just experienced by the individual. In economic terms, this is referred to as a negative externality.
6. An individual is likely to make decisions based only 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.
7. This negative externality gives a rationale for intervention, but it is not immediately clear what form this intervention should take. Imposition of a tax equal to the cost currently faced by society would reduce calorie consumption to the socially optimal level. However, the complexity of the relationship between food and drink purchases and obesity makes the correct implementation of such a tax difficult. A certain level of food and drink consumption is entirely necessary, so the majority of purchases will have no relationship to excess weight gain. Therefore, a general tax on food and drink purchases, whether on price or calorie content, would be unable to target only excess consumption.

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<sup>6</sup> Guh et al. (2009) The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis, BMC Public Health

<sup>7</sup> Ibid.

<sup>8</sup> 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. It has been assumed England costs account for around 85% of UK costs.

<sup>9</sup> Health Survey for England 2016, NHS Digital

<sup>10</sup> Government Office for Science (2007) Tackling Obesities: Future Choices – Project report, <https://www.gov.uk/government/publications/reducing-obesity-future-choices> (accessed 29/05/2018)

<sup>11</sup> Pineda E, Sanchez-Romero LM, Brown M, Jaccard A, Jewell J, Galea G, Webber L, Breda J. Forecasting Future Trends in Obesity across Europe: The Value of Improving Surveillance. Obesity facts. 2018;11(5):360-71.

<sup>12</sup> Public Health England (2018) Calorie reduction: the scope and ambition for action, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685359/Calorie\\_reduction\\_The\\_scope\\_and\\_a\\_m\\_bition\\_for\\_action.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685359/Calorie_reduction_The_scope_and_a_m_bition_for_action.pdf) (Accessed 15/06/2018)

8. Furthermore, if individuals fail to consider the outcomes of their actions, they may make decisions that result in weight gain and ill health. There is evidence to suggest that not only may this be the case for some people<sup>13</sup>, but that many people's attitudes when considering the future are irrational<sup>14</sup>. While it is not clear how a policy could easily correct for this, there are certain behavioural factors that are open to intervention.
9. Many different cues can affect food and drink purchases. It is clear from academic evidence that marketing and promotions in stores are extensive, deep and effective at influencing preferences and purchases<sup>15</sup>. The shopping environment plays an important part of the way products are marketed to us, with factors ranging from in-store background music to the ordering of products on shelves being shown to affect sales<sup>16</sup>. A high quality observational study in England, for example, 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%<sup>17</sup>.
10. Increasing the distance between food and people has been found to decrease the likelihood that they select and consume it<sup>18</sup>. This effect has been observed across a wide variety of different foods including confectionary<sup>19</sup>,<sup>20</sup>, savoury snacks, fruit and vegetables<sup>21</sup>, and nutrient- and energy-dense food<sup>22</sup>.
11. It seems that the intrinsic value of products is not increased by being placed in prominent locations; rather it is thought that their consumption is stimulated via ease of access or triggered impulsive behaviour. As a result, there are valid grounds for restricting the types of products placed in these locations if the current system results in the excess consumption.
12. Acting to reduce the promotion of HFSS food and drinks in retailers and out-of-home food outlets has previously been suggested by Public Health England as a way of reducing excessive sugar consumption<sup>23</sup>. In 2015, Public Health England conducted a review of the evidence 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 suggested that reducing and rebalancing promotions towards healthier products would improve the balance of people's diets.
13. The importance of where products are located within stores is recognised well by manufacturers, with vendors willing to pay retailers to ensure products are placed in desirable locations<sup>24</sup>. Research has shown that 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<sup>25</sup>.
14. *“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*

<sup>13</sup> Komlos et al. (2004) Obesity and the rate of time preference: is there a connection? *Journal of biosocial science*, Mar;36(2):209-19.

<sup>14</sup> Thaler RH, Sunstein CR (2003) Libertarian paternalism. *The American Economic Review*, May 1;93(2):175-9.

<sup>15</sup> 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](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)

<sup>16</sup> 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)

<sup>17</sup> 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)

<sup>18</sup> 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> (accessed 23/10/2018)

<sup>19</sup> 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> (accessed 23/10/2018)

<sup>20</sup> 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> (accessed 23/10/2018)

<sup>21</sup> 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> (accessed 23/10/2018)

<sup>22</sup> 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> (accessed 23/10/2018)

<sup>23</sup> 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](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)

<sup>24</sup> 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](https://www.foodstandards.gov.scot/downloads/FSS-Final_Report_June_1st_2017.pdf) (accessed 23/10/2018)

<sup>25</sup> Wedel M, Pieters R. (2012) Visual marketing: from attention to action. Psychology Press (accessed 23/10/2018)

*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.*<sup>26</sup>

15. As previously noted, it is difficult to associate the purchase of a single item with excess calorie consumption. Individual products are usually not bought in an isolated decision-making process but as part of an overall attempt to satisfy a person's dietary requirements. However, certain goods, such as confectionary, are associated with both a greater propensity to create impulse purchases<sup>27 28</sup> and act as a greater contributor to weight gain<sup>29 30</sup>.
16. Although some HFSS products will be purchased as part of a balanced diet, they nevertheless represent the most focused group of products to target to reduce excess calorie consumption while minimising the impact on the wider market.
17. Restricting the locations in which certain goods can be sold will influence impulse purchasing of those goods while not removing them from sale altogether. 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.
18. An additional benefit of restricting the placement of products is that it generally influences the marginal consumer, but not the average consumer. A tax imposed on HFSS food and drinks would impose a cost on all consumers of these goods, whether or not they are consumed as part of an overall healthy diet. This restriction will only affect those consumers for whom the location of a product is decisive in determining whether a purchase takes place (for example impulse purchases).

## Impact on children

19. Children are uniquely vulnerable to the techniques used by marketers to promote sales<sup>31</sup>, a fact that marketers have responded to in the past by significantly increasing advertising budgets for products aimed at children<sup>32</sup>. These effects can then be transmitted into the purchasing behaviours of parents through 'pester power'<sup>33</sup>.
20. The results of numerous academic studies provide strong evidence that food promotion does encourage children to pester their parents to purchase specific foods, particularly HFSS products<sup>34</sup>. A study into Australian parent's 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<sup>35</sup>. 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<sup>36</sup>.

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<sup>26</sup> 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.

<sup>27</sup> 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)

<sup>28</sup> Muruganatham 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)

<sup>29</sup> 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)

<sup>30</sup> 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)

<sup>31</sup> Carter et al. (2011) Children's understanding of the selling versus persuasive intent of junk food advertising: Implications for regulation. *Social Science & Medicine*. Mar 31;72(6):962-8, <https://www.ncbi.nlm.nih.gov/pubmed/21349621> (accessed 23/10/2018)

<sup>32</sup> 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*. Jan;615(1):133-55, <http://journals.sagepub.com/doi/pdf/10.1177/0002716207308487> (accessed 23/10/2018)

<sup>33</sup> Marshall et al. (2007) Families, food, and pester power: beyond the blame game? *Journal of Consumer Behaviour*, Jul 1;6(4):164-81, <https://onlinelibrary.wiley.com/doi/abs/10.1002/cb.217> (accessed 23/10/2018)

<sup>34</sup> 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)

<sup>35</sup> 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)

<sup>36</sup> 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)

21. As mentioned previously, in the UK 16% of children aged 2-15 are considered obese. Furthermore, the burden of childhood obesity is being felt the hardest in more deprived areas with children growing up in low income households more than twice as likely to be obese than those in higher income households<sup>37</sup>. These rates are unacceptably high. Obesity in childhood directly affects physical and mental health, and is associated with an increased risk of obesity in adulthood<sup>38</sup> when the majority of costs due to obesity occur. Although food and drink habits are not perfectly stable over the life course, there is considerable scope for influencing lifetime habits by intervening in children<sup>39</sup>. Adjusting the consumption patterns of children therefore offers substantial benefits in the long term.

## Policy objective, context and options

### Policy objective

22. Restricting the in-store locations in which HFSS food and drink may be located is intended to:

- Reduce impulse purchases of products likely to lead to excess weight gain while minimising the distortionary effect on purchases of foods that do not contribute to obesity;
- Encourage stores to provide healthier options in key selling locations, thus providing a double win for dietary improvements;
- Create a level playing field in which stores that have voluntarily made progress are no longer penalised;
- Assist the wider obesity strategy to reduce circumstances currently contributing to the obesogenic environment.

### Policy context

23. This proposed restriction on the within-store positioning of HFSS products is part of a wider set of policies included in the Government's Childhood Obesity: A Plan for action – Chapter 2, 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 between children from the most and least deprived areas<sup>40</sup>. The proposals outlined in Chapter 2 include consulting on mandatory calorie labelling in the out-of-home sector, ending the sales of energy drinks to children, encouraging further action in local areas and further restrictions on the marketing of HFSS products to children. 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.

24. In August 2016, the Government launched the first part of its plan for action<sup>41</sup>. This comprehensive plan aims to help children and families make healthier choices and be more active. Key measures in the plan included a Soft Drinks Industry Levy, a sugar reduction and wider reformulation 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.

25. The Soft Drinks Industry Levy has been designed to incentivise reformulation and is charged 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 per 100 millilitres. The Levy came into force in April 2018 and has already

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<sup>37</sup> NHS Digital (2017) National Child Measurement Programme 2016/17, <https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2016-17-school-year>

<sup>38</sup> Singh et al (2008) Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity reviews*, Sep 1;9(5):474-88, <https://www.ncbi.nlm.nih.gov/pubmed/18331423> (accessed 23/10/2018)

<sup>39</sup> Hursti UK (1999) Factors influencing children's food choice. *Annals of medicine*, Jan 1;31(sup1):26-32.

<sup>40</sup> DHSC (2018) Childhood obesity: a plan for action, chapter 2 <https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2> (accessed 29/06/2018)

<sup>41</sup> DHSC (2016) Childhood obesity: a plan for action, [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/546588/Childhood\\_obesity\\_2016\\_2\\_acc.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/546588/Childhood_obesity_2016_2_acc.pdf) (accessed 29/06/2018)

resulted in over 50% of manufacturers reducing the sugar content of drinks, equivalent to 45 million kg of sugar every year<sup>42</sup>.

26. As part of the wider reformulation programme, in August 2017 the Government announced an extensive calorie reduction programme. This programme aims to remove excess calories from the processed foods that 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 (up to the age of 18 years) 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. The products covered by the programme include ready meals, pizzas, meat products, savoury snacks, sauces and dressings, prepared sandwiches and other "on the go" foods.<sup>43</sup>
27. A range of policies are included in the plan because the *"causes of obesity are embedded in an extremely complex biological system, set within an equally complex societal framework"*<sup>44</sup> to which there is no single, simple solution. The size of the problem has led to the normalisation of and the inability of many people to judge their own weight accurately. A survey of obese adults in Great Britain found that only 58.6% of women with a BMI of 35+ identified themselves as 'very overweight' or 'obese', with just 42.4% of equivalent men doing so<sup>45</sup>.
28. Although people have difficulty identifying obesity as an issue at a personal level, it is clear 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.<sup>46</sup>
29. There has been significant engagement and work with industry to enable people to adopt healthier diets over recent years. As part of the Public Health Responsibility Deal, for example, the food industry was challenged to take voluntary action on food promotions, including restricting the placement of confectionary at checkouts and increasing the promotion of healthier options.
30. Voluntary efforts by industry were shown to work best when a consistent approach was adopted across the sector. However, many initiatives on promotions were short lived and only taken forward by a small number of organisations. Furthermore, other voluntary attempts to help control the placement of other goods in prominent locations have not succeeded. A Responsibility Deal pledge on the removal of alcohol from store entrances was initially taken up by one of the big four retailers, but this was partially reversed once no other stores adopted the move<sup>47</sup>.
31. When organisations and trade bodies were approached to take more consistent and concerted action, they advised that a voluntary approach on promotions would not be feasible, and that regulation to ensure a level playing field would be required. This experience has shown that these initiatives require comprehensive participation and some are too commercially sensitive or complex for voluntary initiatives to be effective.
32. 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 1 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.

Table 1: Major retailer approaches to placement of HFSS food and drinks at checkouts  
(As of June 2018)

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<sup>42</sup> HM Treasury (2018) Soft Drinks Industry Levy comes into effect, available at <https://www.gov.uk/government/news/soft-drinks-industry-levy-comes-into-effect> (accessed 29/06/2018)

<sup>43</sup> 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 29/06/2018)

<sup>44</sup> 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)

<sup>45</sup> 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*, Nov 1;4(11):e00556, <https://bmjopen.bmj.com/content/4/11/e005561> (accessed 29/06/2018)

<sup>46</sup> DHSC (2015) 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> (accessed 28/06/2018)

<sup>47</sup> The Grocer (2013) Asda in foyer booze u-turn as 'rivals fail to follow suit', <http://www.thegrocer.co.uk/channels/supermarkets/asda-in-foyer-booze-u-turn-as-rivals-fail-to-follow-suit/349224.article> (accessed 29/06/2018)

Retailer	Actions Taken
The Co-operative <sup>48</sup>	Has banned the display of high fat, sugar, or salt products from checkout stands and kiosks.
Sainsbury's <sup>48</sup>	Has a policy of no sweets or chocolates at checkouts in supermarkets. This does not apply to smaller convenience stores.
Tesco <sup>49</sup>	Its policy is not to place any confectionary at checkouts in all its stores.
ASDA <sup>48</sup>	Limits the display of confectionary treats to one in three checkouts.
Iceland <sup>48</sup>	Its policy is to allow a confectionary stand at only one checkout in each of its stores.
Morrisons <sup>50</sup>	Does not allow sweets at its main bank of checkouts but continues to place them around self-service tills.
Aldi <sup>51</sup>	Has a policy not to place confectionary at checkouts.
Lidl <sup>52</sup>	Has a policy not to place confectionary at checkouts.
Waitrose <sup>53</sup>	Has a policy not to place confectionary at checkouts.

33. Some retailers have voluntarily taken action on discounting and price promotions. For example, Sainsbury's have moved away from multibuy offers. They are also committed to using their store layouts to promote healthier diets.

