Summary: Intervention and Options	RPC Opinion:				
Department for Health and Social Care					
Other departments or agencies:	Childhood.Obesity@dhsc.gov.uk				
Department for Digital, Culture, Media & Sport	Contact for enquiries:				
Lead department or agency:	Type of measure: Primary Legislation				
RPC Reference No:	Source of intervention: Domestic				
IA No: 13013	Stage: Final				
Salt and Sugar (HFSS) products	Date: 25/05/2021				
Title: Introducing a 2100-0530 watershed on TV and online restriction for paid advertising of food and drink that are High in Fat	Impact Assessment (IA)				

Cost of Preferred (or more likely) Option (in 2019 prices)								
Total Net Present Value	Business Net Present Value	Net cost to business per year	Business Impact Target Status Qualifying provision					
£1,585m	-£664	£199m	£928m					

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, increasing the risk of developing heart disease, stroke, type 2 diabetes and cancer. Relatively small but consistent levels of excessive calorie consumption is the key driver of obesity. Evidence shows that children's food preferences and consumption can be influenced by advertising.

What are the policy objectives and the intended effects?

The policy aims to influence children's consumption behaviour, by reducing the amount of advertising that they see for HFSS products on television and online, therefore reducing the likelihood of them consuming excess amounts of HFSS products, purchasing these products directly or influencing family purchases of these products. By limiting when and where HFSS products can be advertised, the proposed policy options aim to reduce children's exposure to HFSS advertisements.

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

Option A - 'Do nothing' – No Government intervention, retain existing food advertising restrictions for online and broadcast TV for programmes which ban HFSS advertising in media created for children or in media with a child audience over 25%.

Option B - Advertising restriction on HFSS products listed in Annex B, **applied on broadcast TV only**, via a 2100-0530 watershed.

Option C - Advertising restriction on HFSS products listed in Annex B. Retain the current restrictions for broadcast TV and **introduce a 2100-0530 watershed online.**

Option D - Advertising restriction on HFSS products listed in Annex B. Retain the current restrictions for broadcast TV and **introduce online restrictions for paid advertising**.

Option E - Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on **broadcast TV** and **online**.

Option F (preferred) - Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on **broadcast TV** <u>and</u> online restrictions for paid advertising.

Option F is the Government's preferred option.

For TV advertising, a 9pm watershed on TV is the most appropriate way to achieve our policy objectives of limiting the advertising children see and so their subsequent consumption of HFSS products. Four fifths of all respondents to the 2019 consultation also favoured the introduction of a 9pm watershed.

For online advertising, restrictions on paid for advertising are the most appropriate measure. Advertising restrictions will be applicable to large businesses only, with small and medium-sized enterprises (SME) advertisers exempt.

Will the policy be reviewed? Yes	Review date: 2027 (5 years after implementation in 2022)

Is this measure likely to impact on international trade and investment? No									
Are any of these organisations in scope? Micro: No Small: No Medium: No Large: Yes									
What is the CO ₂ equivalent change in green (Million tonnes CO ₂ equivalent)	Traded:	N/A	Noi	n-traded: N/A					

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.

Policy Option B

Description: Advertising restriction on HFSS products listed in Annex B, <u>applied on broadcast TV only, via a</u> <u>2100-0530 watershed.</u>

FULL ECONOMIC ASSESSMENT

Price Base Year: 2019	Net I	Benefit (Present Val	ue (PV)) (£m)
Time Period Years: 100	Low: -561	High: 1,080	Best Estimate: 297

COSTS (£m)	Total Transition		Average Annual	Total Cost
	(Constant Price)	Years	(excl.Transition)(Constant Price)	(Present Value)
Low	3	1	7	460
High	7	1	9	604
Best Estimate	5	1	8	532

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

Over 25 years the cost to advertisers is £518m in returns to advertising investment. Enforcement costs are estimated at £9m. The transition costs are £5m and fall mainly to manufacturers and advertising agencies, with £1m in enforcement set-up.

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

Other businesses indirectly affected by the losses to broadcasters, advertising agencies and manufacturers / retailers. For example, businesses employed to film or produce HFSS TV adverts. There may also be transition costs specific to broadcasters such as scheduling changes or cancelled contracts with advertising agencies.

BENEFITS(£m)	Total Transition		Average Annual	Total Benefit	
	(Constant Price)	Years	(excl.Transition)(Constant Price)	(Present Value)	
Low	N/A		N/A	42	
High	N/A		N/A	1,540	
Best Estimate	N/A		N/A	828	

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

Appraised over 100 years, lower calorie consumption by children over their lifetimes is expected to generate health benefits primarily as a result of fewer cases of type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer, among other health conditions. The present value of these health benefits is estimated at £751m. In addition, it would provide NHS savings of £18m, social care savings of £15m, and reduced premature mortality is expected to deliver an additional £44m of economic output.

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

Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. Wider health effects such as improved oral health and emotional wellbeing may also result. Adults might also experience significant health benefits from reduced exposure. If HFSS advertisers generate profits as a result of higher levels of consumption by adults as well as children, this introduces a potential disconnect between the estimation of costs and benefits that would underestimate the net present value of the policy.

Key ass	umptio	ons/sens	itivities/risks				Di	scou	nt rate (%)	3.5/1.5%
14				 11500						

Key assumptions in the analysis include that some HFSS advertising is displaced to other media, and advertisers will move some adverts post-watershed. Health benefits require the direct impacts of the intervention to be maintained throughout life and are based on laboratory studies investigating the impact of HFSS TV advertising exposure on children's immediate consumption. Differing approaches to the calculation of costs and benefits may mean that costs to advertisers stem from adults and children, while benefits only relate to children, underestimating the net benefit. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts in line with HMT Green Book methodology. The total broadcasting revenue at risk is from HFSS advertising during 0530 to 2100.

BUSINESS ASSESSMENT (Option B)

Direct impact on business (Equivalent Annual) £m:

Score for Business Impact Target (qualifying provisions only) £m:

Costs:	Benefits:	Net:	
72	0	72	334

Policy Option C

Description: Advertising restrictions on HFSS products listed in Annex B. Retain the current restrictions for broadcast TV and <u>introduce a 2100-0530 watershed online.</u>

FULL ECONOMIC AS	SESSMENT							
Price Base Year: 20	١	Net Benefit (Present Value (PV)) (£m)						
PV Base Year: 2022	2		104	Hig	h • 2 271	Bost Esti	mate: 1 0/7	
Time Period Years:	100	LOW.	104	ing	II. 2,27 1	Dest Lati	mate: 1,047	
COSTS (£m)	Total T	ransition		Av	erage Annual		Total Cost	
	(Constant Price)	Years	(excl.T	ransition)(Constant Price)		(Present Value)	
Low	3	1			2		118	
High	7	1			2		158	
Best Estimate	5	1			2		126	
 Description and scale of key monetised costs by 'main affected groups' Over 25 years advertisers are expected to lose £112m in returns to advertising investment. Enforcement costs are estimated at £9m. Transition costs are £5m and fall mainly to manufacturers and advertising agencies, with £1m in enforcement set-up. Other key non-monetised costs by 'main affected groups' Other businesses indirectly affected by the losses to online platforms, advertising agencies and manufacturers / 								
transition costs spec	ific to online platforms	s such as c	cancelle	d contrac	ts with advertisi	ing agencies	6.	
BENEFITS (£m)	Total T	ransition		Av	erage Annual		Total Benefit	
	(Constant Price)	Years	(excl.T	ransition)(Constant Price)		(Present Value)	
Low	N/A				N/A		54	
High	N/A			N/A			2,389	
Best Estimate	N/A				N/A		1,173	
 Description and scale of key monetised benefits by 'main affected groups' Appraised over 100 years, lower calorie consumption by children over their lifetimes is expected to generate health benefits as a result of fewer cases of type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer. These health benefits are estimated at around £1.1bn. In addition, it would provide NHS savings of £26m, social care savings of £21m and reduced premature mortality is expected to deliver an additional £62m of economic output. Other key non-monetised benefits by 'main affected groups' Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. Wider health effects such as improved oral health and emotional wellbeing may also result. Adults might also experience significant health benefits from reduced exposure. If HFSS advertisers generate profits as a result of higher levels of consumption by adults as well as children, this introduces a potential disconnect between the estimation of costs and benefits that would underestimate the net 								
Key assumptions/s		Discount rat	3.5%/1.5%					
Key assumptions in the analysis include that some HFSS advertising is displaced to other media and post- watershed. Health benefits require the direct impacts of the intervention to be maintained throughout life and are based on laboratory studies investigating the impact of HFSS TV advertising exposure on children's immediate consumption. Differing approaches to the calculation of costs and benefits may mean that costs to advertisers stem from adults and children, while benefits only relate to children. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts in line with HMT Green Book methodology. Online HFSS spend and impacts have been scaled using data from Comscore. BUSINESS ASSESSMENT (Option C)								
Direct impact on bu	isiness (Equivalent	Annual) £	m:	Score for Business Impact Target (qualifying provisions only) £m:				
Costs:	Benefits:	Net:			<i></i>			

99 0 99 461	
-------------	--

Description: Advertising restriction on HFSS products listed in Annex B. Retain the current restrictions for broadcast TV and introduce online restrictions for paid advertising.