- **Is our assessment of the major supermarkets approach to placing HFSS food and drinks at checkouts accurate? (Consultation question 43)**
- **Is there evidence to suggest that smaller retailers are voluntarily restricting the placement of HFSS food and drink in their stores? (Consultation question 44)**

## Policy Options

34. This impact assessment includes modelling of a range of regulatory options restricting the placement of HFSS products in prominent in store locations. Through this modelling we established the best option to pursue and seek stakeholder's views on. As a result, we are only consulting on Option 3 in this document. Non-regulatory options have been investigated but are not considered sufficient to achieve the policy objectives, as some retailers have stated that they will continue to offer HFSS products in key selling locations, and previous voluntary attempts have not succeeded. The proposed options are therefore:

- Option 1 – Do nothing

<sup>48</sup> 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)

<sup>49</sup> Tesco (2015) Sweets and chocolates removed from all checkouts from today, <https://www.tescopl.com/news/news-releases/2015/sweets-and-chocolates-removed-from-all-checkouts-from-today/> (accessed 23/10/2018)

<sup>50</sup> 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)

<sup>51</sup> Aldi (ND) Healthier checkouts, <https://www.aldi.co.uk/healthier-checkouts> (accessed 23/10/2018)

<sup>52</sup> Lidl (ND) Healthy eating, <https://www.lidl.co.uk/en/Healthy-eating-11187.htm> (accessed 23/10/2018)

<sup>53</sup> 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)









Table 3: UK Grocery sales, 2017

	2017 sales, £bn	%
Hypermarkets	16.2	9%
Supermarkets	86	47%
Convenience stores	40	22%
Discounters	20.1	11%
Online	10.4	6%
Other retailers	11.8	6%
<b>Total</b>	<b>184.5</b>	<b>100%</b>

52. 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 34,609 stores involved in grocery retail<sup>60</sup>. The distribution of stores, by store type, is displayed in Table 4.

Table 4: UK grocery retailers – number of stores by type, 2017

Convenience	13,522
Discount	4,294
Drugstores	6,501
Hypermarkets	368
Non-Grocery	1,907
Online - Grocery Retail	6
Specialist Stores & others	935
Supermarkets	4,976
Wholesale & Foodservice	2,100
<b>Total</b>	<b>34,609</b>

53. 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). Table 5 below presents the numbers of firms for those SIC codes<sup>61</sup> thought most likely to fall in scope.

Table 5: Firms (in-scope) involved in consumer food retail in England<sup>62</sup>

SIC code and description		Enterprises	Micro Enterprises	Small, Medium and Large Enterprises	Local units	Local Units Excluding Micro Enterprises
4730	Retail sale of automotive fuel in specialised stores	2,095	1,455	640	3,465	2,010
4762	Retail sale of newspapers and stationery in specialised stores	2,905	2,655	250	4,815	2,160
4719	Other retail sale in non-specialised stores	5,825	5,325	525	11,665	6,340
4729	Other retail sale of food in specialised stores	3,925	3,425	500	4,835	1,410

<sup>60</sup> IGD Data Centre

<sup>61</sup> Standard Industrial Classification (SIC) is a system to classify industries by digit codes

<sup>62</sup> Data from the Inter-Departmental Business Register can be accessed using the NOMIS service provided by the Office for National Statistics: <https://www.nomisweb.co.uk/query/construct/summary.asp?menuopt=200&subcomp=>

54. We would expect most retailers under codes 4730 (petrol stations) and 4762 (newsagents) to be impacted by this proposal. It is possible that several firms categorised under code 4719 would also be affected. Some specialist food retailers (4729) which do not exclusively sell HFSS products would also fall in scope.

55. The calculations in this Impact Assessment assume that the IGD data fully captures all outlets belonging to large chain retailers. To account for the outlets belonging to micro businesses in the IDBR data, we assume that each micro business only has one outlet. As a result, we assume there are approximately 1,900 predominately non-food businesses in England that would be affected by these regulations and around 11,900 predominately non-food outlets. We aim to revise these estimates further during the consultation.

## Out-of-Home food market

56. The size and composition of the out-of-home food market is more difficult to establish. This is partly due to the high level of business turnover in the sector, and due to different data sources often covering different sections of the eating out market.

57. The Inter-Departmental Business Register (IDBR) contains detailed information on the number of different enterprises and the local units in the eating out market. It also provides breakdowns by the number of employees and turnover information.

58. Table 6 below presents the number of enterprises and local units for the SIC codes thought most likely to fall in scope

Table 6: Firms involved in the out-of-home food market in England<sup>63</sup>

SIC Code and description		Enterprises	Local units
56101	Licensed restaurants	23,635	28,780
56102	Unlicensed restaurants and cafes	17,435	22,855
56103	Take away food shops and mobile food stands	29,465	31,535
56210	Event catering activities	7,620	12,675
56290	Other food service activities	1,870	9,180
56301	Licensed clubs	6,130	6,420
56302	Public houses and bars	25,790	33,045
55100	Hotels and similar accommodation	7,135	9,765
<b>Total</b>		<b>119,070</b>	<b>154,255</b>

59. Most businesses falling under SIC codes 56102 (cafes and coffee shops), 56103 (fast food outlets), 56290 (work canteens) and 56302 (pubs and bars) are expected to display HFSS items at checkouts and therefore be affected by these regulations. The clear majority of licensed restaurants, clubs, event catering activities and hotels and similar accommodation will not be affected by this policy. As a result, these businesses are not considered in this Impact Assessment.

60. Categorising businesses by their number of employees allows us to analyse the structure of the in scope out-of-home market. In contrast to food retail, the out-of-home sector is characterised by large numbers of micro businesses. Figures from the IDBR show that approximately 81% of out-of-home food businesses who would be impacted by these restrictions are micro (Table 7).

Table 7: Number of business (enterprises) in England by SIC code and size

<sup>63</sup> Data from the Inter-Departmental Business Register can be accessed using the NOMIS service provided by the Office for National Statistics: <https://www.nomisweb.co.uk/query/construct/summary.asp?menuopt=200&subcomp=>

SIC Code and description		Micro (<10)	Small (10-49)	Medium (50-249)	Large (250+)	Total	% micro
56102	Unlicensed restaurants and cafes	14,315	2,805	195	120	17,435	82%
56103	Take away food shops and mobile food stands	27,095	2,140	190	35	29,460	92%
56290	Other food service activities	1,570	235	40	25	1,870	84%
56302	Public houses and bars	17,525	7,935	295	35	25,790	68%
<b>Totals</b>		<b>60,505</b>	<b>13,115</b>	<b>7200</b>	<b>215</b>	<b>74,560</b>	<b>81%</b>

61. In terms of sales, micro businesses comprise 23% of turnover in the 'Food and beverage service activities' sector in the UK<sup>64</sup>.

Table 8: Turnover in the 'Food and beverage service' sector in the UK by business size

	Micro (<10)	Small (10-49)	Medium (50-249)	Large (250+)	<b>Total</b>
Turnover	16,940	15,180	6,978	33,236	<b>72,334</b>
% of 'Food and beverage service' sector turnover	23%	21%	10%	46%	<b>100%</b>

62. 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 out-of-home food 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 four broad categories:

- Coffee specialists (e.g. Café Nero and Starbucks)
- Quick service restaurants (e.g. McDonalds, Burger King and KFC)
- Food to go specialists (e.g. Greggs, Subway and Pret a Manger)
- Convenience and supermarkets (e.g. Tesco, Boots and Sainsbury's)

63. According to estimates produced by IGD the food to go market was estimated to be worth £17.4bn in 2017, how this is broken down between the different categories is displayed in Table 9 below.

Table 9: Breakdown of the food to go sector<sup>65</sup>

Category	Coffee specialist	Quick service restaurants	Food to go specialists	Convenience and supermarkets	<b>Total</b>
Value (£bn)	£2.9bn	£5.4bn	£5.1bn	£4bn	<b>£17.4bn</b>

## Checkout, end-of-aisle, and store entrance sales

64. No data is available that disaggregate sales of HFSS products, or sales of all goods, by their placement within retail stores or out-of-home food outlets. However, studies of individual supermarkets provide some indication as to the likely contribution of checkouts and ends-of-aisles to overall sales.

<sup>64</sup> Department for Business, Energy and Industrial Strategy (2017) Business population estimates, <https://www.gov.uk/government/statistics/business-population-estimates-2017> (accessed 28/06/2018)

<sup>65</sup> IGD (2017) Food-to-go on the move to £23.5bn by 2022, IGD forecasts, <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> (accessed 29/06/2018)

65. 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<sup>66</sup>. 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<sup>67</sup> and the fact that tobacco products are available at checkouts, and it seems likely that German consumers will behave differently to those in the UK. Given a lack of UK specific information on this topic, we assume that 7.1% of UK grocery sales also occur at the checkout.
66. It is not clear to what extent the checkout area accounts for sales in smaller, convenience type stores. The EHI Retail Institute study did however 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. While the central estimates presented below assume a 7.1% share of sales for all stores, the sensitivity analysis examines possible higher levels for stores.
67. It is 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. 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, confectionary was the single biggest contributor to checkout sales once tobacco and cigarettes are excluded.
68. DHSC analysis of 2,000 food and drink products in Kantar Worldpanel data suggests that around 49.6% of GB food sales would be considered HFSS by the 2004/05 Nutrient Profile Model. We would therefore expect at least 49.6% of checkout sales for stores who have not pledged to implement healthy checkouts to be from HFSS products.
69. Similarly, limited amounts of data are available on the contribution of ends-of-aisles to total sales. It has previously been estimated that 30% of supermarket sales are from products placed in these locations<sup>68</sup>. To check the robustness of this estimate, we calculate a further possible share below.
70. 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%<sup>5</sup>. 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% of sales (excluding sales from other areas of the store, such as checkouts and store entrances).
71. 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%.
72. Because this approach results in figures substantially less than 30%, we revise our estimate of the share of end-of-aisle sales to 20%.
73. We are not aware of any data on the composition of end-of-aisle displays with respect to the proportion of HFSS products being sold. Likewise, we are not aware of any retailers having committed to removing HFSS products from the ends of aisles. As such, we assume that HFSS products currently account for 49.6% of end-of-aisle sales, in line with their overall market share.
74. Furthermore, 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. It has therefore not been possible to assess this aspect of the policy. We would welcome any evidence covering store entrances as part of the consultation.

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<sup>66</sup> 'Die umsatzstärksten Quadratmeter im Markt: Bedeutung der Kassenzone im LEH nimmt zu', Wrigleys Press Release, 2013

<sup>67</sup> 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)

<sup>68</sup> Sales impact of displaying alcoholic and non-alcoholic beverages in end-of-aisle locations: An observational study, Nakamura et al. Social Science & Medicine 2014.

- Is there any additional evidence that would improve our estimates of the use of location promotions within the domestic retail or OOH markets, the sales uplift they provide and proportion of sales they represent? (Consultation question 45)
- Are you aware of any other data sources available which would improve our estimates of the number of food retailer and out-of-home food outlets? (Consultation question 38)
- Are you aware of any comprehensive data sources on sales in the out-of-home food market and the nutritional content of the products sold? (Consultation question 37)

## Costs and benefits of options

75. The benefits of restricting the placement of HFSS products are expected to accrue through:

- A reduction in excess purchases and calorie consumption, with a consequent reduction in obesity prevalence;
- A reduction in obesity-related morbidity and mortality, resulting in reduced costs for the NHS and an increase in economic output;
- A potential increase in consumption of healthier items, leading to further health benefits.

76. The main categories of costs to be considered are:

- Transition costs associated with the reorganisation of stores to replace HFSS items located in restricted locations;
- Loss in profit from reduced sales of HFSS products;
- Loss in profit to manufacturers of HFSS food and drink items due to reduced sales.

77. The magnitude of the costs and benefits could be significantly influenced by wider factors. It is possible, for example, that consumers might adjust their consumption or purchasing behaviour in response to consuming fewer calories. This type of behaviour change is a major source of uncertainty in our analysis and as such could have a significant impact on the estimated net present value. As a result, we first estimate the costs and benefits of each option based on no compensation and then adjust these figures to create high, central and low scenarios based on different levels of compensation.

78. The net present values of the options are assessed over a period of 25 years. This is much longer than the typical 10-year assessment period used in impact assessments. Ill health related to being overweight or obese tends to develop later in life. Therefore, a longer period than usual has been chosen to ensure the benefits of these regulations are captured in our analysis.

### Option 1 – Do-nothing

79. Option 1 is the do-nothing scenario against which all other options are compared. As such, the costs and benefits are zero by definition.

### Option 2 – Restrict placement of HFSS products at store entrances, checkouts and ends of aisles

#### Costs to retailers

##### Transition costs

80. Transition costs are expected to fall within three categories:

- Familiarisation;
- Product assessment;
- Store planning and adjustment.

81. 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. We welcome any comments on whether our estimated costs to businesses are reasonable and hope to improve these assumptions during the consultation.

### *Familiarisation*

82. We assume that on average, it would take one manager one hour to read and become familiar with the regulations. It is likely this will vary from one business to another. It might be expected, for example, that larger businesses will require more time as different managers will need to be briefed. We would welcome any further evidence on this as part of the consultation.

83. The median hourly wage rate for a manager or director in retail and wholesale is £12.40<sup>69</sup>. This is uprated by 30% to £16.12 to account for non-wage labour costs such as national insurance and pensions<sup>70</sup>. The wage rate will also 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.

84. As mentioned earlier we would expect all the stores identified in the IGD data to be part of a wider chain. To calculate the familiarisation costs to these stores we have used the number of outlets as opposed to the number of businesses, with it being likely that store layouts are dictated by local conditions and facilities.

85. As outlined above, IGD data suggests there are 34,609 stores belonging to chains in the UK and we estimate there are around a further 11,900 non-food stores in England which would be affected by these regulations. To estimate an England only cost we adjust the IGD figures using England's share of the UK population. This suggests there are approximately 29,100 chain grocery stores in England. Together this implies that managers of around 41,000 stores would need to familiarise themselves with the regulations.

86. Our central estimate using the uprated median average wage indicates that familiarisation cost to business will be £662k. Sensitivity analysis using the maximum and minimum wage rate percentiles suggests this cost could range between £443k and £1.3m.

### *Product assessment*

87. To comply with the regulations retailers will need to assess whether each of the products they stock is considered high in fat, salt, and sugar (HFSS).

88. To assist retailers and minimise the burden of this assessment, DHSC will provide guidance and a methodology that will help businesses determine which products can or cannot be placed in the prominent store locations covered by these restrictions.

89. We assume that the assessment of products will occur at enterprise 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.

90. If individual assessment is required, the cost will depend on the number of products stocked by each store. This ranges from around 2,000 Stock Keeping Units in discounters like Aldi and Lidl, through to 40,000 for Tesco<sup>71</sup>. These refer to all products, including non-food and drink items. Comparing the IGD figure for the value of the UK grocery market with the Kantar food specific figure discussed previously, we assume that around 50% of these products to be food and drink items. The true number of products

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<sup>69</sup> Annual Survey of Hours and Earnings, Provisional 2017 (provisional) data  
<https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010asheta/ble14/2017provisional/table142017provisional.zip> (Table 14.6a) (accessed 20/07/2018).

<sup>70</sup> 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-government> (accessed 29/06/2018)

<sup>71</sup> USDA (2016) UK Supermarket Chain Profiles 2016,  
[https://gain.fas.usda.gov/Recent%20GAIN%20Publications/UK%20Supermarket%20Chain%20Profiles%202016\\_London\\_United%20Kingdom\\_12-13-2016.pdf](https://gain.fas.usda.gov/Recent%20GAIN%20Publications/UK%20Supermarket%20Chain%20Profiles%202016_London_United%20Kingdom_12-13-2016.pdf) (accessed 29/12/2017)

requiring assessment will be somewhat less than this, as a single product may have multiple Stock Keeping Units (for example when a product is available in various pack sizes).

91. For the 1,900 predominately non-food businesses, such as newsagents and petrol stations, we do not have information on the number of food products stocked. We would expect the number of products stocked by these stores to be considerably smaller than a supermarket. To provide illustrative estimates, we assume these stores stock around 250 different food and drink products.
92. For the purposes of this Impact Assessment, we assume that it would take 2 minutes per product to assess and record the outcome. This would imply 500 minutes, or around 8.3 hours of staff time for each of the non-food businesses. This assumption is used to generate an illustrative estimate of the costs, with it being recognised that this may differ from the true time required. We consider the possibility of this assessment requiring more time in the sensitivity analysis.
93. The median wage of stock control clerks and assistants in 2017 was £10.09<sup>72</sup>, giving an hourly cost to firms of £13.12 once 30% on costs are included. This implies a cost of approximately £109, or a total cost of £209k across the 1,900 predominately non-food retailers. Further costs would then be incurred from sharing this information with individual stores. Assuming this takes 1 hour of time for a 'Manager or director in retail and wholesale' at £16.12 (including 30% on costs) per hour for each of the 11,900 outlets in England, distribution of this information would cost a further £192k.
94. For the larger chain retailers, we have used the IGD data to calculate the product assessment costs. For businesses operating at least one supermarket, we assume their inventories contain an average of 16,500 food and drink products, except Tesco for whom 25,000 products are used. This results in 38 retailers needing to assess 1,000 products each, 16 assessing 16,500, and 1 assessing 25,000 products.
95. Across the 55 chain-retailers<sup>60</sup> identified in the IGD data, this means assessment of 327,000 products is required – taking approximately 10,900 hours and costing £143k. Further costs would then be incurred from sharing this information with individual stores. Assuming this takes 1 hour of time for a 'Manager or director in retail and wholesale' at £16.12 (including 30% on costs) for each of the 29,100 chain stores in England, distribution of this information would cost a further £470k.
96. The total cost of assessing products is therefore estimated to be around £1m for all retailers in England. There may also be ongoing costs as new products are introduced. Due to a lack of data and the small nature of those costs, they remain unquantified.

#### *Store planning & adjustment*

97. 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.
98. Stores often use the ends-of-aisles 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 Impact Assessment.
99. Once these new layouts have been planned, it will be necessary to reallocate goods. The illustrative estimates below are based on assumptions of the amount of time this will take.
100. For all stores, we assume that planning would require the involvement of at least one retail manager and one stock control clerk. For larger stores, it is likely that multiple people would need to be involved. Furthermore, it is possible that general design principles would be created centrally within chain retailers, simplifying the process for their individual stores.
101. For our estimated 11,900 predominately non-food stores, we assume planning would take a full 8-hour day for a stock control clerk and retail manager. This results in a per-store cost of £233.90, or a total cost of £2.8m.
102. To implement the new layout, we assume 4 hours of 'sales assistant and retail cashier' time is required, at £9.17 per hour including on costs. This results in a cost of £36.66 per store, or £437k in total.

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<sup>72</sup> Annual Survey of Hours and Earnings, Provisional 2017 (provisional) data  
<https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashtable14/2017provisional/table142017provisional.zip> (Table 14.6a) (accessed 20/07/2018)



103. We assume the same costs apply to discounters, convenience, drugstores, non-grocery, specialist, and wholesale stores as defined in the IGD dataset. This results in a planning cost for these 24,600 stores of £5.8m, and implementation costs of £900k.

104. IGD define convenience stores as having an area of up to 3,000 square feet, small supermarkets of having an area between 3 and 25 thousand square feet, superstores 25 to 60 thousand feet and hypermarkets greater than 60 thousand feet. If we assume the average size of convenience stores to be 2,000 square feet, and the average of supermarkets and hypermarkets to be 30,000 square feet, we might expect planning and implementation costs to scale accordingly. For the estimated 4,500 supermarkets and hypermarkets in England, we therefore assume that costs of planning and implementation will be 15 times greater than for smaller stores. This results in a total cost of planning of £15.8m, and an implementation cost of £2.5m.

- **The above calculations represent illustrative transition costs. Do these calculations reflect a fair assessment of the costs that would be faced by your organisation? (Consultation question 36)**

### Reduction in profits

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

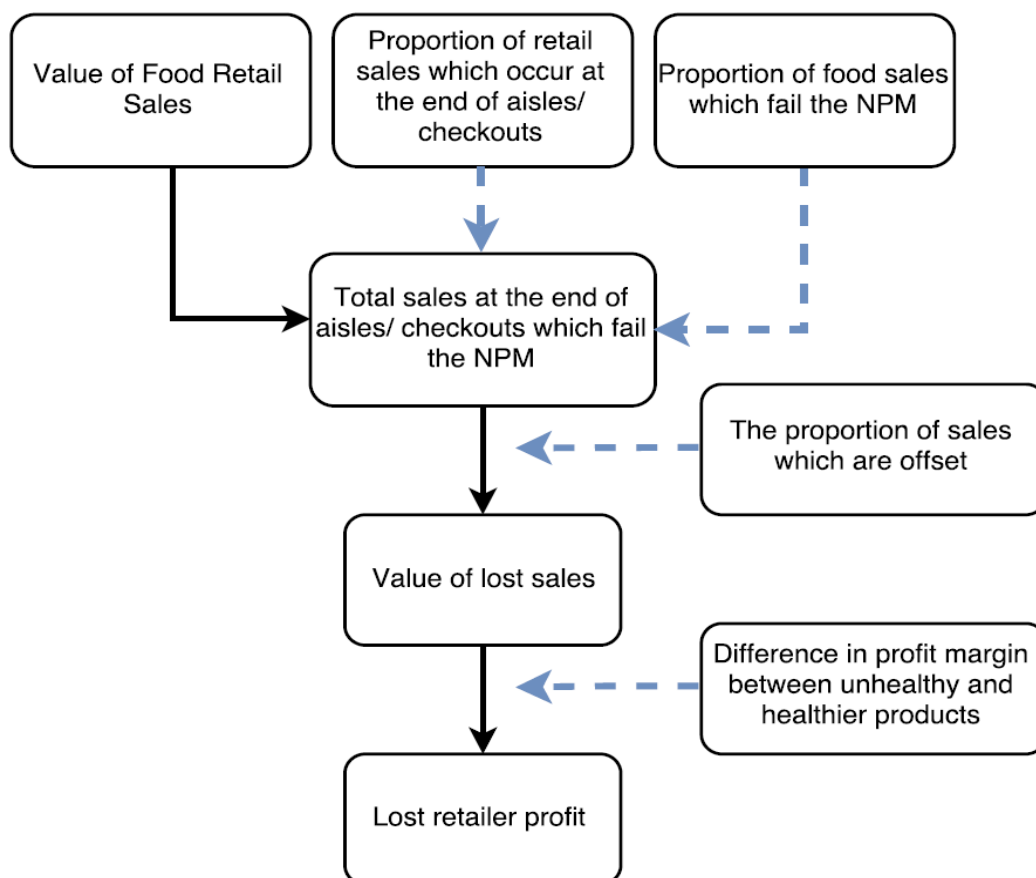
106. The impact on retailer profits is estimated using differential profit margins rather than differential sales uplifts, as we have limited evidence for the former but not the latter. It is possible that HFSS products will benefit to a greater (or lesser) degree by being placed in prominent store locations. As a major source of lost profits to business, we have varied this assumption in the sensitivity analysis. The methodology used to calculate the impact on retail profits is outlined in Figure 1 below.

107. The first stage involves calculating the total value of sales at checkouts and end-of-aisles that would be considered HFSS by the 2004/05 Nutrient Profile Model (NPM). This is done by applying academic findings on the proportion of retail sales that occur due to location promotions and estimates of the proportion of products that fail the NPM to the total value of food retail sales. This provides us with an estimate of the total value of sales at risk from these restrictions.

108. 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 HFSS items in normal aisle space to be significantly reduced compared to prime locations. The sales these products achieve in their new location will offset some of the sales that are at risk from these restrictions and need to be considered in our calculations.

109. Once the expected value of lost sales has been estimated, we apply assumptions for the difference in profit margins between healthy and HFSS products to calculate the impact on retailer's profits.

Figure 1: Estimating the reduction in retailer profits



110. As mentioned previously our intention is to exclude very small outlets. The rationale for excluding these stores is that 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. Due to our lack of data on the proportion of convenience stores that would fall into this category, we have not been able to adjust our calculations to consider this. We aim to revise this during the consultation.

#### Checkout sales

111. We first consider the impact of removing HFSS products from checkouts. Table 10 uses retailer's approaches to the placement of HFSS products at checkouts outlined in Table 1 to estimate the proportion of goods sold through checkouts displaying HFSS products.

Table 10: Estimated retail sales through checkouts with HFSS food and drink products present

Retailer	Market share	Percentage of sales through relevant checkouts
Tesco	28.0%	0%
Sainsbury's	16.2%	12% <sup>73</sup>
Asda	15.3%	33%
Morrison's	10.4%	30% <sup>74</sup>
Aldi	6.7%	0%
The Co-Operative	6.1%	0%
Waitrose	5.3%	0%
Lidl	5.1%	0%

<sup>73</sup> 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

<sup>74</sup> 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.

Iceland	2.0%	20% <sup>75</sup>
Symbols & Independent	1.8%	100%
Other Outlets	3.0%	100%

112. By multiplying the relevant market share and the proportion of sales through relevant checkouts, we estimate that 15.4% of food retail sales take place through checkouts where HFSS products are displayed.
113. Applying this 15.4% proportion to the £88.5bn GB food retail market, suggests that total food sales worth £13.6bn occur through checkouts where HFSS products are available. Applying our estimate of 7.1%<sup>65</sup> for the share of sales accounted for by checkout locations, suggests total checkout sales of £0.97bn. As stated previously, it is estimated that around 49.6% of total food sold by value would be classified as HFSS by the 2004/05 Nutrient Profile Model. Applying this adjustment suggests that checkout sales of HFSS food amount to £479m per annum.
114. There is considerable uncertainty around the portion of checkout sales which are HFSS items. Our 49.6% 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.
115. However, there is evidence to suggest that retailers have a greater incentive to position confectionery at checkouts instead of other items, with the EHI Retail Institute finding that average confectionery profit margins are substantially higher than other products sold at checkouts<sup>76</sup>. We cannot know the relative importance of these effects so we regard the use of 49.6% as a tentative central approach.
116. The EHI Retail Institute report finds that average confectionery profit margins are 31.5%. Applying this to the £479m reduction in sales, results in lost profits to retailers of £151m per year.
117. The 31.5% figure applies solely to confectionery, which is just a subset of HFSS food. However, it seems reasonable to assume that the majority of HFSS products located at checkouts are confectionery. As a major source of lost profits to business, this is key to determining the Equivalent Annual Net Direct Cost to Business of the policy. We therefore vary this assumption in the sensitivity analysis.
118. As stated previously, we would expect a partial offsetting of this loss through increased sales of other products at checkouts. If we assume that the new products achieve an average profit margin of 12.4% (as per the EHI retail institute estimates), the net loss would be £91m per annum.
119. The loss in profits will be further offset if retailers move the HFSS items previously at checkouts into aisles, displacing healthier items in the process. In this scenario, there would be a reduction in sales of healthier food products, and an increase in sales of HFSS products.
120. At 1% of shop floor space but 7.1% of sales, this implies checkout locations 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. Therefore, assuming HFSS products removed from checkouts continue to generate a significant proportion of their previous sales seems more reasonable.
121. Assuming HFSS items removed from checkouts continue to generate 30% of their sales in aisle locations implies £144m in additional revenue. Taking the same profit margins as above suggests additional profits of £27.4m per year, reducing the total loss in profits for retailers to around £64m per annum.
122. These calculations have used Kantar's estimate of the size of the GB food retail market. Reducing the costs in proportion with England's 86.6% share of the GB population results in a final net loss to retailers in England of £55.4m per year.