FULL ECONOMIC ASSESSMENT

Price Base Year: 2	019	Net Benefit (Present Value (PV)) (£m)					
PV Base Year: 2022 Time Period Years	Time Period Years: 100 Low: -110 High: 2,399 Best						
COSTS (£m)	Total T	ransition		Average Annual	Total Cost		
	(Constant Price)	Years	(excl.]	Transition)(Constant Price)	(Present Value)		
Low	3	1		2	118		
High	7	[′] 1		2	175		
Best Estimate	5	1		2	128		
Description and so Over 25 years adve estimated at £9m. T in enforcement set-	ale of key monetise rtisers are expected to ransition costs are £5 up.	d costs b o lose £1 im and fa	y 'main 15m in H Il mainly	affected groups' FSS advertising revenue to manufacturers and ad	. Enforcement costs are vertising agencies, with £1m		
Other key non-mor Other businesses in retailers. For examp transition costs spec	directly affected by th le, businesses or peo ific to online platform	in affecto e losses f ple emplo s such as	ed group to online byed to p cancelle	os ' platforms, advertising ag roduce HFSS online adve d contracts with advertisi	encies and manufacturers / erts. There may also be ing agencies.		
BENEFITS (£m)	Total T	ransition		Average Annual	Total Benefit		
	(Constant Price)	Years	(excl.]	Fransition)(Constant Price)	(Present Value)		
Low	N/A			N/A	65		
High	N/A			N/A	2,517		
Best Estimate	N/A			N/A	1,346		
Appraised over 100 health benefits as a liver disease and bro provide NHS saving deliver an additional	years, lower calorie of result of fewer cases east cancer. These he s of £29m, social care £71m of economic of	onsumpti of type 2 alth bene savings utput.	s by ma on by chi diabetes efits are e of £24m	in affected groups' ildren over their lifetimes , coronary heart disease, estimated at around £1.2t and reduced premature i	is expected to generate , stroke, colorectal cancer, on. In addition, it would mortality is expected to		
Other key non-monetised benefits by 'main affected groups' Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. Wider health effects such as improved oral health and emotional wellbeing may also result. Adults might also experience significant health benefits from reduced exposure. If HFSS advertisers generate profits as a result of higher levels of consumption by adults as well as children, this introduces a potential disconnect between the estimation of costs and benefits that would underestimate the net present value of the policy							
Key assumptions/s	ensitivities/risks		Discou	Int rate(%)	3.5%/1.5%		
Key assumptions in the analysis include that some online HFSS advertising is displaced to other media. Health benefits require the direct impacts of the intervention to be maintained throughout life and are based on laboratory studies investigating the impact of HFSS TV advertising exposure on children's consumption. Differing approaches to the calculation of costs and benefits may mean that costs to advertisers stem from adults and children, while benefits only relate to children, underestimating the net benefit. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts in line with HMT Green Book methodology. Online HFSS spend and impacts have been scaled using data from Comscore.							
Direct impact on b	Direct impact on business (Equivalent Annual) £m: Score for Business Impact Target (quali provisions only) £m:				npact Target (qualifying		
Costs:	Benefits:	Net:					
128	0	128		595			

Description: Advertising restriction on HFSS products listed in Annex B. <u>Applied via a 2100-0530 watershed on</u> <u>broadcast TV and online</u>.

Price Base Year: 2019 PV Base Year: 2022 Time Period Years: 100			Net Benefit (Present Value (PV)) (£m)				
		Low: -	Low: -620		High: 3,567	Best	Best Estimate: 1,574
COSTS (£m)	Total Tra	nsition	nsition		Average Annual		Total Cost
	(Constant Price)	Years	(excl.T	rans	ition)(Constant Price)		(Present Value)
Low	3	3 1			9		617
High	8	3 1			11		728
Best Estimate	5	5 1	10			663	
Description and scale of key monetised costs by 'main affected groups' Over 25 years advertiser costs from lost HFSS advertising investment returns are £649m. Enforcement costs are estimated at £9m. Transition costs are £5m and fall mainly on manufacturers and advertising agencies, with £1m in enforcement set-up. Other key non-monetised costs by 'main affected groups' Other businesses indirectly affected by the losses to broadcasters, online platforms, advertising agencies and manufacturers / retailers. For example, businesses employed to film or produce HFSS TV adverts or design online adverts. There may also be transition costs specific to broadcasters and online platforms such as							
consultation should	mitigate these.		1	5-0			
BENEFITS(£m)	Total T	ransition) /		Average Annual		Total Benefit
	(Constant Price)) Years	(excl. I	rans	ition)(Constant Price)	 	(Present Value)
Low	N/A	<u>`</u>			N/A		108
High	N/A	<u>`</u>			N/A		4,185
Best Estimate	Best Estimate N/A 2,237						
Description and scale of key monetised benefits by 'main affected groups' Appraised over 100 years, lower calorie consumption by children over their lifetimes is expected to generate health benefits as a result of fewer cases of type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer. These health benefits are estimated at around £2.0bn. In addition, it would provide NHS savings of £49m, social care savings of £40m and reduced premature mortality is expected to deliver an additional £118m of economic output. Other key non-monetised benefits by 'main affected groups' Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. Wider health effects such as improved oral health and emotional wellbeing may also result. Adults might also experience significant health benefits from reduced exposure. If							
introduces a potential disconnect between the estimation of costs and benefits that would underestimate the net present value of the policy							
Key assumptions/s	ensitivities/risks		Discount rate (%)			3.5 / 1.5%	
Key assumptions in the analysis include that some HFSS advertising is displaced to other media. Health benefits require the direct impacts of the intervention to be maintained throughout life and are based on laboratory studies investigating the impact of HFSS TV advertising exposure on children's consumption. Differing approaches to the calculation of costs and benefits may mean that costs to advertisers stem from adults and children, while benefits only relate to children, underestimating the net benefit. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts in line with HMT Green Book methodology. The total broadcasting revenue at risk is from HFSS advertising during 0530 to 2100. Online HFSS spend and impacts have been scaled using data from Comscore.							
Direct impact on business (Equivalent Annual) £m:			Sc pro	ore for Business In ovisions only) £m:	npact T	arget (qualifying	
Costs:	Benefits:	Net:					

Description: Advertising restriction on HFSS products listed in Annex B. <u>Applied via a 2100-0530 watershed on</u> broadcast TV and online restrictions for paid advertising.

FULL ECONOMIC ASSESSMENT

199

0

Price Base Year: 2019 PV Base Year: 2022 Time Period Years: 100		Net Benefit (Present Value (PV)) (£m)				
		Low: -627		High: 3,598	Best Estimate: 1,585	
COSTS (£m)	Total Tra	nsition Average Annual		Average Annual	Total Cost	
	(Constant Price)	Years	(excl.Transition)(Constant Price)		(Present Value)	
Low	3	1		9	640	
High	8	1		11	735	
Best Estimate	5	1		10	673	
Description and scale of key monetised costs by 'main affected groups' Over 25 years advertisers are expected to lose £659m in returns to advertising spending. Enforcement costs are estimated at £9m. Transition costs are £5m and fall mainly to manufacturers and advertising agencies, with £1m in enforcement set-up. Other key non-monetised costs by 'main affected groups' Other businesses indirectly affected by the losses to broadcasters, online platforms, advertising agencies and manufacturers / retailers. For example, businesses employed to film or produce HFSS TV adverts or design online adverts. There may also be transition costs specific to broadcasters and online platforms such as						
BENEFITS(£m)	Total Tra	insition		Average Annual	Total Benefit	
	(Constant Price)	Years	(excl.Tran	sition)(Constant Price)	(Present Value)	
Low	N/A			N/A	108	
High	N/A			N/A	4,238	
Best Estimate	N/A			N/A	2,258	
 Description and scale of key monetised benefits by 'main affected groups' Appraised over 100 years, lower calorie consumption by children over their lifetimes is expected to generate health benefits as a result of fewer cases of type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer. These health benefits are estimated at around £2.0bn. In addition, it would provide NHS savings of £50m, social care savings of £40m and reduced premature mortality is expected to deliver an additional £119m of economic output. Other key non-monetised benefits by 'main affected groups' Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. Wider health effects such as improved oral health and emotional wellbeing may also result. Adults might also experience significant health benefits from reduced exposure 						
Key assumptions/set	ensitivities/risks		Discount	rate (%)	3.5 / 1.5%	
Key assumptions in the analysis include that some HFSS advertising is displaced to other media. Health benefits require the direct impacts of the intervention to be maintained throughout life and are based on laboratory studies investigating the impact of HFSS TV advertising exposure on children's consumption. Differing approaches to the calculation of costs and benefits may mean that costs to advertisers stem from adults and children, while benefits only relate to children, underestimating the net benefit. A discount rate of 1.5% is applied to health impacts and 3.5% to all other monetised impacts in line with HMT Green Book methodology. The total broadcasting revenue at risk is from HFSS advertising during 0530 to 2100. Online HFSS spend and impacts have been scaled using data from Comscore. BUSINESS ASSESSMENT (Option F) Direct impact on business (Equivalent Annual) £m:						
			pr	ovisions only) £m:	ipaor i ai gor (quain ying	
Costs:	Benefits:	let:				