### *End-of-aisle sales*

<sup>75</sup> Based on the information in [Table 1](#) and implicitly assumes an average of 5 checkouts per store

<sup>76</sup> 'Die umsatzstärksten Quadratmeter im Markt: Bedeutung der Kassenzone im LEH nimmt zu', Wrigleys Press Release, 2013

123. We assume that all retailers display at least some HFSS products on the ends of aisles. The EHI Retail Institute study considered only checkout sales. Therefore, we assume that end-of-aisle displays contain a proportionate amount of HFSS products and apply the 49.6% figure used previously.
124. Again, the types of products located on the end of aisles is likely to vary depending on the type and size of the store, with convenience stores being likely to locate items differently to supermarkets even if they are part of the same chain.
125. We have previously estimated that 20% of goods are sold from end-of-aisle locations, combining this with the size of the GB food retail market suggests end-of-aisle food and drink sales are worth £17.7bn per annum. If 49.6% of these are from HFSS products, the immediate effect of their removal would be a reduction in sales of £8.8bn per annum. 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.
126. Because we do not have profit margins for either the HFSS products displaced or the goods replacing them, 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.
127. Evidence suggests that the average net profit margin for the major UK supermarkets is approximately 2%<sup>24</sup>. With no evidence on the different profit margins delivered by HFSS products and other goods, we present illustrative costs based on a 1-percentage point profit margin difference. This assumption plays an important role in estimating the costs to retailers. Given its importance, and the lack of evidence underlying this figure, we vary this in the sensitivity analysis.
128. Across £8.8bn in sales, a 1-percentage point reduction in profitability would equate to £87.7m per annum in lost profit for retailers.
129. Using the Nakamura et al.<sup>77</sup> 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 – resulting in a total reduction in sales of £3.1bn. As this requires the replacement of some current in-aisle displays with HFSS items, this gain in sales would be offset by a loss in sales of other products.
130. Based on a change in sales of £3.1bn and a relative difference in profit margin of 1%, the total annual loss in profits to retailers would be £31m. Adjusting this to calculate the England only figure, results in total annual costs of around £27m.
131. The calculations above only consider the impact of relative profit margins when estimating the impact on retailer profits. As the study by Nakamura et al., demonstrated, different products appear to benefit from different sales uplifts when moved to prominent locations. However, there is no clear evidence to suggest that HFSS products experience a larger uplift than other products – as the estimated 52.4% uplift in confectionary sales falls in the middle of the range of products examined.

*Store entrance sales*

132. We are not aware of any information on the proportion of sales from goods located by store entrances, or the relative proportion of HFSS products in these areas. We are therefore unable to quantify an expected loss in profits at this stage. We will continue to develop the evidence-base and our estimate during the consultation.

*Summary table*

133. Table 11 below outlines the expected impact of the policy on retailer profits, with the calculations at each stage of the methodology split out.

Table 11: Option 2: Summary of the reduction in annual profits for retailers

Location	Total sales which fail the NPM.	Sales increase from moving products to aisle locations	Net change in HFSS food and drink sales	Reduced profit from HFSS food	Profit from higher healthy	Net lost profit [UK]	England only lost profit

<sup>77</sup> 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)

				and drink sales	food and drink sales		
Checkout	£479m	£144m	£335m	£123m	£59m	£64m	£55.4m
End-of-aisle	£8,772m	£5,659m	£3,113m	£31m	-	£31m	£27m

## Costs to the Out-of-Home sector

### Transition costs

134. Transition costs for the out-of-home sector are expected to fall within the same three categories as the retail sector:

- Familiarisation;
- Product assessment;
- Store planning and adjustment.

135. 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. We welcome any comments on whether our estimated costs to businesses are reasonable and hope to improve these assumptions during the consultation.

#### *Familiarisation*

136. We assume that on average, it would take one manager one hour to read and become familiar with the regulations. Like the retail sector, the time taken for initial familiarisation will vary between businesses.

137. The median hourly wage for restaurant and catering establishment managers and proprietors is £10.45<sup>78</sup> per hour. This is uprated by 30% to account for overheads to £13.59. We have also performed a sensitivity analysis, where we have used the maximum and minimum wage rate percentiles to show how different wages affect the familiarisation costs.

138. To calculate the familiarisation costs, we have used data on the number of out-of-home food enterprises contained in the IDBR. Excluding micro businesses, we believe there are 14,050 enterprises in England which would be affected by these regulations and therefore an equal number of managers who would need to familiarise themselves with them.

139. Our central estimate indicates that the familiarisation cost to the out-of-home sector will be around £191k. Sensitivity analysis using the maximum and minimum wage rate percentiles indicates that this could range between £144k and £246k.

#### *Product assessment*

140. To comply with the restrictions, out-of-home food businesses will need to assess whether or not each of their products is considered HFSS by the 2004/05 Nutrient Profile Model.

141. We assume that the assessment of products occurs at enterprise rather than store level, with chains able to distribute information centrally. The cost of this assessment will depend greatly on the number of packaged products in each stores inventory. This is affected by the size of the business, the sector it operates in and the type of food served.

142. Due to the lack of data on the number of different packaged food and drink products sold in out-of-home business, we have calculated illustrative costs (see Table 12).

Table 12: Businesses and number of products affected

SIC Code and description		Number of businesses	Packaged products per business	Total number of packaged products
56102	Unlicensed restaurants and cafes	3,120	40	124,800

<sup>78</sup> Annual Survey of Hours and Earnings, Provisional 2017 (provisional) data  
<https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010asheet14/2017provisional/table142017provisional.zip> (Table 14.6a) (accessed 20/07/2018).

56103	Take away food shops and mobile food stands	2,365	20	47,300
56290	Other food service activities	300	40	12,000
56302	Public houses and bars	8,265	20	165,300
<b>Totals</b>		<b>14,050</b>	<b>-</b>	<b>349,400</b>

143. Assuming it takes 2 minutes per product to assess and record the outcome implies around 11,600 hours of staff time in total. The median wage of stock control clerks and assistants in 2017 was £10.09<sup>79</sup>, giving an hourly cost to firms of £13.12 once 30% on costs are included. This implies a total cost of assessing products for the out-of-home sector in England of around £153k.

144. Further costs would then be incurred from sharing this information with individual outlets. Assuming this takes 1 hour of time for a catering establishment manager or proprietor at £13.59 (including 30% on costs) for each of the 36,110 outlets in England, distribution of this information would cost a further £491k.

145. The total cost of assessing products is therefore estimated to be around £644k for all out-of-home food businesses in England.

#### *Store planning and adjustment*

146. Again, as was the case with retailers, once products have been assessed businesses will need to re-plan layouts so HFSS products are no longer placed in restricted locations. We assume this planning occurs at store rather than firm level.

147. Once these new layouts have been planned, outlets will need to relocate products. We present illustrative cost estimates below based on assumptions of the time required.

148. For all stores, we assume that at least one manager and one waiter or waitress would be needed to re-plan store layouts.

149. Out-of-home food establishments will have far fewer products to relocate; therefore, it seems likely that the time needed to plan would also be far less. As a result, we have assumed it takes half as much time to both plan and adjust store layouts as previously used to estimate the cost for retailers.

150. The total cost of four hours for a restaurant or catering establishment manager and a waiter or waitress to plan the reorganisation is £93.34. This is our cost per outlet.

151. The costs associated with planning and implementing new store layouts are estimated at outlet level. To account for the outlets belonging to micro businesses in the IDBR data, we assume that each micro business only has one outlet. As a result, we assume there are approximately 36,110 out-of-home outlets in England that would be affected by these regulations. We aim to revise this estimate further during the consultation.

152. Multiplying this by the cost per store gives us total planning costs of around £3.4m.

153. For the implementation of the new layout, we assume 2 hours of 'waiter or waitress' time is required, at £7.50<sup>80</sup> or £9.75 including on costs. This implies a cost of £19.50 per store and a total cost of around £704k for England.

#### **Reduction in profits**

154. Out-of-home businesses are expected to organise stores in the most profit maximising way. As a result, any restriction on their ability to do this is expected to reduce profits.

155. We are not aware of any comprehensive data sources on sales in the out-of-home sector or the nutritional content of the products sold. Furthermore, we have also been unable to find any studies assessing the current use of location promotions within out-of-home settings, or the impact these might have on consumer behaviour. Although it seems reasonable to assume that, any location promotions in

<sup>79</sup> Annual Survey of Hours and Earnings, Provisional 2017 (provisional) data  
<https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010asheta/ble14/2017provisional/table142017provisional.zip> (Table 14.6a) (accessed 20/07/2018).

<sup>80</sup> Ibid.

out-of-home settings are likely to take place at checkouts, with cafes, bars, and canteens generally not containing any end-of-aisle or entrance displays.

156. Out-of-home food purchases occur in a distinctly different setting to retail purchases, with stores being much smaller and often only containing a few areas to display products. As a result, it is possible that products stand out less when placed at checkouts in these settings than they would do in a large supermarket for example. If this were the case, we would expect items to receive a smaller sales uplift from being placed in prominent locations in out-of-home businesses.

157. As mentioned previously these restrictions are expected to particularly affect the out-of-home food to go market. Therefore, we have decided to calculate the lost profit for this section of the market only.

#### Checkout sales

158. Given the lack of evidence on the impact and use of location promotions in out-of-home settings, we have followed the same process and applied the same assumptions used previously to estimate the cost of checkout restrictions for food retailers.

159. First, we need to adjust our estimate of the value of food-to-go sales in convenience stores and supermarkets to account for any voluntary restrictions on displaying HFSS products at checkouts. To do this we apply the 15.4% figure calculated previously to the £4bn of food sales in these stores. This suggests that £614m of food to go sales in convenience and supermarkets occur through checkouts where HFSS food products are displayed; Meaning £14bn of total sales when the other segments of the food-to-go market are included.

160. From the IDBR data, we estimate that around 77% of turnover in the food and beverage service sector is accounted for by small, medium and large enterprises. Using this figure to calculate amount of revenue in the food-to-go sector that is in scope, we estimate that the value of the included market is approximately £10.7bn.

161. Applying our estimate that 7.1% of sales are accounted for by products located at checkouts, gives us total checkout sales of around £0.76bn. Adjusting for the proportion of sales that we expect to be HFSS suggests that checkout sales of HFSS products in the food to go sector amount to £378m per annum.

162. Again, it seems reasonable to assume that the majority of HFSS products located at checkouts are confectionary. Combining this with the 31.5% estimate of confectionary profit margins, results in lost profits of £119m for food to go retailers.

163. Some of this loss will be offset by increased sales of other products at checkouts. If we assume that the new products achieve an average profit margin of 12.4% (as per the EHI retail institute estimates), the net loss would be £72m per annum.

164. The loss in profits will be further offset by retailers moving the HFSS items previously located at checkouts to other locations. Assuming these other locations generate 30% of the sales previously achieved (£113m) and the same profit margins as above, this would result in additional profits of £21.6m per year, reducing the total loss in profits for food to go retailers to £50.5m per annum.

165. Reducing the costs in proportion with England's share of the UK population gives a final net loss of £42.5m per year.

#### Summary table

166. Table 13 below outlines the expected impact of the policy on out-of-home food to go profits, with the calculations at each stage of the methodology performed above split out.

Table 13: Option 2: Summary of the reduction in out-of-home food to go profits per year

Location	Total sales which fail the NPM	Sales increase from moving products to aisle locations	Net change in sales of HFSS food and drink	Reduced profit from HFSS food and drink	Profit from higher healthy food and drink sales	Net lost profit [UK]	England only lost profit
Checkout	£378m	£119m	£264m	£97.3m	£46.8m	£50.5m	£42.5m

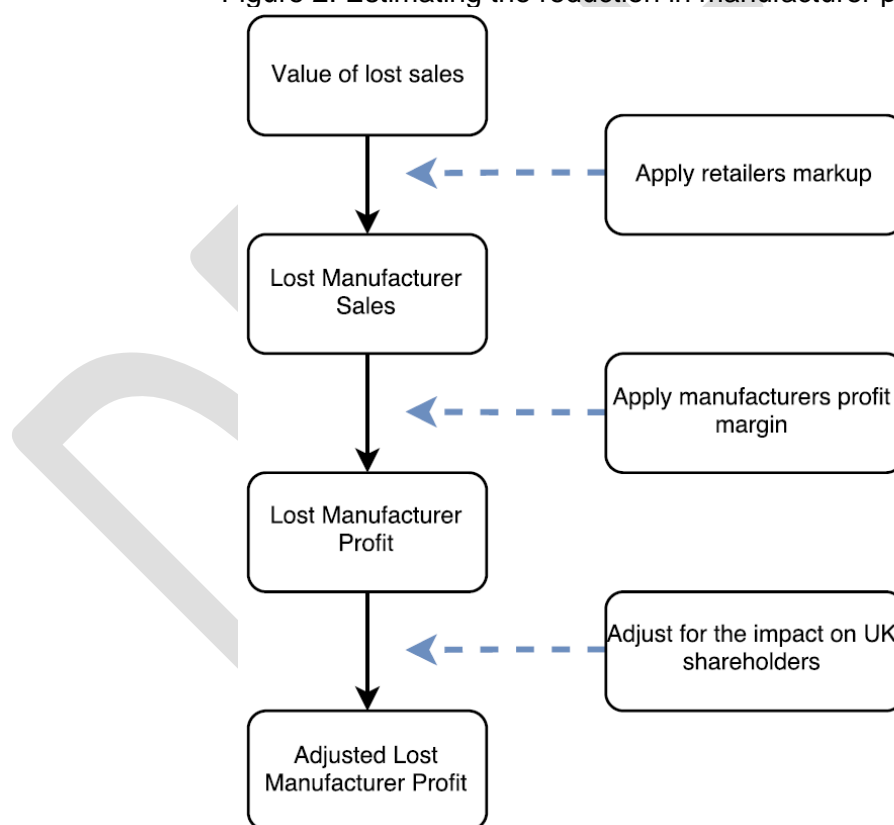
## Costs to manufacturers

### Reduction in profits

167. 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.

168. To estimate the impact on manufacturers' of HFSS products profits we follow a three-stage process outlined in Figure 2 below. First, we estimate 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. However, food and drink manufacture is a global business so for the final stage we must adjust the manufacturer impact to estimate the impact on UK shareholders.

Figure 2: Estimating the reduction in manufacturer profits.



169. We have estimated that the initial impact of a ban on locating HFSS products at checkouts would be a reduction in sales of those products of £335m in food retailers and £264m in the food-to-go sector, i.e. £599m per year in total. UK supermarket mark-ups are estimated to be between 35% and 70%<sup>81</sup> - assuming the mid-point of this suggests the value of manufacturer sales is £393m.

<sup>81</sup> USDA (2011) UK Retail foods 2010.

[http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Retail%20Foods\\_London\\_United%20Kingdom\\_2-3-2011.pdf](http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Retail%20Foods_London_United%20Kingdom_2-3-2011.pdf) (accessed 09/11/2017)



170. Over the past decade or so, food and drink producers profit margins have ranged between 5 and 7%<sup>82</sup>. Taking the midpoint of this range and applying a profit margin of 6% implies lost profits of around £23.6m per annum for manufacturers of HFSS products.

171. Applying the same profit margins to the manufacturer share of the £3.1bn reduction in end-of-aisle sales, results in lost profits of £122.5m per year for manufacturers of HFSS products.

172. The true figure for the share of manufacturer profits retained in the UK requires further research, but for this consultation, we assume 49% of manufacturer profits are retained in the UK. This is based on the proportion of food that was supplied from within the UK in 2016<sup>83</sup>.

173. Thus, combining the two figures above and adjusting for the total impact on UK shareholders results in a £71.6m reduction in annual profits, with the England only share of this reduction being £61.9m.

174. Once HFSS products are removed from these locations businesses will rearrange store layouts, filling the prominent locations with items that pass the NPM. When estimating the impact on retailer profits we previously assumed that these items achieve the same sales as the HFSS items they are replacing. Therefore, assuming manufacturers of non HFSS products achieve the same profit margins, implies that there would be an equal and offsetting increase in profits for manufacturers of other goods.

175. However, 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. As a major source of lost profits to business, we have varied this assumption in the sensitivity analysis.

### Summary Table

176. Table 14 below outlines the expected impact of the policy on manufacturer profits, with the calculations at each stage of the methodology performed above in detail.

Table 14: Option 2: Summary of the annual reduction in profits for manufacturers of HFSS food and drink

Location	Reduced retail sales of HFSS food and drink	Reduced manufacturer sales of HFSS food and drink	Lost profit	Impact on UK shareholders	England only lost profit
Checkouts	£599m	£393m	£23.6m	£11.6m	£9.9m
End-of-aisle	£3,113m	£2,041m	£122.5m	£60m	£52m

### Reformulation

177. Some manufacturers might respond to these restrictions by reformulating their products. This may be possible for goods that are only slightly above the threshold, but for products such as confectionery, it will be more challenging reformulate to avoid this categorisation. 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 and the cost of alternative ingredients.

178. Due to the uncertainties surrounding these costs, we believe it is not appropriate to estimate them in this Impact Assessment. 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.

### Retailer – manufacturer relationship

179. The estimates above take a somewhat simplistic view of the relationship between manufacturers and retailers. While retailers are considered to plan store layouts to maximise profits, sales of goods do not represent their only revenue stream.

<sup>82</sup> 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)

<sup>83</sup> Department for Environment, Food & Rural Affairs (2016) Food Statistics Pocket Book 2016, <https://www.gov.uk/government/statistics/food-statistics-pocketbook-2016> (accessed 23/10/2018)

180. Manufacturers of products are willing to pay a premium to retailers to ensure their products receive prominent positioning within stores. Such payments are not recorded in the UK, but evidence from the US suggests they may be equivalent to 8% of the value of goods sold by retailers<sup>84</sup>.
181. 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.
182. Due to the lack of data in this area, it has not been possible to assess the impact on the internal market between retailers and manufacturers. We can however note that any losses in income to one sector would be offset by equivalent gains to the other sectors involved. We would welcome any further evidence on how these proposals would impact the intricate supply chain relationships (e.g. sales agreements, sales targets, the future relationships and profitability) between manufacturers and retailers as part of the consultation.
183. 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.

- **How will these proposals affect the relationships between manufacturers and retailers (e.g. sales agreements, sales targets, the future relationships and profitability)? (Consultation question 39)**

## Costs to government

### Enforcement costs

184. To enforce the legislation, the positioning of these products will need to be checked as part of normal inspection visits.
185. 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, an experienced trading standards officer works around 37 hours per week and earns between £24k and £50k a year<sup>85</sup>. Using the midpoint of this range we estimate an hourly salary assuming a 37-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 £28.63. 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 £28k.
186. We have previously estimated, using IDBR and IGD data, that there are approximately 41,100 relevant retail stores in England. Furthermore, we also estimate there are approximately 36,100 relevant out-of-home food outlets in England.
187. Assuming retail outlets are visited once every 3.5 years<sup>86</sup>, we estimate there will be around 11,700 visits to these stores per year. We estimate the additional time required at each outlet for to be 15 minutes per inspection. By multiplying visits by time required and the updated hourly wage of £28.63, we estimate that total staff costs for enforcement are approximately £84k per year. Likewise, TSOs visit OOH outlets every two years, resulting in around 18,000 visits per year, and costs of £129k per annum. Total enforcement costs are therefore £213k per annum.
188. The Department of Health and Social Care is proposing to reimburse local authorities for the cost of enforcing this policy. Where a policy is placing an additional cost on the department, it is DHSC policy to convert this into an opportunity cost. This is done by estimating the value of the health benefits this displaces from the fixed health budget.

<sup>84</sup> Simpson (2014) The hidden world of supplying a supermarket, BBC, <http://www.bbc.co.uk/news/business-29629742> (accessed 10/11/2017)

<sup>85</sup> National Careers Service (ND) Trading standards officer, <https://nationalcareersservice.direct.gov.uk/job-profiles/trading-standards-officer> (accessed 06/06/2018)

<sup>86</sup> <http://www.tradingstandardswales.org.uk/help/foodinspect.cfm> indicates this to be a plausible assumption. (accessed 18/01/2018)

189. 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. Dividing the yearly enforcement costs by this figure and multiplying by society's valuation of a QALY, implies that the opportunity cost of this funding is £850k per annum, with the opportunity cost of the initial familiarisation costs valued at £112k.

- **Is it reasonable to assume that retailers and OOH businesses are inspected every 3.5 and 2 years, respectively? (Consultation question 40)**

## Health benefits consequent upon reduced consumption

190. Due to the lack of comprehensive data on sales in the out-of-home sector or the nutritional content of the products sold, we have decided to estimate the health benefits of reduced consumption in the grocery retail sector only. As a result, it is likely that the benefits estimated below are an underestimate.

191. We have estimated that a restriction on location promotions within retailers might be expected to result in a £3.4bn annual reduction in expenditure on HFSS food and drink products – equating to 3.9% of the GB retail grocery market.

192. The resulting health benefits will depend on the items used to replace these HFSS products. The benefits will be maximised if items are replaced by non-food and drink products. Due to the likelihood that products may be replaced by other food and drink items, we assume that all the offsetting goods are other non-HFSS food and drink products.

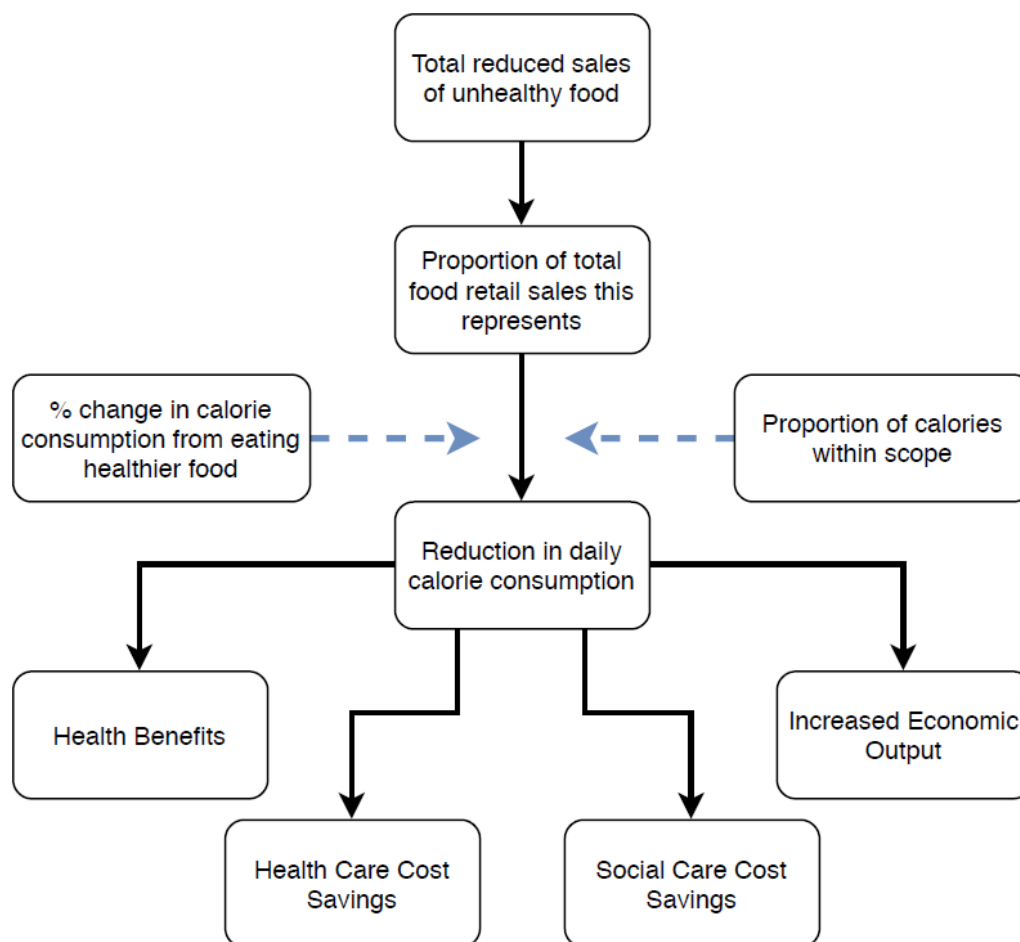
193. To estimate the health benefits, we translate the annual reduction in expenditure on HFSS products into a reduction in daily calorie intake. The calculations of the quantified benefits (including QALYs) are done within the “DHSC Calorie Model”. This model simulates a “control” group of would-be 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.

194. The average BMI determines the likelihood of the following five conditions associated with obesity, which in turn have a mortality rate and a reduced quality of life: diabetes, coronary heart disease, stroke, colorectal cancer, 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 values 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](#) and the [DHSC Calorie Model Technical Consultation Document](#)<sup>87</sup> published alongside this document.

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<sup>87</sup> DHSC Calorie Model Technical Consultation Document: <https://www.gov.uk/government/publications/department-of-health-and-social-care-dhsc-calorie-model>

Figure 3: Estimating the health benefits of restricting location promotions.



195. DHSC analysis of 2,000 food and drink products in 2014 Kantar World Panel data suggests that on average £1 spent on a product which passes the NPM only provides around 65% of the calories compared to spending £1 on a HFSS product. We might therefore expect, if consumers shift all £3.4bn of expenditure from HFSS goods to other foodstuffs, a 35% reduction in calories consumed from consumers switching to these purchases.

196. It is estimated that around 23% of calories are consumed in the out-of-home sector<sup>88</sup>. We therefore assume that 77% of calories consumed are purchased from GB retailers. A small proportion of these calories will be bought from locations such as chocolatiers that are both outside the scope of this policy and likely not captured by the Kantar World Panel data.

197. ONS data suggests that 5.4% of sales in 'Predominantly Food Stores' occurred in 'Specialist Food Stores' in 2016<sup>89</sup>. We therefore estimate that 94.6% of retailer calories are within scope, equivalent to 72.8% of all calories.

198. Applying a 35% reduction to 3.9% of sales (accounting for 72.8% of calories) results in an overall reduction in daily calories consumed of 1%. However, we might assume that children consume a disproportionate number of HFSS items (e.g. confectionary and sugar sweetened beverages). Therefore, we calculate reductions for adults and children separately based on their calorie intakes recorded in the National Diet and Nutrition Survey. This results in reductions of 1.2% for people aged under 18 and 1% for those aged 19 and over.

199. The combined impacts of checkout and end-of-aisle restrictions for specific age-gender groups are displayed in Table 15.

<sup>88</sup> This figure is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey.

<sup>89</sup> Retail Sales Index 2016, ONS, 2017.

Table 15: Current calorie consumption and expected reductions<sup>90</sup>

	Males				Females			
	4-10	11-18	19-64	65+	4-10	11-18	19-64	65+
Mean daily calorie intake	1521	1933	2107	1838	1401	1617	1596	1491
Calorie reduction	16	20	21	18	14	16	16	15

200. The calculation above relies on mean daily calorie consumptions reported in the National Diet and Nutrition Survey. Even though this survey is based on current best practice, there is evidence of significant under-reporting in the food diaries completed by individuals<sup>91</sup>. 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 calorie consumption must be under-reported in the survey. This is a common problem in all dietary surveys relying on self-reported food intake. As a result, it is likely that the calorie reductions above are significant underestimates.

201. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 164,000 Quality Adjusted Life Years, or a present value of £7.5bn at £60,000 per QALY. Reduced morbidity would also result in reduced cost pressures to the NHS. There would be additional health benefits to the population from reinvesting these savings back into the NHS; these are estimated to be worth around £5bn over the 25-year assessment period<sup>92</sup>. Social care savings would amount to £1bn and reduced premature mortality would be expected to deliver an additional £192m of economic output through additional labour force participation.

### Reformulation

202. As mentioned above, some manufacturers might respond to these restrictions by reformulating their products. If businesses were to reformulate or create new healthier products, this would lead to further indirect health benefits for consumers.

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

### Adjusting for compensating behaviour

204. So far, the costs and health benefits have been calculated on the basis that wider factors do not offset the impact of the policy. It is possible, for example, that consumers might adjust their consumption behaviour in response to consuming fewer calories, shift their purchasing to smaller stores that might be excluded from these regulations or respond to alternative marketing strategies from businesses. This type of behaviour change is a major source of uncertainty in our analysis and as such could have a significant impact on the estimated net present value.

205. 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

<sup>90</sup> Current mean daily calorie consumption is based on DHSC analysis of years 5-6 of the National Diet and Nutrition Survey.

<sup>91</sup> ONS (2016) A Government Statistical Service perspective on official estimates of calorie consumption, (<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/methodologies/agovernmentstatisticalserviceperspectiveonofficial estimatesofcalorieconsumption>)

<sup>92</sup> 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 outlined in Annex A and the DHSC Calorie Model Technical Consultation Document accompanying this publication. 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 additional health benefits these savings generate.

compensation at subsequent meals or during the short time period covered by the study<sup>93 94 95</sup>. In contrast, other investigations have found that subjects completely compensated for a change in calorie intake<sup>96 97</sup>. Furthermore, two other studies have found imprecise levels of calorie compensation, with subjects adjusting their intake to compensate for 40%<sup>98</sup> and 35%<sup>99</sup> of the calories removed from their diets.

206. The rate of compensation is also likely to depend on the food and drinks that are removed from people’s diets, with some evidence suggesting that people are less likely to compensate for changes in calorie intakes from beverages than solid food<sup>100</sup>. 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 in real world conditions.

207. 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.