928

199

Contents

Executive Summary	10
A. Overview	17
A(i). Problem under consideration	17
A(ii). Rationale for intervention	18
A(iii). Policy Objective	20
A(iv). Policy context	20
A(v). Consultation process and responses overview	21
B. The evidence for action	24
B(i). The link between advertising and food consumption	24
B(ii). Children's media consumption	30
B(iii). Current Food Advertising Regulations	33
B(iv). Industry overviews	37
C. Scope and options overview	42
C(i). Scope	42
C(ii). Options considered	45
C(iii). Alternative Options Considered	47
D. Cost and Benefits methodologies	49
D(i). Overall Methodology	49
D(ii). Methodology - modelling the restriction on broadcast TV	52
D(iii). Methodology - modelling the online restriction	59
D(iv). Estimating children's advertising exposure	59
D(v). Health Benefits Methodology	68
D(vi). Methodology- modelling advertisers lost return on investment (ROI)	78
E. Options Assessment	83
E(i). Costs to Business	85
E(ii). Costs to government	94
E(iii). Non-monetised costs	95
E(iv). Benefits	98
E(v). Non-monetised Benefits	103
E(vi). Summary of Options	104
E(vii). Options summary table and cost-benefit ratios.	107
F. Special IA Sections	107
F(i). Effects of interactions with other policies	107
F(ii). Sensitivity and risk analysis	109
F(iii). Critical value analysis	119
F(iv). Equivalent Annual Net Direct Cost to Business	119
F(v). Specific Impact Tests	120
G. Post Implementation Review Plan	131

Annexes			
Annex A – Further Evidence and International Evidence	133		
Annex B – HFSS Food Definition	145		
Annex C – Kantar Consulting - HFSS Advertising Analysis: Methodology summary	149		
Annex D – DHSC Calorie Model V3	158		

Executive Summary

Problem and justification for action

- 1. Childhood obesity is one of the biggest health problems this country faces.¹ Around one fifth of children in England are obese or overweight by the time they start primary school aged 4-5, and this rises to more than one third by the time they leave aged 10-11.² It is also an issue that affects adults, with around two-thirds (63%) of adults being above a healthy weight, and of these, half live with obesity.³
- 2. Obesity is a major determinant of ill health increasing the risk of heart disease, stroke, type 2 diabetes and some cancers.⁴ As well as the impact on individuals, this imposes a substantial burden on the NHS, with overweight and obesity estimated to have cost the health service in the UK an estimated £6.1bn in 2014/15.⁵ Obesity causes further costs to society through premature mortality, increased sickness absence and additional benefit payments.
- 3. Obesity is caused by regularly consuming more calories than are expended. There is consensus that relatively small but consistent levels of excess calorie intake is the largest factor contributing to weight gain and obesity.^{6,7}
- 4. HFSS foods that are highly processed and energy-dense are often the items that are over-consumed, and so contribute strongly towards obesity.⁸ Taking action to help reduce this excess calorie consumption will decrease obesity prevalence and obesity related ill health.
- 5. Children are thought to be particularly vulnerable to marketing techniques, with academic evidence showing their food preferences, purchasing and consumption can be influenced by advertising.⁹ A recent study estimated that 6.4% of UK childhood obesity and 5.0% of overweight is attributable to HFSS TV advertising.¹⁰
- 6. Although food habits are not perfectly stable over life, there is potential scope for influencing lifetime habits by intervening in childhood.¹¹ Although some HFSS products will be purchased as part of a

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837907/cmospecial-report-childhood-obesity-october-2019.pdf (last accessed 29/12/2020)

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

⁵ Public Health England. (2018). Health Matters: Obesity and the food environment. Available at: <u>https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2</u> (accessed 06/02/2019)

¹ Time to Solve Childhood obesity: An Independent Report from the Chief Medical Officer, Professor Dame Sally Davies, 2019.

² NHS Digital (2020) National Child Measurement Programme 2019/20. Available here: <u>https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2019-20-school-year</u> (accessed 29/12/2020)

³ NHS Digital. (2020). Statistics on Obesity, Physical Activity and Diet, England 2020

⁶ Time to Solve Childhood obesity: An Independent Report from the Chief Medical Officer, Professor Dame Sally Davies, 2019.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837907/cmo-special-report-childhood-obesity-october-2019.pdf (last accessed 29/12/2020)

⁷ Public Health England (2018). Calorie reduction: The scope and ambition for action. Available at <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/800675/Calories</u> <u>Evidence_Document.pdf</u> (Accessed 23/02/2021)

⁸ Sonntag D, Schneider S, Mdege N, Ali S, Schmidt B. Beyond Food Promotion: A Systematic Review on the Influence of the Food Industry on Obesity-Related Dietary Behaviour among Children. Nutrients. 2015;7(10):8565–8576. Published 2015 Oct 16. doi:10.3390/nu7105414

⁹ Cairns, G., Angus, K., Hastings, G. & Caraher, M. (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. Appetite, 62, pp. 209-215.

¹⁰ Mytton OT, Boyland E, Adams J, Collins B, O'Connell M, Russell SJ, et al. (2020) The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: A modelling study. PLoS Med 17(10): e1003212. <u>https://doi.org/10.1371/journal.pmed.1003212</u>

¹¹ Hursti UK. Factors influencing children's food choice. Annals of medicine. 1999 Jan 1;31(sup1):26-32.

balanced diet and not contribute to obesity, they nevertheless represent the most focused group of adverts to target to reduce excess calorie consumption while minimising the impact on the wider market. Adjusting the consumption patterns of children by restricting their exposure to HFSS advertising therefore offers possible benefits in the long-term to both society and the individual.

Terminology

(TV) Impact

In TV advertising, an impact is defined as an individual seeing a single advert one time. For example, if 1 million children are watching a TV advert simultaneously this would result in 1 million child impacts for that advert.

(Online) Impression

In online advertising, an impression is defined as an individual seeing a single advert one time. For example, if 2 million children were served the same advert (at any time) this would result in 2 million child impressions for that advert.

NPM

The 2004/5 Nutrient Profiling Model (NPM) was developed by the Food Standards Agency (FSA) to provide Ofcom, the broadcast regulator, with a tool to differentiate foods on the basis of their nutritional composition. This is the calculation used to determine if a food or drink passes the boundary to be HFSS. See <u>Annex B</u> for more details.

HFSS

Foods and drinks that are high in fat, sugar or salt. In the context of this policy, this applies to products with a high NPM score and fall under the SDIL or the PHE sugar and calorie reformulation programmes listed in <u>Annex B</u> for more details.

SDIL

Soft Drinks Industry Levy

Advertiser

A business that is advertising an HFSS product or products. This can include manufacturers, retailers and out of home food services.

Manufacturer

A business that is manufacturing an HFSS product or products.

Retailer

A business that is selling an HFSS product or products.

Out of home food services include restaurants, cafes, market stalls and take away outlets.

Policy Objective

 The overarching objective of Chapter 2 of the Government's Childhood Obesity Plan is to halve childhood obesity and significantly reduce the gap in obesity prevalence between children from the most and least deprived areas by 2030.¹²

¹² Childhood obesity: a plan for action, chapter 2. Available from:

https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2 (accessed 06/02/2019)

8. The primary objective of introducing these restrictions is to reduce children's exposure to HFSS advertising, in order to reduce children's overconsumption of HFSS products.