208. As well as consumers adjusting their behaviour to maintain a constant calorie intake, businesses might pursue alternative ways of marketing HFSS products to maintain profits. The way products are marketed to us can be split into several elements often known as the ‘four Ps’: product; price; place; and promotion. These proposals only restrict businesses’ ability to use place promotions to promote HFSS food and drinks and leave open the possibility of increasing sales using other in store marketing techniques. We would expect any compensating activity by businesses to be undertaken based on mitigating the cost of the policy and increasing their profits.

209. Due to the considerable amount of uncertainty, we have calculated low, central, and high net present value scenarios based on different levels of compensation. Furthermore, we have also undertaken critical value analysis to consider what proportion of the above benefits would need to be offset for the policy to impose a net cost to society.

210. Our high net present value scenario assumes that consumers and businesses do not alter their behaviour over time. The central and low scenarios assume behaviour adjusts to compensate for 40% and 100% of the calories removed from their diets.

211. We expect the benefits from reduced consumption to fall in proportion with the level of compensation. The compensation adjusted benefit figures are presented below in Table 16.

Table 16: Option 2: Calorie compensation adjusted benefit figures over 25 years

Benefit	Scenarios		
	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Quality Adjusted Life Years	0	98,000	164,000
Monetised health benefit	0	£4.5bn	£7.5bn
NHS savings	0	£3bn	£5bn
Social care savings	0	£0.6bn	£1bn

<sup>93</sup> Anton et al. (2010) Effects of stevia, aspartame, and sucrose on food intake, satiety, and postprandial glucose and insulin levels. *Appetite*. Aug 31;55(1):37-43, <https://www.ncbi.nlm.nih.gov/pubmed/20303371> (accessed 24/10/2018)

<sup>94</sup> Rolls et al. (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*. Jan 1;83(1):11-7, <https://www.ncbi.nlm.nih.gov/pubmed/16400043> (accessed 24/10/2018)

<sup>95</sup> Kelly et al. (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*, Feb;102(3):470-7, <https://www.ncbi.nlm.nih.gov/pubmed/19216813> (accessed 24/10/2018)

<sup>96</sup> Foltin et al. (1988) Compensation for caloric dilution in humans given unrestricted access to food in a residential laboratory. *Appetite*, Feb 29;10(1):13-24, <https://www.sciencedirect.com/science/article/pii/S0195666388800291> (accessed 22/1/2018)

<sup>97</sup> Foltin et al. (1990) Caloric compensation for lunches varying in fat and carbohydrate content by humans in a residential laboratory. *The American journal of clinical nutrition*, Dec 1;52(6):969-80, <https://www.ncbi.nlm.nih.gov/pubmed/2239795> (accessed 22/10/2018)

<sup>98</sup> Porikoset al. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of conventional foods. *Physiology & behavior*. Aug 31;29(2):293-300, <https://www.ncbi.nlm.nih.gov/pubmed/7146134> (accessed 23/10/2018)

<sup>99</sup> Kendall et al. (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*, May 1;53(5):1124-9, <https://www.ncbi.nlm.nih.gov/pubmed/2021123> (accessed 24/10/2018)

<sup>100</sup> Mourao et al. (2007) Effects of food form on appetite and energy intake in lean and obese young adults. *International journal of obesity*, Nov 1;31(11):1688-95, <https://www.ncbi.nlm.nih.gov/pubmed/17579632> (accessed 23/10/2018)

Economic output	0	£0.1bn	£0.2bn
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212. Compensating behaviour by consumers and businesses could work by encouraging people to continue buying HFSS food and drinks or increasing the number of healthy items they buy. Both of which would increase industry profits compared to our estimates. Therefore, as well as decreasing the benefits, we would also expect any compensation to decrease the costs. As a result, we have also assumed that the lost profit to industry decreases in proportion with the amount of compensation, with all other costs remaining the same.

213. The calorie compensation adjusted annual lost profit figures are presented below

Table 17: Option 2: Calorie compensation adjusted annual lost profit figures

Group Affected	Impact	Scenarios		
		Low (100% compensation)	Central (40% compensation)	High (100% compensation)
Retailers	Lost annual profit – Checkout restrictions	£0	£33m	£55.4m
	Lost annual profit – End-of-aisle restrictions	£0	£16.2m	£27m
Out-of-home	Lost annual profit – Checkout restrictions	£0	£25.5m	£42.5m
Manufacturers of HFSS products	Lost annual profit	£0	£37.1m	£61.9m

- **Is there any additional evidence that would improve our understanding of the level of compensating behaviour which might occur? (Consultation question 41)**

## Consumer surplus

214. 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.

## Summary of costs and benefits

215. It has not been possible to quantify every aspect of the proposed policy. We will continue to work on the unquantified areas during the consultation to create robust estimates. The table below outlines the expected influence of the policy, with quantifications where currently possible, as estimated over a 25-year assessment period.

216. Furthermore, as mentioned previously due to the considerable number of uncertainties our calculations do not consider the future impact of the policies already announced as part of the 'Childhood obesity: A plan for action' or any other possible future actions by government. The interactive implications of implementing multiple policies at once are also not assessed under our estimates.

Table 18: Summary of costs and benefits – Option 2

Group affected	Impact	Present value, £m		
		Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Retailers	Transition - Familiarisation	-0.7	-0.7	-0.7
	Transition – HFSS assessment	-1	-1	-1
	Transition – Store planning & adjustment	-28	-28	-28
	Lost profit – Checkout restrictions	0	-565	-945
	Lost profit – End-of-aisle restrictions	0	-275	-460
	Lost profit – Store entrance restrictions	Not quantified - Negative	Not quantified – Negative	Not quantified - Negative
	Lost revenue, HFSS placement payments	Not quantified - Negative	Not quantified – Negative	Not quantified - Negative
	Gained revenue, Non-HFSS placement payments	Not quantified - Positive	Not quantified – Positive	Not quantified - Positive
<b>Total retailer impact</b>		<b>-30</b>	<b>-875</b>	<b>-1,435</b>
Out-of-home	Transition - Familiarisation	-0.2	-0.2	-0.2
	Transition - Product assessment	-0.6	-0.6	-0.6
	Transition - Store planning & adjustment	-4	-4	-4
	Lost profit - Checkout restrictions	0	-435	-725
<b>Total out-of-home impact</b>		<b>-5</b>	<b>-440</b>	<b>-730</b>
Manufacturers of HFSS products	Lost profit – Checkout restrictions	0	-100	-170
	Lost profit – End-of-aisle restrictions	0	-530	-885
	Lost profit – Store entrance restrictions	Not quantified - Negative	Not quantified – Negative	Not quantified - Negative
	Reduced expenditure, HFSS placement payments	Not quantified - Positive	Not quantified – Positive	Not quantified - Positive
<b>Total HFSS manufacturer impact</b>		<b>0</b>	<b>-635</b>	<b>-1,055</b>
Other manufacturers	Additional profit – Checkout restrictions	0	100	170
	Additional profit – End-of-aisle restrictions	0	530	885
	Additional profit – Store Entrance restrictions	Not quantified - Positive	Not quantified – Positive	Not quantified - Positive
	Additional expenditure, HFSS placement payments	Not quantified - Negative	Not quantified – Negative	Not quantified - Negative
<b>Total non-HFSS manufacturer impact</b>		<b>0</b>	<b>635</b>	<b>1,055</b>
Government	Trading Standards - Familiarisation	-0.1	-0.1	-0.1
	Trading Standards - Enforcement	-18	-18	-18
	NHS savings	0	3,035	5,065
	Social Care Savings	0	600	995
<b>Total Government impact</b>		<b>-18</b>	<b>3,615</b>	<b>6,040</b>
Wider society	Health Benefits	0	4,500	7,500
	Economic output	0	115	192
	Consumer surplus	0	0	0
<b>Total wider society impact</b>		<b>0</b>	<b>4,615</b>	<b>7,695</b>
<b>Net present value</b>		<b>-53</b>	<b>6,920</b>	<b>11,570</b>



## Option 3 – Restrict the placement of HFSS products included in Public Health England’s sugar and calorie reduction programmes and the SDIL

### Costs to retailers

#### Transition costs

217. Familiarisation costs are calculated using the same methodology described in Option 2. This results in a cost to retailers of £662k.
218. Transition costs associated with the assessment of products are estimated using the methodology outlined under Option 2. This results in costs to retailers of £1m.
219. Costs for planning and implementing new store layouts are estimated as per Option 2. This results in costs to retailers of £28m.
220. All the costs presented above are for England only.

#### Reduction in profits

221. A potential loss in profit for retailers and manufacturers resulting from these restrictions was estimated under Option 2. As Option 3 focuses only on the products covered by Public Health England’s sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL), the impact will be smaller.
222. As stated under Option 2, the clear majority of products high in fat, salt, and sugar (HFSS) on display at checkouts are deemed likely to be confectionary or similar. We would therefore expect these products to be included in Public Health England’s sugar and calorie reduction programmes and the SDIL. As a result, we would expect a similar reduction in checkout sales as a blanket restriction on all HFSS products. This implies a direct reduction in retailer profits of £64m once expected offsets are considered. Adjusting for England’s share of the GB food retail market gives a total annual cost of £55.4m.
223. This is not thought to be the case for items located at the ends of aisles. As such, we decrease the expected reduction in sales of HFSS products (as calculated in Option 2) in line with the proportion of products that are included in Public Health England’s sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL). Department of Health and Social Care analysis of 2014 Kantar data suggests that the products listed in [Annex D](#) account for around 38% of GB food sales. Using this figure, we estimate that sales of the products in scope of this option are worth £33.8bn per year, of which around £6.8bn occur at the end of aisles.
224. We previously estimated that, according to the 2004/05 Nutrient Profile Model, 49.6% of GB food sales are considered HFSS. The products included in the reformulation programmes were chosen because they contribute the most sugar and calories to children’s diets. It is therefore likely that a greater proportion of these products will fail the NPM than estimated previously. DHSC analysis of 2,000 food and drink products in Kantar Worldpanel data suggests that around 65.3% of products included in Public Health England’s sugar and calorie reduction programmes and the SDIL would be considered HFSS by the NPM. This suggests that the immediate effect of this policy option would be to reduce sales by £4.4bn per annum.
225. Following the same assumptions and methodology outlined in Option 2 to estimate the proportion of these sales that would be offset, results in a net reduction in sales of HFSS products of around £1.6bn.
226. This suggests lost profits of £15.7m, or £13.6m for England only.

#### Summary Table

227. Table 19 below outlines the expected impact of the policy on food retailers’ profits, with the calculations at each stage of the methodology performed above split out.

Table 19: Option 3: Summary of the reduction in retailer profits per year

Location	Total sales which fail the NPM	Sales increase from moving products to aisle locations	Net change in sales of HFSS food and drink	Reduced profit from HFSS food and drink	Profit from higher healthy food and drink sales	Net lost profit [UK]	England only lost profit
Checkout	£479m	£144m	£335m	£123m	£59m	£64m	£55.4m
End-of-aisle	£4,416m	£2,849m	£1,567m	£15.7m	-	£15.7m	£13.6m

## Costs to the Out-of-Home sector

### Transition costs

228. Familiarisation costs are calculated using the same methodology described in Option 2. This results in a cost to out-of-home food retailers of £191k.

229. Again, Transition costs are calculated using the same methodology as Option 2. This results in costs to out-of-home retailers in England of £643K.

230. The costs associated with planning and implementing new store layouts are estimated at outlet level. These are calculated using the same methodology as outlined in Option 2. This results in costs for out-of-home food businesses in England of £4.1m.

### Reduction in profits

231. As stated previously, the vast majority of HFSS products on display at checkouts are deemed likely to be confectionary or similar. We would therefore expect these products to be included in Public Health England's sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL). As a result, we would expect a similar reduction in checkout sales as a blanket restriction on all HFSS products.

232. This implies a direct reduction in retailer profits of £119m, or £50.5m once expected offsets occur. Adjusting for England's share of the GB food retail market gives a total annual cost of £42.5m.

### Summary Table

233. Table 20 below outlines the expected impact of the policy on out-of-home food profits, with the calculations at each stage of the methodology performed above split out.

Table 20: Option 3: Summary of the reduction in out-of-home food profits per year

Location	Total sales which fail the NPM	Sales increase from moving products to aisle locations	Net change in sales of HFSS food and drink	Reduced profit from HFSS food and drink	Profit from higher healthy food and drink sales	Net lost profit [UK]	England only lost profit
Checkouts	£378m	£119m	£264m	£97.3m	£46.8m	£50.5m	£42.5m

## Costs to manufacturers

### Reduction in profits

234. We have estimated that the initial impact of restricting the placement of the included HFSS products at checkouts would be a reduction in sales of £335m in food retailers and £264m in the out-of-home food sector, £599m per year in total. The manufacturer portion of these sales is estimated to be £393m per year. Applying an average profit margin of 6% implies lost profits for manufacturers of HFSS products of £23.6m per annum. As with the other options, we only consider 49% of this to be the impact on UK shareholders, giving an annual cost of around £11.6m. This is further adjusted to give an England only cost of £9.9m. We would expect this to be offset by an equivalent increase in profits for other manufacturers.

235. Applying the same profit margins to the manufacturer market share of the reduction in end-of-aisle sales, results in a reduction in profits of £61.7m per year, or £30.2m for UK shareholders and £26.2m for England only.

236. Again, assuming manufacturers of non HFSS products achieve the same profit margins, we would expect this to be offset by increased profits for other manufacturers.

237. However, 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. As a major source of lost profits to business, we have varied this assumption in the sensitivity analysis.

### Summary Table

238. Table 21 below outlines the expected impact of the policy on manufacturer profits, with the calculations at each stage of the methodology performed above in more detail.

Table 21: Option 3: Summary of the annual reduction in profits for manufacturers of HFSS food and drink

Location	Reduced retail sales of HFSS food and drink	Reduced manufacturer sales of HFSS food and drink	Lost profit	Impact on UK shareholders	England only share
Checkouts	£599m	£393m	£23.6m	£11.6m	£9.9m
End-of-aisle	£1,567m	£1,028m	£61.7m	£30.2m	£26.2m

### Reformulation

239. As mentioned previously some manufacturers might respond to these restrictions by reformulating their products. 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 and the cost of alternative ingredients added to products.

240. 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.

### Costs to government

#### Enforcement costs

241. Enforcement costs have been assessed as per Option 2.

242. The opportunity cost of initial familiarisation costs is expected to remain the same at £112k, with subsequent annual enforcement costs of £853k for England.

### Health benefits consequent upon reduced consumption

243. We have estimated that a £1.9bn annual reduction in expenditure on HFSS products in food retailers might be expected from these restrictions – equating to 2.2% of the GB retail food market.

244. Following the same approach as for Option 2, this implies a population average reduction in daily calorie intake of 0.6%. After taking into account the fact that children are likely to consume more HFSS items than adults, this results in reductions of 0.6% for people aged under 18, and 0.5% for those aged 19 and over. Precise impacts are displayed in Table 22.

Table 22: Current calorie consumption and expected reductions

	Males				Females			
	4-10	10-18	19-64	65+	4-10	10-18	19-64	65+
Mean daily calorie intake	1521	1933	2107	1838	1401	1617	1596	1491
Calorie reduction	9	11	12	10	8	9	9	8

245. This reduction in calorie intake is converted into estimated changes in average BMI and subsequent healthcare outcomes through a modelling process discussed in Annex A and in DHSC Calorie Model Technical Consultation Document<sup>101</sup> accompanying this publication.

246. As mentioned previously, significant levels of underpotting are likely present in the food diaries collected for the National Diet and Nutrition Survey. As a result, it is likely that the calorie reductions above are significant underestimates.

247. Over 25 years, discounted health benefits through reduced mortality and morbidity are estimated at around 90,000 Quality Adjusted Life Years, or a present value of £4.1bn at £60,000 per Quality Adjusted Life Year. Reduced morbidity would also result in reduced cost pressures to the NHS. There would be additional health benefits to the population from reinvesting these savings back into the NHS; these are estimated to be worth around £2.8bn over the 25-year assessment period. Social care savings would amount to £0.5bn and reduced premature mortality would be expected to deliver an additional £0.1bn of economic output through additional labour force participation.

### Reformulation

248. If businesses were to reformulate their products or create new healthier products, this would lead to further indirect health benefits for consumers. 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.

### Adjusting for calorie compensation

249. Again, it is possible that consumers will adjust their consumption or purchasing behaviour in response to consuming fewer calories or alternative marketing strategies.

250. As for Option 2, the cost and benefit calculations above are based on assuming no calorie compensation. Given the wide range of calorie compensation found in the literature, this is a major area of uncertainty in our analysis. As a result, we have again calculated a low, central and high net present value scenario based on different levels of calorie compensation. The calorie compensation adjusted benefit and annual lost profit figures are presented below in Table 23.

Table 23: Option 3: Calorie compensation adjusted benefit and annual lost profit figures

Benefit	Scenarios		
	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Quality Adjusted Life Years	0	54,000	90,000
Monetised health benefit	£0	£2.5bn	£4.1bn
NHS Savings	£0	£1.7bn	£2.8bn
Social Care Savings	£0	£0.3bn	£0.5bn
Economic output	£0	£0.1bn	£0.1bn

<sup>101</sup> DHSC Calorie Model Technical Consultation Document: <https://www.gov.uk/government/publications/department-of-health-and-social-care-dhsc-calorie-model>

Lost annual profit		Scenarios		
Group affected	Impact	Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Retailers	Lost annual profit – Checkout restrictions	£0	£33.3m	£55.4m
	Lost annual profit – End-of-aisle restrictions	£0	£8.1m	£13.6m
Out-of-home	Lost annual profit – Checkout restrictions	£0	£25.5m	£42.5m
Manufacturers of HFSS products	Lost annual profit	£0	£21.6m	£36m

### Summary of costs and benefits

251. It has not been possible to quantify every aspect of the proposed policy. For those areas that remain unquantified, work will continue during the consultation in order to create robust estimates. The table below outlines the expected impacts of the policy, with quantifications where currently possible.

252. Furthermore, as mentioned previously due to the considerable number of uncertainties our calculations do not take into account the future impact of the policies already announced as part of the 'Childhood obesity: A plan for action' or any other possible future actions by government. The interactive implications of implementing multiple policies at once are also not assessed under our estimates.

Table 24: Summary of costs and benefits – Option 3

Group affected	Impact	Present value, £m		
		Low (100% compensation)	Central (40% compensation)	High (0% compensation)
Retailers	Transition - Familiarisation	-0.7	-0.7	-0.7
	Transition – NPM assessment	-1	-1	-1
	Transition – Store planning & adjustment	-28	-28	-28
	Lost profit – Checkout restrictions	0	-565	-945
	Lost profit – End-of-aisle restrictions	0	-140	-230
	Lost profit – Store entrance restrictions	Not quantified – Negative	Not quantified – Negative	Not quantified – Negative
	Lost revenue, placement payments	Not quantified – Negative	Not quantified – Negative	Not quantified – Negative
	Gained revenue, placement payments	Not quantified – Positive	Not quantified – Positive	Not quantified – Positive
<b>Total retailer impact</b>		<b>-30</b>	<b>-735</b>	<b>-1,210</b>
Out-of-home	Transition - Familiarisation	-0.2	-0.2	-0.2
	Transition - Product assessment	-0.6	-0.6	-0.6
	Transition - Store planning & adjustment	-4	-4	-4
	Lost profit - Checkout restrictions	0	-435	-725
<b>Total out-of-home impact</b>		<b>-5</b>	<b>-440</b>	<b>-730</b>
Manufacturers of HFSS products	Lost profit – Checkout restrictions	0	-100	-170
	Lost profit – End-of-aisle restrictions	0	-270	-445
	Lost profit – Store entrance restrictions	Not quantified - Negative	Not quantified - Negative	Not quantified - Negative
	Reduced expenditure, HFSS placement payments	Not quantified - Positive	Not quantified - Positive	Not quantified - Positive
<b>Total HFSS manufacturer impact</b>		<b>0</b>	<b>-370</b>	<b>-615</b>
Other manufacturers	Additional profit – Checkout restrictions	0	100	170
	Additional profit – End-of-aisle restrictions	0	270	445
	Additional profit – Store entrance restrictions	Not quantified - Positive	Not quantified – Positive	Not quantified - Positive
	Additional expenditure, HFSS placement payments	Not quantified - Negative	Not quantified – Negative	Not quantified - Negative
<b>Total non-HFSS manufacturer impact</b>		<b>0</b>	<b>370</b>	<b>615</b>
Government	Trading Standards - Familiarisation	-0.1	-0.1	-0.1
	Trading Standards - Enforcement	-18	-18	-18
	Social Care Savings	0	330	550
	NHS savings	0	1,670	2,780
<b>Total Government impact</b>		<b>-18</b>	<b>1,980</b>	<b>3,315</b>
Wider society	Health Benefits	0	2,475	4,125
	Economic output	0	63	105
	Consumer surplus	0	0	0
<b>Total wider society impact</b>		<b>0</b>	<b>2,535</b>	<b>4,230</b>
<b>Net present value</b>		<b>-53</b>	<b>3,340</b>	<b>5,605</b>

## One in three out calculation

253. Only direct impacts on business should be counted for 'one in three out' purposes. Lost profits to retailers and others in the supply chain due to reduced consumption of HFSS products are considered a direct impact on business. For retailers, the direct impact is considered to be the net change in profits once retailers have adjusted store layouts. Although there is a change in the source of profits, from HFSS items to healthy items, because these profits are retained within the same firm we consider the net change to be appropriate.
254. For manufacturers, although we do not expect a total net change in profits, we do expect considerable redistribution of income between firms. We consider the impact on manufacturers of HFSS products to be direct, but impacts on other manufacturers to be indirect.
255. For one in three out and Equivalent Annual Net Direct Cost to Business purposes a "GDP approach" is adopted to assess the direct impact on UK-based activities. This requires an assessment of the proportion of the gross value added provided by businesses based in the UK. For retailers, we assume 100% of value added is UK based. For manufacturers, we assume that 49% of value added is UK based, with this being the proportion of food that was supplied domestically in 2016<sup>102</sup>.
256. It has not been possible at this stage to quantify all impacts to business - as such, we present only a partial estimate of the total Equivalent Annual Net Direct Cost to Business. Work will continue during the consultation to refine and extend the scope of this estimate. Our partial assessment of Equivalent Annual Net Direct Cost to Business for the central estimate of Option 3 is £77.3m in 2014 prices and discounted to 2015.

## Sensitivity and risk analysis

### Interaction of policy effects

257. 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. It is recognised that there will be interactive effects between this policy and the others being proposed or already in place. This section considers what form these interactive effects are likely to take, and what impact this will have both on reducing obesity and on the costs to business.
258. The health benefits have been estimated by modelling a reduction in BMI due to a decrease in calorie consumption. As part of the 'Childhood Obesity – A Plan for Action', Public Health England launched the sugar and calorie reduction programmes. These programmes aim to encourage food manufacturers to remove 20% of the sugar and calories in certain products. If successful, both of these schemes will reduce the expected fall in calorie consumption and the benefits from the restrictions considered in this Impact Assessment.
259. There is a well-recognised relationship between the use of price promotions and placement of goods in prominent locations around stores. 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 or if their individual effectiveness would be diminished by pursuing both policies.
260. The costs of assessing products have been identified in both this Impact Assessment, and the Impact Assessment on restricting price promotions. As a result, there will be double counting of these costs if both policies are implemented.
261. Due to the substantial number of policies which are being consulted on, the potential interactions between options have not been quantified.

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<sup>102</sup> Department for Environment, Food & Rural Affairs (2016) Food Statistics Pocket Book 2016, <https://www.gov.uk/government/statistics/food-statistics-pocketbook-2016> (accessed 23/10/2018)

## Items replacing HFSS products

262. There is the potential for the HFSS goods removed from key locations to be replaced by other items that exhibit negative externalities, such as alcohol. Alcohol specifically is not thought to be a significant risk as the study by Nakamura et al. found alcoholic products to experience a relatively low uplift in sales from end-of-aisle locations. However, it is possible that other categories of products could result in wider social costs.

## Critical value analysis

263. As mentioned previously, it is possible that wider factors, such as changes to consumer behaviour, could offset the expected calorie reduction from this policy. To assess the impact of calorie compensation, we consider the degree of offsetting required to result in a neutral net present value.

264. Our high estimate for Option 3 does not include an adjustment for calorie compensation and estimated the total benefits of the policy to be £7.6bn over the 25-year period assessed. Total net costs (once the profit reduction for manufacturers of HFSS goods has been offset by profit gains for manufacturers of other products) are valued at around £2bn over the same period. As mentioned previously any offsetting would depend on additional consumption, and thus further profits to industry. As a result, most of the costs and benefits of the policy tend to vary together. Considering this suggests that around 99% of the benefits of the policy would need to be offset for it not to be deemed socially beneficial.

## Sensitivity analysis

265. It is recognised that many of the calculations within this Impact Assessment only generate illustrative estimates based on plausible assumptions. The specific choices behind these assumptions can have a substantial impact on the final estimates. Therefore, we have selected several variables for sensitivity analysis based on the degree of uncertainty, and the extent to which they determine the direction and magnitude of the policy's net present value. These variables are:

- The proportion of sales at checkouts and end-of-aisles which are replaced by healthier items,
- The proportion of sales that are of products located at checkouts and ends of aisles,
- The relative profit margins for HFSS products compared to other food and drink products,
- The profit margins for HFSS and non HFSS food and drink manufactures,
- The factors underlying the transition cost calculations.

266. Calculations are performed below for the costs and benefits of the central estimate of the preferred option, Option 3. Similar uncertainties exist around the figures calculated for Option 2. As the same calculation methodology has been used across each option, we would expect the impact of variables differing from our central assumptions to be similar for both options.

### Proportion of sales at checkouts and ends of aisles replaced by healthier items

267. The central estimates above are calculated based on differential profit margins rather than differential sales uplifts. This assumes that the value of sales at checkout and end-of-aisle locations remains the same but the profit margin achieved on those sales decreases. It is possible that healthy products benefit to a lesser degree from being placed in these locations, and achieve fewer sales than HFSS products. Therefore, below we compare our central estimate to a scenario in which healthy food and drink products only achieve half the sales previously done by HFSS items.

Table 25: Varying the proportion of HFSS sales replaced by healthier products

Option 3, £m	Central estimate	High cost scenario
End-of-aisle	100%	50%
Checkouts	100%	50%



Retailer and out-of-home profit	-£1,140	-£1,800
HFSS food and drink Manufacturer profit	-£370	-£370
Healthier food and drink manufacturer profit	£370	£185
Total Benefits	£2,475	£4,735

268. As Table 25 shows, reducing the proportion of HFSS checkout and end-of-aisle sales that are replaced by healthy items increases both the major costs and benefits of the policy. These changes are not proportional to each other, but suggest that for any plausible set of assumptions the net present value will remain positive.

### Proportion of sales at checkouts and ends of aisles

269. The central estimates above assume that 7.1% of sales occur at checkouts, with a further 20% occurring 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%. We additionally consider scenarios in which checkouts account for only 5% or up to 15% of sales.

270. This sensitivity analysis is not intended to examine the uncertainty around the sales uplift generated by key locations, 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.

Table 26: Varying key locations share of sales, 25-year present values

Option 3, £m	Low cost scenario	Central Estimate	High cost scenario
End-of-aisle sales share	10%	20%	30%
Checkout sales share	5%	7.1%	15%
Retailer and out-of-home profit	-£775	-£1,140	-£2,325
HFSS manufacturer profit	-£205	-£370	-£615
Health benefit	£1,325	£2,475	£3,970

271. As Table 26 shows, modifying the share of sales accounted for by key locations either increases or decreases both the major costs and benefits at the same time. These changes are not quite proportional to each other – the ratio of costs to benefits is slightly higher under the low impact scenario compared to the high impact scenario, but for any plausible set of assumptions, the net present value will remain positive.

### Relative profit margins

272. Our central estimates assume that HFSS products sold at checkouts achieve a profit margin of 31.5%, compared to 12.4% for the items that would replace them. 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%.

273. The base case modelling has assumed a 1-percentage point difference in the profit margins of HFSS products and other products placed at the ends of aisles. With average retailer profits of around 2%, this represents a 50% difference in profit margins. We vary the percentage point difference in profit margins between 0.5% and 2% below.

Table 27: Varying profit margins, 25-year present values

Option 3, £m	Low cost scenario	Central Estimate	High cost scenario
Checkout profit margin difference	5%	19.1%	19.1%
End-of-aisle profit margin difference	0.5%	1%	2%
Retailer and out-of-home profit	-£330	-£1,140	-£1,280
HFSS manufacturer profit	-£370	-£370	-£370
Health benefit	£2,475	£2,475	£2,475

274. As Table 27 shows, restricting the placement of HFSS products results in substantially higher health gains across all scenarios.