Wider policies on obesity

- 9. A variety of other policies were announced as part of the Childhood obesity plan, such as the SDIL, the Sugar Reduction and Calorie Reduction Programme, a ban on sales of Energy Drinks to those under 16 years, location and volume price restrictions and Out of Home Calorie Labelling.
- 10. These policies will likely have interactions with restrictions on HFSS advertising. These interactions have not been modelled. The decision was taken not to create an overarching IA, which would require updating upon announcement of each new policy or upon new information revealed in policy development. Instead each regulatory policy has its own standalone IA. As a result, the costs and benefits presented in this IA should be considered in isolation from the other policies. An assessment of pairings of wider policies and HFSS advertising restrictions indicates that interactions would most often reduce the cost effectiveness of the policy estimated in this IA. However, it is also true that a comprehensive suite of interventions may help tackle the complex, obesogenic environment leading to gains greater than the sum of the parts.

Policy Options

- 11. In the <u>2019 consultation</u>, the Department for Health and Social Care (DHSC) and the Department for Digital Culture Media and Sport (DCMS) consulted on a number of policy options to restrict HFSS advertising, including a watershed on both TV and online. In the <u>Tackling Obesity strategy</u> published July 2020, the Government announced its intention to introduce a 9pm watershed on TV and online and that it would consult further on introducing an online restriction of HFSS advertising. This online only consultation was <u>published</u> in November 2020. As we have already announced our intention on TV, and have restricted it to two options online, we have only modelled these options, in all possible combinations. The modelled options are as follows:
 - **Option A** 'Do nothing' Retain current set of HFSS advertising restrictions for broadcast TV and online.
 - Option B Advertising restriction on HFSS products listed in <u>Annex B</u>. Retain the current set of HFSS product advertising restrictions for online and **introduce a 2100-0530 watershed on broadcast TV.**
 - **Option C** Advertising restriction on HFSS products listed in Annex B. Retain the current set of HFSS advertising restrictions for broadcast TV and **introduce a 2100-0530 watershed online.**
 - Option D Advertising restriction on HFSS products listed in Annex B. Retain the current set of HFSS advertising restrictions for broadcast TV and introduce online restrictions for paid advertising.
 - **Option E** Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on **broadcast TV** and online.
 - **Option F** (preferred)- Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on **broadcast TV** <u>and</u> **online restrictions for paid advertising**.
- 12. In all options the restrictions apply to large businesses only, with SMEs exempt from advertising restrictions both on TV and online platforms.
- 13. Option F is the Government's chosen option. For TV, Government has decided that introducing a 9pm watershed is the most appropriate way of achieving our policy objectives of limiting the advertising children are exposed to, and subsequently reducing their consumption of HFSS products. It also has the advantage that is easily understood by parents and wider stakeholders. 79% of all respondents to the 2019 consultation also favoured the introduction of a 9pm watershed. For online, Government has decided that a restriction of paid for advertising is the most appropriate measure. 74% of all

respondents to the 2020 consultation supported the proposal to introduce a total online HFSS advertising restriction.

14. The Government also considered an alternative industry-led proposal, which was presented to DCMS, DHSC and No10 officials on 9 March 2021. Our reasons for not taking this proposal further are outlined below in paragraph <u>Section C(iii)</u>.

Summary of analysis completed

- 15. The analysis relies on industry data to establish the level of HFSS advertising taking place on TV and online, and where relevant the time of day that takes place. This information is used to estimate the amount of advertising that would be restricted under the various options. Various assumptions are applied to that account for the mitigation options that advertisers, manufacturers and retailers may take. This projected distribution of advertising is used to understand the costs to advertisers and wider stakeholders involved in the advertisement of HFSS products.
- 16. Advertising data is also used to generate information on the level of HFSS advertising that a child is exposed to, and the level that this would decrease under the outlined options.
- 17. An estimate of the positive relationship between minutes of HFSS advertising exposure and calorie consumption in children has been taken from a peer reviewed meta-analysis¹³. This value is multiplied by the number of minutes of HFSS advertising averted to generate an estimate of total calorie reduction. Subsequently this calorie reduction is entered as an input into the DHSC calorie model to estimate the health and societal benefits of reduced prevalence of obesity and excess weight
- 18. The analysis assumes that the policy option will be in place for 25 years. A cohort of children who have reduced exposure to HFSS advertising are followed up to 100 years. This simulates their life and health throughout their life until death, as there is evidence of a sustained impact from early habits and many health benefits are only seen in older age. This means that costs resulting directly from restricted advertising are modelled for 25 years, but that the benefits associated with reduced calorie intake are modelled for up to 100.

Limitations, risks and caveats of the analysis

- 19. As with any analysis, there are limitations and uncertainties. The main issues that have been identified are:
 - The evidence used to link HFSS advertising exposure to calorie consumption has been generated by experimental studies that may lack generalisability to real world conditions e.g. where children have more limited access to unlimited HFSS food during and immediately after HFSS advertising exposure.
 - While there is some evidence linking children's diet to adult consumption choices, it is not
 possible to draw a firm conclusion on whether reduced HFSS consumption in childhood would be
 maintained. The benefits of reduced prevalence of being overweight and obesity in society are
 not realised until a significant period into the future. The central modelling assumes that all
 calorie reductions are maintained into adulthood.
 - The same study of effect, which assessed the effects of TV advertising, has been used as a
 proxy measure for online exposure to display and video HFSS advertising, as there is limited
 evidence for online advertising. Therefore, other forms of paid for advertising online are not
 included in the exposure reduction analysis.
 - The central analysis has not taken into account compensating behaviour by children, whereby calories averted due to less HFSS advertising exposure are made up elsewhere, e.g. main meals.

¹³ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." Obesity Reviews(2018).

- There is very limited research on the relationship between HFSS advertising and adults' consumption choices. While one study looked at this and found no impact it acknowledged its limitations and the need for further research. Given the lack of strong evidence of an impact we have taken a conservative approach when estimating health benefits and benefits to adults have not been quantified from reduced HFSS advertising on TV and online. In the estimation of costs, the impact on HFSS advertisers is based on the estimated profitability of advertising. This value is not restricted to profits derived from children. If HFSS advertisers generate profits as a result of higher levels of consumption by adults, this introduces a potential disconnect between the estimation of costs and benefits that would underestimate the net present value of the policy. Potential health benefits to adults have been included in the non-monetised benefits.
- Manufacturers may respond to advertising restrictions by increasing the use of price promotions, reducing the cost of HFSS consumption. Evidence submitted as part of the consultation indicated a willingness of manufacturers to take this action. Lower prices would encourage purchase and consumption of HFSS products, potentially undermining the effect of the advertising restrictions. However, the price elasticity of HFSS foods overall appears inelastic, meaning overall HFSS consumption may not see large rises. It is also uncertain how sustainable price promotions could be over the medium and longer term. Due to this uncertainty, in the central analysis no reduction in prices is assumed.
- 20. These issues introduce uncertainty into the generated result but have been explored through sensitivity and critical value analysis.

Costs and benefits of options

- 21. The main benefits of introducing further restrictions on HFSS food and drink advertising are expected to be a reduction in obesity prevalence and obesity related morbidity and mortality.
- 22. The main categories of costs are transition costs associated with familiarisation with the new regulations, lost advertising revenue for broadcasters, online platforms and advertising agencies and a reduction in profits for retailers and manufacturers of HFSS products.
- 23. Under options B to F, modelling has suggested that the benefits outweigh the costs, and that a positive net present value would be generated by the regulations.

Preferred Option

- 24. Under Option F transition costs are estimated to be around £5m across all impacted groups: broadcasters, ad agencies, regulators, manufacturers and retailers.
- 25. Broadcasters are estimated to lose around £1.5bn in advertising revenue, in present value, over the duration of the modelled policy period. Online platforms will see revenue fall by £3.5bn and advertising agencies are expected to lose up to £550m. Due to advertiser behaviour, these costs are not included in the calculations of net benefits as these revenues will flow elsewhere in the economy. Furthermore, our estimates suggest that retailers and manufacturers of HFSS products will see their profits reduced by £659m.
- 26. The health benefits to our cohort of children from Option F are estimated to be around 90,000 Quality Adjusted Life Years,^{14,15} or a present value of £2.0bn when monetised. This would be supplemented by NHS savings of £50m. Social care savings would amount to £40m and reduced premature mortality would be expected to deliver an additional £119m of economic output.

¹⁴ A QALY is a well recognised health metric that captures both quality and quantity of life. One QALY is equivalent to a year in full health. For the purposes of Central Government impact assessments each QALY is values at a constant £60,000.

¹⁵ This is an undiscounted number of Quality-Adjusted Life Years that will accumulate over the cohort's lifetime. When discounted at 1.5% this has a present value of approximately 34,200 Quality-Adjusted Life Years.

Non-Monetised Costs and Benefits

- 27. The modelling conducted only captures the benefits of the 6 key obesity related health conditions. Wider health benefits have not been included. Children will experience additional health benefits associated with reduced obesity related ill health and from lower salt, sugar and fat consumption. For example, there may be an associated reduction in tooth decay in children. Similarly, there is evidence linking excess weight to negative emotional and mental wellbeing.
- 28. A reduction in HFSS advertising may reduce the calorie consumption in adults. This has not been captured in the analysis. Some evidence has been found indicating that advertising has no influence on adults' calorie consumption, however, it is not conclusive and further empirical research on the subject is needed.
- 29. In addition to the costs that have been captured in the analysis there may be other businesses that are indirectly affected by the costs borne by online platforms, TV broadcasters, advertising agencies and manufacturers / retailers. For example, businesses or people employed to film HFSS advertisements or design online content. There may also be transition costs specific to broadcasters and online platforms such as scheduling changes and cancelled contracts with advertising agencies respectively.

Alternative Options

30. The table below outlines the expected impacts of the different policy options over the 100-year appraisal period.

Option	Present value costs	Present value benefits	Net present value	Business net present value	EANDCB*
A-Do nothing	0	0	0	0	0
B-TV pre- watershed	532	828	297	-2,136	72
C-Online pre watershed	126	1,173	1,047	-2,944	99
D-Online restrictions for paid advertising	128	1,346	1,217	-3,802	128
E-TV and online pre-watershed	663	2,237	1,574	-5,068	170
F-TV pre- watershed and online restrictions for paid advertising (Preferred)	673	2,258	1,585	-5,925	199

Table 1 Summary of the central estimates for the policy options (£m) over a 100-year appraisal period

*Equivalent annual net direct cost to business

Critical Value Analysis

- 31. There are a variety of sources of uncertainty inherent in the analysis. As outlined above, we have made assumptions where the evidence base is limited. In isolation, those assumptions are likely to both under- and overestimate the cost-effectiveness. The most significant of those assumptions, which would lead to an overestimate of the benefits for children, relate to the realisation of health improvements. Health benefits presented in the central analysis may be overestimated health impacts on children if they have less influence on family shopping, are more likely to engage in compensating consumption, or sustain the reduced calorie intake over a shorter period than assumed. On the part of manufacturers, if they respond with greater use of price competition, this too could reduce the observed health benefits.
- 32. Countering this are the non-quantified benefits outlined above, which while not quantified do mean we are likely underestimating the health benefits of reduced calorie intake. Another important factor is the differing methods used to estimate costs and benefits, meaning that while benefits are specific to children, costs to advertisers may also capture the effects on adults.
- 33. Empirical evidence is not always available in a format and quality that permits exploration through quantitative sensitivity analysis. So, to assess the impact of these issues, the degree of offsetting required to result in a neutral Net Present Value has been estimated.
- 34. The central estimate for Option F suggested the total benefits of the policy to be £2.3bn. Total costs are valued at £673m. This means that around 70% of the estimated benefits would need to be offset for the policy not to be deemed socially beneficial. Or alternatively, costs would need to increase by 236% for the policy to reach the 'break-even' point.
- 35. Therefore, very large changes in costs, benefits or a combination of the two, would be needed for the costs to outweigh the benefits. Again, while the uncertainty cannot be easily quantified, this does add weight to the argument that the policy is cost effective.

A. Overview

A(i). Problem under consideration

- Childhood obesity is one of the biggest health problems this country faces. Around one fifth of children in England are obese or overweight by the time they start primary school aged 4-5, and this rises to more than one third by the time they leave aged 10-11. These proportions have risen significantly over the last decade.¹⁶ Weight is also an issue that affects adults, with around two-thirds (63%) of adults being above a healthy weight, and of these, half live with obesity.¹⁷
- 2. Obesity puts children's physical health at risk. Overweight or obese children are more likely to develop Type 2 diabetes in childhood,¹⁸ and are far more likely to go on to become obese adults,¹⁹ with a higher risk of developing life-threatening conditions such as some forms of cancer, Type 2 diabetes, heart disease²⁰ and liver disease.²¹ It also damages their mental health, with those who are overweight or obese more likely to experience bullying, stigmatisation and low self-esteem.²²
- 3. The outbreak of the COVID-19 pandemic has brought the health and resilience of the nation into sharper focus as evidence shows that people who are overweight or living with obesity who contract COVID-19 are at greater risk of being seriously ill and dying from the virus.²³ As excess weight is one of the few modifiable factors for COVID-19, the Government has been clear that there is an urgent need to help support people to achieve a healthier weight and do all that they can to improve the health of the nation both now and in the future. It is recognised though that tackling obesity is a long-term objective.
- 4. The challenge and harms of obesity disproportionately affect the most deprived groups in society. Children growing up in low income households are around twice as likely to be obese as those in higher income households.²⁴ Hospital admissions directly attributable to obesity were around four times more likely in the most deprived areas (33 per 100,000 population), compared to the least deprived areas (8 per 100,000 population).²⁵ Children from black, Asian and minority ethnic group families are more likely than children from white families to be overweight or obese.²⁶ The prevalence of obesity in black women is almost double that in white women.²⁷ Those with learning difficulties are far more likely to be obese than the general population.²⁸

²³ Public Health England (2020). Excess weight and COVID-19: insights from new evidence. Available at: <u>https://www.gov.uk/government/publications/excess-weight-and-covid-19-insights-from-new-evidence</u>

¹⁶ NHS Digital. (2020). National Child Measurement Programme 2019/20

¹⁷ NHS Digital. (2020). Statistics on Obesity, Physical Activity and Diet, England 2020

¹⁸ Abbasi A, Juszczyk, D, et al. (2017). Body mass index and incident type 1 and type 2 diabetes in children and young adults: a retrospective cohort study. Journal of the Endocrine Society, 1(5), 524-537

¹⁹ Simmonds, M, Llewellyn et al. (2016). Predicting adult obesity from childhood obesity: a systematic review and meta analysis. Obesity reviews, 17(2), 95-107

²⁰ Guh et al. (2009). The incidence of co-morbidities related to obesity and overweight: a systematic review and meta- analysis. BMC Public Health, 9(1), 88

²¹ Scheen, A J. (2002). Obesity and liver disease. Best Practice & Research Clinical Endocrinology and Metabolism, 14(4), 703-716

²² Gatineau M, Dent M. (2011). Obesity and mental health. National Obesity Observatory: Oxford UK

²⁴ NHS Digital. (2020). National Child Measurement Programme 2019/20

²⁵ NHS Digital. (2020). Statistics on Obesity, Physical Activity and Diet, England 2020

²⁶ NHS Digital. (2020). National Child Measurement Programme 2019/20

²⁷ NHS Digital (2017) Health Survey for England. Available at: https://digital.nhs.uk/dataand-

information/publications/statistical/health-survey-for-england/2017

²⁸ NHS Digital (2021) Health and Care of People with Learning Disabilities, Experimental Statistics 2019 to 2020.

- 5. It is estimated that obesity-related conditions cost the NHS £6.1 billion in 2014/15.²⁹ Additionally, the total costs to society of these conditions have been estimated at around £27 billion per year³⁰ with some estimates placing this figure much higher.³¹
- 6. We know that childhood obesity is a complex problem and is caused by many different factors. As a result, no one policy and no one sector will reduce childhood obesity on its own. Therefore, the Government is committed to pursuing a wide set of actions to tackle childhood obesity.
- 7. Despite the complexity of its drivers, at its root obesity is caused by consistently consuming more calories than we use to maintain our bodies and through activity. It is estimated that on average, compared with those of ideal body weights, overweight and obese children consume between 146 and 505 excess calories per day for boys and between 157 and 291 for girls, depending on their age.³² Taking action to help reduce this excess calorie consumption will decrease obesity prevalence and obesity related ill health.
- 8. A critical part addressing childhood obesity is reducing excessive calorie intake. We make numerous decisions about the food we eat, and every day we are presented with encouragement and opportunity to eat the least healthy foods. This can be through: pricing; the advertisements our children see on TV and online; the range of foods sold in our local shops or delivered straight to our doors; and the food that is promoted in-store and online. All of this is intended to influence the choices we make about the food we buy our children and the purchasing choices children make themselves.
- 9. Evidence commissioned from Kantar (presented in <u>Table 2</u>) shows that despite strict regulations already being in place to govern advertising around children's programming, which have driven down exposure, children still see a significant volume of HFSS product advertising in the media that they engage with the most.