### Profit margins for HFSS and non HFSS food and drink manufactures

275. 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.

276. Below we consider a high and a low-cost scenario where HFSS manufactures have a 1-percentage point higher and lower profit margin.

Table 28: Difference in manufacturer profit margins, 25-year present values

Option 3, £m	Low cost scenario	Central Estimate	High cost scenario
HFSS manufacturer profit margin difference	-1%	0%	1%
Overall impact on food and drink manufacturers	£62	£0	-£62
Health benefit	£2,475	£2,475	£2,475

277. As Table 28 shows, modifying the difference in profit margins between HFSS and non HFSS manufactures 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.

### Transition costs

278. Transition costs have been identified due to the need to assess products and plan and implement new store layouts. These costs are dependent on several assumptions, including the time taken to assess products, the number of products requiring assessment, the staff costs associated with planning new layouts and the staff costs associated with implementing new layouts.

279. We consider a high cost scenario below in which the number of products per store, and hours taken to plan and implement layouts is twice the value assumed under our base case, and time taken to assess products is increased by 50%. As Table 29 shows, while this does result in a substantial increase in transition costs, these are still marginal relative to the long run policy costs and benefits.

Table 29: Varying transition cost assumptions, 25-year present values

Option 3, £m	Central Estimate	High cost scenario
Product assessment	-£1.7	-£2.9
Store planning & adjustment	-£33.2	-£64.5

# Specific Impact Tests

## Small and Micro Business Assessment

280. This section considers the estimated impact specifically on small and micro businesses from both options. The calculations below consider the costs under our central estimate with 40% calorie compensation and assume that micro businesses would be excluded from these regulations.

281. With respect to Small and Micro Businesses (SMBs), we consider the following five impacts:

- Transition costs associated with the assessment of products and planning/implementation of new store layouts,
- Lost profits arising from removing products high in fat, salt, and sugar (HFSS) from key locations,
- Increased profits arising from the sale of healthier goods newly placed in key locations,
- Profits for manufacturers of HFSS products,
- Profits for other manufacturers.

### *Transition costs*

#### Option 2

282. Based on the IDBR data we estimate that there are approximately 1,680 small food retail businesses across England who would be affected by the proposed regulations. However, we are unable to estimate the number of outlets owned by small businesses from the IDBR data. Assuming each small business has 3 outlets would suggest that 5,040 retail outlets in total belong to small businesses.

283. This suggests that the assessment of HFSS products would cost approximately £265k for these businesses and familiarisation costs would be around £27k.

284. These small retailers would also face additional costs in terms of planning and implementing new store layouts. This has been estimated at approximately £1.4m across England.

285. Based on the IDBR data we estimate there are 13,115 small businesses in out-of-home sector that would be affected by these regulations. It seems likely that an out-of-home food outlet will require more staff than a comparable food retail store, with people needed to both prepare and serve the food. As a result, we assume that on average, each small out-of-home food business has 1.5 outlets. Implying there are approximately 19,700 outlets belonging to small businesses in England.

286. This would suggest that the assessment of HFSS products would cost approximately £409k for these businesses and familiarisation costs would be around £178k.

287. Small out-of-home food businesses would also face additional costs from planning and implementing new layouts. This has been estimated at approximately £2.2m.

#### Option 3

288. We expect the transition costs for small businesses to be the same as under Option 2.

### *Retailer profits*

#### Option 2

289. 'Symbols and Independents' and 'other outlets' have been identified as accounting for 4.8% of GB grocery sales. Not all this market share will be accounted for by small businesses, with certain large retailers falling under these categories. However, considering impacts on these two categories can give an estimate of the potential impact on small retailer profits. In contrast, ONS retail sales data find that 9.2% of sales in non-specialised food stores in 2016 occurred in 'small businesses'. We therefore consider the impact on profits under both market shares.

290. Assuming no small retailers currently restrict the items made available at the ends of aisles, we might expect the loss in retailer profits from this restriction to fall proportionately on the 4.8/9.2% section of the market identified above. This suggests small retailers in England could experience reduced profits of between £0.8m and £1.5m per year.

291. Given the progress of major supermarkets toward removing HFSS products from checkouts, a greater proportion of the reduction in profits from restricting checkout placements would be expected to fall on small businesses. Table 10 indicates that this 4.8% section of the market account for around 31% of sales through checkouts displaying HFSS products. Of the £31m annual reduction in profits from restricting checkout sales under the central estimate of Option 2, we might therefore expect up to £10.4m of this to fall on small businesses. If this section of the market accounts for 9.2% of all sales, the annual reduction in profits for small businesses would rise to £15.9m.

292. It is not thought that a restriction on placement of HFSS products within retailers would result in reduced footfall for small retailers. Moreover, we do not think placement of items within stores encourages trips, but modifies purchasing behaviours once customers have entered the store.

### Option 3

293. Applying the same methodology and assumptions to Option 3 suggests small retailers could experience reduced profits of between £0.7m and £1.3m per year from reduced sales of HFSS products on the ends of aisles.

294. The clear majority of HFSS products on display at checkouts are deemed likely to be confectionary or similar. We would therefore expect all of these products to be included in Public Health England's sugar and calorie reduction programmes and the Soft Drinks Industry Levy (SDIL). As a result, we would expect a similar reduction in checkout sales and profits as estimated for Option 2. We might therefore expect up to a £10.4m reduction in profits for small businesses using the Kantar market shares and a £15.9m reduction using the ONS retail sales data.

### *Out-of-home Profits*

#### Option 2

295. From the IDBR data, we estimate that around 21% of turnover in the food and beverage service sector is accounted for by small businesses. Using this figure to calculate the amount of revenue in the food sector that occurs at these businesses, we estimate that the value the included food market is around £2.9bn.

296. Using the same methodology as previously suggests that £209m of these sales occur at checkouts per year, of which around £104m are on HFSS products. Applying a 31.5% profit margin to the value of HFSS food sales results in lost profits of £32.6m per annum.

297. As discussed under option 2 this does not represent the final change in profits. We would expect other items now placed at checkout locations and HFSS items now located within aisles to deliver additional profits. This reduces the total net loss per annum to around £14m.

298. This figure is then adjusted to calculate an England only cost and take into account calorie compensation. This results in lost profit of around £7m per year.

#### Option 3

299. As stated previously, the clear majority of HFSS products on display at checkouts are deemed likely to be confectionary or similar. We would therefore expect all of these products to be included in Public Health England's sugar and calorie reduction programmes and the SDIL. As a result, we would expect a similar reduction in checkout sales as estimated for Option 2.

300. We might therefore expect small out-of-home businesses to see a £7m reduction in profits per year.

### *Manufacturer profits*

301. It is not currently clear what proportion of HFSS products are sourced from small and micro manufacturers.

302. It is possible that small and micro manufacturers of HFSS products would benefit relative to larger manufacturers because of this restriction. It has been identified that retailers receive substantial payments from certain manufacturers to ensure prominent positioning of their goods. Given that these payments would represent a far greater relative cost to small manufacturers, it seems likely that only larger manufacturers are currently able to afford to do so. Restricting the placement for products from all manufacturers of HFSS products could therefore result in a more level playing field.

## Equality Test

303. To assess the potential impact of the proposed policies 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 considered as part of the second chapter of the governments childhood obesity plan<sup>103</sup>.

- **Do you think this proposal would have a differential impact on people on the basis of their age, sex, race, religion, sexual orientation, pregnancy and maternity, disability, gender reassignment and marriage/civil partnership? (Consultation question 50)**

## Inequalities Test

304. 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).

305. 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 10 years.

Table 30: Childhood obesity prevalence by deprivation

<b>Obesity Rate Prevalence by IMD2015 Decile</b>				
		<b>Most Deprived</b>	<b>Least Deprived</b>	<b>Gap</b>
4 - 5 years old	<b>2006/07</b>	12.3%	7.1%	5.1%
	<b>2016/17</b>	12.7%	5.8%	6.8%
10 - 11 years old	<b>2006/07</b>	21.5%	12.1%	9.4%
	<b>2016/17</b>	26.3%	11.4%	15.0%

*Source: PHE analysis of National Child Measurement Programme*

306. 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.

307. If those in lower socioeconomic groups consume more items subject to 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.

308. However, as outlined above, here it is assumed that micro-businesses will be excluded from this policy. We do not know how the concentration of micro-businesses varies by area. If micro-businesses were concentrated in more deprived areas, excluding them from the intervention would mean the impacts of the policy would be concentrated in the least deprived areas, worsening the inequality gap.

309. 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.

- **Do you think this proposal would have a differential impact on people from lower socioeconomic backgrounds? (Consultation question 54)**

## Competition Test

310. Does the proposal:

<sup>103</sup> Childhood obesity plan for action chapter 2: equality assessment: <https://www.gov.uk/government/publications/childhood-obesity-plan-for-action-chapter-2-equality-assessment>

### 1. *Directly limit the number or range of suppliers?*

- The proposal places no direct limit on the number of businesses that can operate in the market.

### 2. *Indirectly limit the number or range of suppliers?*

- Both options only apply to small, medium and large retailers and out-of-home food businesses. 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 businesses will not affect this. Their exclusion advantages the micro retailers.

### 3. *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.

### 4. *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**

311. 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**

312. 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.

## **Human Rights Assessment**

313. 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 and would welcome any submissions addressing this.

## **Rural Proofing**

314. 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 businesses that might be excluded under both options being considered. As a result, these restrictions might have a smaller impact on rural communities compared to those living in more urban areas.

## Justice Impact Test

315. 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.

DRAFT

## Annex A – DHSC Calorie Model

1. This document aims to give a brief but high-level summary of the DHSC Calorie Model. The purpose of the DHSC Calorie Model is to estimate the health and NHS cost impacts caused by a change in excess calorie consumption. Further details are provided in the [Technical Consultation Document](#).
2. The DHSC Calorie Model is a cohort-based model implemented in Microsoft Excel using an iterative approach on a yearly basis.
3. The impacts of a change in excess calorie consumption are modelled using a control and treatment scenario, with the control scenario assuming no policy implementation, and the treatment scenario assuming a calorie imbalance reduction. The effects of the policy are measured by comparing the two scenarios over a 25-year period.
4. The model simulates cohorts of adults grouped into ages 19-64 and 65-79, and children in two age groups: 4-10 and 11-18 years. It groups these broad age groups into different gender, and weight categories.
5. Early results from modelling children and adults together and comparing it to modelling adults only showed that, in a 25-year period, the health benefits are predominantly in adulthood. As most impacts on children's health resulting from obesity occur later in life, it was decided that, in modelling terms, it was preferable to only include the impact during adulthood. This simplified the model significantly without compromising its quality. While impacts are not modelled in childhood, benefits for today's children are modelled when they become adults.
6. The input to the model is the calorie reduction per day set by the policy. Changes in weight and BMI caused by the reduction in excess calories are calculated and used as a starting point for the remainder of the analysis within the model.
7. The model then considers the implications of the calorie imbalance reduction on 5 diseases associated with obesity: diabetes, coronary heart disease, stroke, colorectal cancer, and breast cancer. This is done by considering changes in prevalence and mortality rates for each disease caused by changes in BMI in order to calculate the number of deaths avoided in the treatment scenario. The savings to the NHS are calculated from the reduced treatment of each disease.
8. Reductions in mortality are used to calculate the impact 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.
9. 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.
10. 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.
11. 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.
12. The calculations (which are carried out on a year-by-year basis) are summed to calculate overall changes over a 25-year period.



## 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<sup>104</sup>.
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' nutrients 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.

<sup>104</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/216094/dh\\_123492.pdf](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 <sup>a</sup> (g)	or AOAC Fibre <sup>a</sup> (g)	Protein <sup>b</sup> (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

a 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 – Questions for consultation

- Is our assessment of the major supermarkets approach to placing HFSS food and drinks at checkouts accurate? (Consultation question 44)
- Is there evidence to suggest that smaller retailers are voluntarily restricting the placement of HFSS food and drink in their stores? (Consultation question 45)
- Is there any additional evidence that would improve our estimates of the use of location promotions within the domestic retail or OOH markets, the sales uplift they provide and proportion of sales they represent? (Consultation question 46)
- Are you aware of any other data sources available which would improve our estimates of the number of food retailer and out-of-home food outlets? (Consultation question 38)
- Are you aware of any comprehensive data sources on sales in the out-of-home food market and the nutritional content of the products sold? (Consultation question 38)
- The above calculations represent illustrative transition costs. Do these calculations reflect a fair assessment of the costs that would be faced by your organisation? (Consultation question 37)
- How will these proposals affect the relationships between manufacturers and retailers (e.g. sales agreements, sales targets, the future relationships and profitability)? (Consultation question 40)
- Is it reasonable to assume that retailers and OOH businesses are inspected every 3.5 and 2 years, respectively? (Consultation question 41)
- Is there any additional evidence that would improve our understanding of the level of compensating behaviour which might occur? (Consultation question 42)
- Do you think this proposal would have a differential impact on people on the basis of their age, sex, race, religion, sexual orientation, pregnancy and maternity, disability, gender reassignment and marriage/civil partnership? (Consultation question 52)
- Do you think this proposal would have a differential impact on people from lower socioeconomic backgrounds? (Consultation question 56)

### **The Department of Health and Social Care would welcome any further comments regarding**

- The calculations conducted in the Impact assessment
- The assumptions made in the Impact assessment

# Annex D – 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 6<sup>th</sup> of April 2018.
2. A drink is liable for the Soft Drinks Industry Levy if it meets all of the following conditions:
  - It has had sugar added during production, or anything (other than fruit juice, vegetable juice and milk) that contains sugar, such as honey
  - It contains at least 5 grams (g) of sugar per 100 millilitres (ml) in its ready to drink or diluted form
  - 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
  - It is bottled, canned or otherwise packaged so it is ready to drink or be diluted
  - 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<sup>105</sup>.
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

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<sup>105</sup> 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<sup>106</sup>.

### **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<sup>107</sup>.

<sup>106</sup> 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 21/06/2018)

<sup>107</sup> Public Health England (2018) Sugar reduction: Achieving the 20% <https://www.gov.uk/government/collections/sugar-reduction> (Accessed 21/06/2018)