A(ii). Rationale for intervention

- 10. Regulatory intervention would typically be justified when there is a market failure (or several market failures) to address. That is when a market, without regulation, leads to an inefficient or sub-optimal outcome from a societal perspective. The rationale for intervention in the case of obesity is based on two market failures: negative externalities, and information failure.
- 11. Negative externalities are generated by excessive consumption of HFSS food and drinks, which are not borne by the manufacturers, the marketers, or the distributors of the products. Individuals only face some of the costs associated with ill health, as universal health care 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.
- 12. In addition to negative externalities, there is an information failure, as consumers are often not fully aware of, and manufacturers are not fully transparent about, the implications of consumption of HFSS products for their future health. This is particularly concerning in the case of children, who are less equipped to understand these health implications.

²⁹ Public Health England. (2018). Health Matters: Obesity and the food environment. Available at: <u>https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2</u> (accessed 28/02/2019)

³⁰ McPherson, K, Marsh, T. (2007). Modelling Future Trends in Obesity and the Impact on Health. Foresight Tackling Obesities: Future Choices. Available at: <u>https://www.gov.uk/government/publications/reducing-obesity-modelling-future-trends</u> (accessed 28/02/2019)

³¹ McKinsey Global Institute. (2014). Overcoming obesity: An initial economic analysis. Available at: <u>https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Economic%20Studies%20TEMP/Our%20Ins</u> <u>ights/How%20the%20world%20could%20better%20fight%20obesity/MGI_Overcoming_obesity_Full_report.ashx</u> (accessed 28/02/2019)

³² Calorie reduction: the scope and ambition for action, Public Health England, 2018: <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685359/Calorie_reduction_The_scope_and_ambition_for_action.pdf</u> (accessed 15/06/2018)

- 13. Adverts are designed to influence our decision making. However, we have only limited evidence of the degree to which adverts affect long term decision making. With evidence that adverts can lead to higher immediate consumption in children it could be inferred that there may be myopic decision making by children (where short-term gains are put ahead of future (unknown) health outcomes).
- 14. Many different cues can affect food and drink purchases, including price, taste, parental and peer influence, and public health campaigns. However, it is clear from academic evidence that marketing and TV advertising can also be effective at influencing preferences and purchases. Advertising of unhealthy, high calorie food has been identified as a contributory factor to the increasing prevalence of obesity around the world. Children are thought to be particularly vulnerable to marketing techniques, with academic evidence showing their food preferences, purchasing and consumption can be influenced by advertising.³³ A recent study estimated that 6.4% of UK childhood obesity and 5.0% of overweight is attributable to HFSS TV advertising.³⁴
- 15. The factors that influence obesity are complex and there is no single solution. Tackling obesity requires a wide range of interventions that primarily address our diet but also help increase our physical activity. The Government's <u>Sporting Future strategy</u> complements the policies in the Tackling Obesity strategy in the effort to support everyone to eat better, move more and maintain a healthy weight.
- 16. Around 16% of children aged 2-15 are considered obese, with a further 14% being overweight.³⁵ Obesity in childhood directly affects physical and mental health and is associated with an increased risk of obesity in adulthood³⁶ when the majority of overweight and obesity related ill health occurs. Although food habits are not perfectly stable over the course of life, there is potential scope for influencing lifetime habits by intervening in childhood.³⁷ Adjusting the consumption patterns of children by restricting their exposure to HFSS advertising therefore offers possible benefits in the long-term to both society and the individual.
- 17. It is difficult to associate the purchase of a single food item with excess calorie consumption. Individual products are not usually bought in an isolated decision-making process but as part of an overall attempt to satisfy a person's dietary requirements. However, certain goods are associated with a greater propensity to create impulse purchases³⁸ and act as a greater contributor to weight gain.³⁹
- 18. Although some HFSS products will be purchased as part of a balanced diet and not contribute to obesity, they nevertheless represent the most focused group of adverts to target to reduce excess calorie consumption while minimising the impact on the wider market.
- 19. Children's media consumption changes over time as new technologies develop. While television viewing is in decline it still makes up a significant portion of children's total media consumption. The current HFSS advertising restrictions that apply online and during children's TV and other programming of particular appeal to children do not provide an adequate safeguard. Analysis commissioned by DCMS for the 2019 consultation⁴⁰ showed that in 2017, there were an estimated 3.6 billion child

modelling study. PLoS Med 17(10): e1003212. <u>https://doi.org/10.1371/journal.pmed.1003212</u>

³⁵ Health Survey for England 2019, NHS Digital. Available at: <u>https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2019</u> (Accessed: 21/12/2020)

⁴⁰ "Impact Assessment - Gov.uk." 14 Mar. 2019,

³³ Cairns, G., Angus, K., Hastings, G. & Caraher, M. (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. Appetite, 62, pp. 209-215.

³⁴ Mytton OT, Boyland E, Adams J, Collins B, O'Connell M, Russell SJ, et al. (2020) The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: A modelling study. PL as Mad 17(10): a1002212, https://doi.org/10.1271/journal.pmad.1002212

³⁶ Singh AS, Mulder C, Twisk JW, Van Mechelen W, Chinapaw MJ. (2008) Tracking of childhood overweight into adulthood: a systematic review of the literature. Obesity reviews. 2008 Sep 1;9(5):474-88.

³⁷ Hursti UK. Factors influencing children's food choice. Annals of medicine. 1999 Jan 1;31(sup1):26-32.

³⁸ Muruganantham G, Bhakat RS. (2013) A review of impulse buying behaviour. International Journal of Marketing Studies, 2013 Apr 22;5(3):149.

³⁹ Mendoza JA, Drewnowski A, Christakis DA. (2007) Dietary energy density is associated with obesity and the metabolic syndrome in US adults. Diabetes care. 2007 Apr 1;30(4):974-9.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786554/advertisi ng-consultation-impact-assessment.pdf. Accessed 19 May. 2021.

impacts on TV,⁴¹ and 15.1 billion child impressions online in 2017. Furthermore, online food and drink advertising spend has increased by $450\%^{42}$ between 2010 and 2017^{43} (it should be noted this percentage includes HFSS/non-HFSS products). Media consumption is explored in depth in <u>Section</u> <u>B(ii)</u>, alongside an exploration into the evidence linking advertising to increased calorie consumption, and longer-term health consequences.

A(iii). Policy Objective

- 20. As announced in <u>Chapter 2 of the Government's Childhood Obesity Plan</u>, the Government's overarching objective is to halve childhood obesity and significantly reduce the gap in obesity between children from the most and least deprived areas by 2030.⁴⁴ These advertising restrictions are being considered alongside a range of other policies outlined in the previous chapter of the <u>Childhood Obesity Plan</u>, the <u>Prevention Green Paper: Advancing our health in the 2020s</u>, and the <u>Tackling Obesity Strategy</u>. This includes measures on labelling of food and drink in and out of home and restrictions on promotions of HFSS foods. This broad approach ensures we are taking a comprehensive and ambitious approach to tackling obesity.
- 21. The primary objective of the restrictions being considered in this impact assessment is to reduce children's exposure to HFSS advertising, in order to reduce children's overconsumption of HFSS products.
- 22. Furthermore, in both the 2019 and 2020 consultations we outlined secondary objectives of the policy:
 - to drive reformulation of products by brands;
 - to be proportionate both to the scale of the childhood obesity challenge and economic impact;
 - to be targeted to the products most likely to contribute to childhood obesity; and
 - to be easily understood by parents so that they can be supported in making healthier choices for their families.
- 23. Together, these objectives have guided our decisions on the final design of the policy.

A(iv). Policy context

- 24. On 27th July 2020 the Government launched its <u>Tackling Obesity Strategy</u>, to empower adults and children to live healthier lives. This strategy builds on the three chapters of the Childhood Obesity Plan, published in <u>2016</u>, <u>2018</u> and <u>2019</u> respectively.
- 25. In this Strategy, Government made clear that helping people to achieve and maintain a healthy weight is one of the most important things we can do to improve our nation's health. We also know from the evidence that tackling obesity requires a wide range of interventions that cover both our diet and our physical activity, and that everyone has a role to play.
- 26. In the strategy, the Government announced a number of measures to help people live healthier lives. Alongside the advertising restrictions, these included a new 'Better Health' campaign, expanding weight management services, consulting on front of pack labelling, requiring large out of home food businesses to add calorie labels to the food they sell, consulting on introducing calorie labelling on

⁴¹ A child impact is one view of an advert by one child. Ten impacts could be ten views by one child or one view by ten children.

⁴² AA/WARC Expenditure Reports 2017 and 2019

 ⁴³ A child impression is the expression of online advertising exposure - similar to a child impact on TV. It denotes each time an advert is served and displayed on a website, regardless of whether or not it is seen or clicked on.
 ⁴⁴ Childhood obesity: a plan for action, chapter 2 <u>https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2</u> (accessed 06/03/2019)

alcohol, and legislating to end the promotion of foods high in fat, sugar or salt (HFSS) by restricting volume promotions and placement in certain locations.

27. As set out in the Government's <u>Sporting Future strategy</u>, it is vital that everyone has opportunities to be active, for both their physical and mental wellbeing. In particular, our <u>School Sport and Activity</u> <u>Action Plan</u> sets out how we intend to help increase children's activity levels, ensuring children enjoy being physically active and retain active habits throughout their lives. This work complements the Tackling Obesity strategy and shows how we can help and support everyone to eat better and move more.

A(v). Consultation process and responses overview

- 28. This impact assessment and the accompanying consultation response document covers two different consultations. The first consultation in 2019 asked for views on what HFSS advertising restrictions should be placed on TV and online, if they should be applied to any other types of media, the products in scope, and if measures should be introduced at the same time.
- 29. This consultation included three options for further advertising restrictions on TV:
 - Option 1 introduce a 9pm-5.30am watershed on broadcast TV
 - Option 2 a ladder of advertising restrictions to incentivise reformulation
 - Option 3 no government intervention

30. It also proposed four options for an online restriction:

- Option 1 introduce a 9pm-5.30am watershed online
- Option 2 strengthen current targeting restrictions
- Option 3 mixed option
- Option 4 no government intervention
- 31. Whilst the responses to both TV and online favoured introducing a watershed on both types of media, a number of respondents questioned whether a watershed was an appropriate measure online. Some stakeholders from industry voiced concerns that as media online is not consumed or served in a linear way, a watershed could be challenging to implement.
- 32. Since the 2019 consultation, and as outlined elsewhere in this document, COVID-19 has also emphasised the need to reduce the levels of obesity in the UK and help people reach and maintain a healthy weight. This, combined with children shifting their habits away from watching TV and towards online media (where there is limited transparent data to demonstrate the adverts they are being exposed to) led the government to conduct a second consultation on going further and introducing a total HFSS advertising restriction online.
- 33. This second consultation was published on 10th November 2020 and was open for 6 weeks. It included a proposal for how a total online restriction could be implemented, asking questions on the scope, enforcement and liability.
- 34. As these two consultations are so closely linked, the Government made the decision to only publish one response and impact assessment that covered both consultations and therefore the policy as a whole. This should help provide certainty for industry, as the response represents a final policy position that will be introduced via legislation.

2019 Consultation

- 35. The 2019 consultation asked for views on what HFSS advertising restrictions should be placed on TV and online, if they should be applied to any other types of media, products in scope, and if measures should be introduced at the same time.
- 36. The consultation proposed further action on TV and online. We asked in the consultation whether further restrictions should be applied to other types of media, if so what other forms of advertising and why. 89% of respondents thought that restrictions should apply to other types of media. Despite the majority of respondents favouring restrictions applying to other types of media, there is insufficient evidence on the level of HFSS exposure in other media and of its effect on children's food consumption habits.
- 37. The consultation proposed that any additional advertising restrictions apply to food and drink products in PHE's sugar and calorie reduction programmes, and the Soft Drink Industry Levy, using the Nutrient Profiling Model (NPM) 2004/5 to define what products are HFSS. The majority of respondents (83%) agreed to using this definition, however, only 26% of businesses agreed. Reflecting on the views expressed by respondents and the objective of the policy to be targeted to those products of most concern to childhood obesity we have revised the list of categories that are in scope of restrictions (Annex B), and reflecting on the feedback we received we consider this a proportionate approach.
- 38. There were a total of 1,743 responses to the 2019 consultation, consisting of individuals (92% of responses), organisations (2% of responses) and businesses (6% of responses). Organisations and business responses included feedback from advertisers, broadcasters, online platforms, food and drink businesses, and health advocates.
- 39. 79% of all respondents agreed that introducing a watershed on TV was the best way to restrict HFSS advertising on this media. Following consultation feedback, and further consultation with some key advertising and broadcasting stakeholders, the Government decided that introducing a watershed is the most effective way to achieve our objectives of limiting the advertising children see, reflecting when children spend the majority of their viewing time and being easily understood by parents.
- 40. In the consultation, the Government proposed an exemption for TV channels and programmes with low child audiences. We suggested setting this level as 1% of the total children's audience; that is, fewer than 90,000 child viewers. Of the respondents who wanted a TV watershed restriction, approximately 60% did not support an exemption for channels/programmes with low child audiences. The Government has decided to not include an exemption for low child audiences in the policy as it was felt that it could undermine the delivery of the policy as children would continue to be exposed to the advertising on these channels.
- 41. The consultation proposed to introduce any advertising restrictions arising from the consultation at the same time on TV and online to reduce displacement between different types of medias. 92% of respondents agreed with this approach. In the Tackling Obesity strategy, the Government announced this was its intention and that these restrictions would be implemented at the end of 2022.
- 42. The consultation also asked for views about the government's consultation impact assessment. Certain respondents provided detailed feedback on the methodology, data and assumptions, such as the estimates of current child exposure to HFSS advertising online, the causal link between child advertising exposure online and obesity, and displacement effects. As part of the impact assessment we also invited evidence on the impact any further restrictions would have on SMEs.

2020 consultation

- 43. The 2020 consultation proposed to introduce a total online HFSS advertising restriction. It asked for views on this proposal, the scope and definitions of marketing communications included in the restriction, impacts on competition and SMEs, and options for enforcement and liability. We also asked for views on an evidence note setting out the government's impact estimates.
- 44. Consultation responses were considered from 30 creative/media industry stakeholders (e.g. broadcasters, online platforms, advertising agencies, publishers, industry associations and the

ASA/CAP), 219 food and drink industry or health stakeholders (e.g. out of home food sector, food and drink retailers, food and drink manufacturers, think tanks, health NGOs/academics, local authorities, NHS trusts and public bodies) and 2,615 individuals.

- 45. The consultation asked respondents if they supported the proposal to introduce a total online HFSS advertising restriction. 74% of all respondents supported the proposals for a total online restriction. This differed depending on respondent type, with 85% and 75% of organisations and individuals supporting the proposal but only 23% of businesses.
- 46. The main objections to the proposal are that it is disproportionate, has adverse economic impacts, is not evidence based, has unintended consequences, and dismisses alternative options.
- 47. Stakeholders also provided a qualitative description of certain impacts across the supply chains of sectors affected by the restriction, including reduced advertising revenues for online companies; reduced advertising revenues for online publishers and less investment in news journalism; reduced sports rights holder sponsorship revenues and consequently lower reinvestment in sports and charitable activities.
- 48. Only three respondents provided any quantitative estimates of the specific impact of the restriction on their businesses. An online business estimated that HFSS brand advertising makes up about 10% of its annual advertising revenue. Two publishers estimated lost advertising revenues.
- 49. Several stakeholders highlighted challenges that the advertising, media and food and drink sectors are facing during the pandemic, such as decreasing revenues.
- 50. The consultation proposed that the restrictions apply to all online marketing communications that are either intended or likely to come to the attention of UK children (with certain exclusions) and which have the effect of promoting identifiable HFSS products. This scope includes paid-for advertising and marketers' activities in the non-paid-for space, such as their websites and social media content, generally referred to as "owned media".
- 51. 53% of consultation respondents agreed with this definition, though 44% foresaw difficulties with it. Some online and advertising stakeholders disagreed with the proposal to include owned media in scope as they believed that this proposal was disproportionate and was not evidence based. They also indicated social media platform tools that could be used to limit child exposure to HFSS content, such as age gating of accounts. Some food and drink industry stakeholders also opposed the inclusion of owned media. They wanted to be able to talk to their customers on websites and social media and argued that consumers choose to come to these platforms. Health organisations generally supported a broad definition, with a minimum of exclusions. Broadcasters also supported a broad definition.
- 52. The consultation asked about impacts on SMEs. Of those answering the relevant question, 32% of respondents thought that 'yes' a total restriction would have specific impacts on SMEs and start-ups, 23% thought 'no', and 45% did not know. 12 out of 16 DCMS respondents answered 'yes', some arguing that many SMEs rely on online advertising as their sole way of promoting their products, especially free social media and would be disproportionately negatively impacted by the proposals. Certain respondents provided examples of SME food and drink businesses that rely on online advertising. The out of home food sector and food and drink manufacturers agreed with this view.
- 53. We also asked whether the proposed restriction would disproportionately affect UK companies. Impacts mentioned included harm to UK SMEs in international markets, if they were unable to advertise online, and making the UK a less attractive place to do business.
- 54. Some respondents believed that a total ban was not the most efficacious tool to meet the Government's stated objective. Some online platform respondents proposed an alternative "precision targeting" solution that uses technology, data and insight to target advertising away from children. However, health stakeholders were clear that they had concerns over the current targeting techniques and that they thought a total ban would be more effective at limiting childhood exposure to HFSS content than a watershed restriction.
- 55. The consultation also asked for views about the government's evidence note. Certain respondents provided detailed feedback on the methodology, data and assumptions, such as the estimates of

current child exposure to HFSS advertising online, the counterfactual, the causal link between child advertising exposure online and obesity, and displacement effects.

56. These responses have been used to update the analysis presented in both the <u>2019 consultation stage</u> <u>impact assessment</u> and the <u>2020 evidence note</u>.

B. The evidence for action

B(i). The link between advertising and food consumption

- 57. In the section below, we review the evidence on how HFSS advertising may affect children's food and drink consumption. We have mainly focused on UK based literature, especially where social context is particularly important, such as when looking at observational real-world studies. Some international evidence is considered here, and further evidence is included in <u>Annex A</u>.
- 58. To help consider the link between viewing HFSS adverts and increases in children's food and drink consumption, Figure 1 shows the possible routes between exposure and increased consumption, along with an indication of the evidence available on each. This shows there is reasonable evidence on the level of HFSS adverts viewed for some media types for both adults and children. The only route for which sufficient evidence has been identified and used to estimate the impacts on consumption of exposure is for children changing their behaviour immediately following viewing adverts. Insufficient evidence was found to establish a link between advertising and shopping habits, either through a direct influence on adults or via children's requests for certain food types. The research on the link between an adult's exposure to HFSS advertising and their immediate calorie consumption is less developed than for children. The evidence that has been identified does not show there to be an effect, so changes in adult calorie consumption have not been included in the analysis.

An HFSS advert is shown Viewed by children Viewed by adults Key Sufficient evidence for modelling purposes Advert causes immediate Insufficient evidence for Children 'pester' parents Adults change modelling purposes short-term additional into changing shopping shopping behaviour calorie consumption in preferences adults Advert causes immediate short-term additional calorie consumption in Shopping behaviour causes additional children calorie consumption in adults and children

Figure 1. Routes between exposure to HFSS adverts and food consumption in children and adults

Social-cognitive theory

- 59. Social-cognitive theories suggest that the effects of food advertising are subtle yet have impacts on eating behaviours that may be outside the participants' awareness through 'priming'.⁴⁵
- 60. Priming studies have demonstrated that complex social and physical behaviours can be subconsciously activated through external stimuli. This is to say, many of the messages delivered

⁴⁵ Bargh JA, Morsella E. The unconscious mind. Perspectives on Psychological Science. 2008;3:73–79

through advertisement may not affect conscious decision-making behaviour but will act in the subconscious.

61. The implication of this is that if advertising were to act on the subconscious through 'priming', then children may not even be aware of the effect advertising is having on their food preferences.

Impact of unhealthy food advertising on children's calorie consumption

- 62. This is supported by laboratory experiments showing exposure to food advertising triggers an impact on children's food consumption. Harris et al. present the hypothesis that television food advertising can act as a "real-world prime".⁴⁶ Their experiment showed children in the US aged 7-11 who saw food advertising consumed 45% more calories during the 14-minute viewing period than their peers who saw non-food advertising. Similar studies conducted in the UK by Halford et al. in the mid-2000s also found that children who saw food advertising consumed more calories.^{47,48}
- 63. A systematic review and meta-analysis found that advertising exposure had a statistically significant effect on children's food intake, though no effect on adult intake.⁴⁹ Boyland et al. in 2016 looked at the short-term impact of food advertising on calorie intake. After reviewing the results from 13 studies, the authors found that there was a moderate difference in food intake between those who were exposed to unhealthy food adverts and those who were.
- 64. The Department of Health and Social Care commissioned the National Institute for Health Research (NIHR) Obesity Policy Research Unit (OPRU) to review the evidence and quantify the effect of screen advertising on dietary intake in children. The authors rapid systematic review suggests that exposure to screen advertising for unhealthy food results in significant increases in dietary intakes among children during or shortly after the exposure. Furthermore, exposure to 4.4mins of food advertising was found to increase children's consumption by around 62.5kcal when using weighted averages.⁵⁰ It is not clear how well these laboratory findings translate into the real world as they are based on food being readily available to children after viewing adverts. The time of day adverts are viewed will also play a role, and it is unclear whether children will increase consumption when viewing adverts after a meal.
- 65. As well as looking at experimental studies with measured outcomes, the NIHR OPRU also conducted a separate analysis of non-experimental 'real-world' studies using reported outcomes. Overall, their meta-analysis of 16 real world studies found a 'strong positive relationship between exposure to TV margin food advertising and dietary intake in children'. However, it's important to note that these are often child or parent-reported outcomes and do not allow for incremental measurements that would allow for a quantification of marginal calorie intake per minute of advertising exposure.
- 66. Additional modelling looking at the effects of HFSS television advertising restrictions between 5.30am and 9pm in the UK⁵¹ estimates that the impact on childhood obesity may be reduced by around two-thirds if adverts are displaced to after 9pm rather than being withdrawn. Mytton et al. used a proportional multi-state life table model to estimate the health impact using the results from OPRU rapid systematic review. The study assumes that the reduction in mean BMI would persist into later

⁴⁶ Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behaviour. Health psychology. 2009 Jul;28(4):404.

⁴⁷ Halford JC et al. (2007). Beyond-brand effect of television (TV) food advertisements/commercials, in Public Health Nutrition 11(9):897-904

⁴⁸ Halford JC, Gillespie J, Brown V, Pontin EE, Dovey TM. Effect of television advertisements for foods on food consumption in children. Appetite. 2004 Apr 1;42(2):221-5.

⁴⁹ Boyland EJ, Nolan S, Kelly B, Tudur-Smith C, Jones A, Halford JC, Robinson E. Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults, 2. The American journal of clinical nutrition. 2016 Jan 20;103(2):519-33.

⁵⁰ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." Obesity Reviews(2018).

⁵¹ Mytton OT, Boyland E, Adams J, Collins B, O'Connell M, Russell SJ, et al. (2020) The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: A modelling study. PLoS Med 17(10): e1003212. https://doi.org/10.1371/journal.pmed.1003212

life, reflecting the observational data^{52,53} that shows that childhood weight status tracks into adult life. Whilst the calorie reduction does not persist into adulthood, the analysis does consider that the health benefits resulting from young people's reduced exposure would be meaningful across the lifespan.

Advertising and food preferences

- 67. In addition to the evidence showing the impact HFSS advertising can have on children's consumption, there's also evidence suggesting that advertising can alter their food preferences. This is indicative that advertising may influence children's preferred consumption beyond immediately after exposure, as determined by the experimental literature.
- 68. A systematic review of the literature in 2009, commissioned by the World Health Organization (WHO), concluded that on balance, the evidence indicates that food promotion has a modest impact on food preferences and consumption patterns resulting in associations between food promotion and adverse health outcomes.⁵⁴ Other systematic reviews in the UK⁵⁵ (2003) and the US⁵⁶ (2006) have come to the same conclusion.
- 69. The specific findings of the WHO systematic review are discussed in more detail in <u>Annex A</u>. This review focuses mainly on US evidence (49) but also considers evidence from the UK (8), Australia (4), Canada (4) and other countries (24). The study recognises "creative strategies known to attract and engage children in the developed world are found to be similarly employed in lower income countries." The specific context of each country may have some impact on the results and the conclusions we can draw from this.

Considering a causal link between food advertising and children's food preferences

- 70. Norman, Kelly, Boyland & McMahon⁵⁷ concluded there is, "compelling evidence that the two [unhealthy food marketing and childhood obesity] are causally linked". Using Bradford-Hill Criteria⁵⁸ they assessed the experimental and observational literature to evaluate the evidence of a causal relationship between food marketing on childhood obesity. Using mostly experimental evidence from the UK,⁵⁹ the authors concluded that the research satisfies all the key criteria commonly used to establish causal relationships in epidemiology.
- 71. The direct link between food marketing and obesity is difficult to measure and quantify due to obesity being a multi-factorial condition. The authors believed it appropriate to investigate food behaviours (particularly calorie intake) to examine the causal relationship between unhealthy food marketing and children's weight.
- 72. The WHO systematic review, discussed above, also found modest strength evidence that food promotion has a causal influence on food preferences and consumption behaviour. This is covered in further detail in <u>Annex A</u>.

Impact of online HFSS food and drink advertising

73. Most of the academic literature investigates television advertising, due to its popularity and the length of time for which it has been around. Many of the hypotheses presented above are also likely to apply to online advertising, which aims to act on the same mechanisms as television advertisements – just

⁵² Gordon-Larsen P, The NS, Adair LS. Longitudinal trends in obesity in the United States from adolescence to the third decade of life. Obes (Silver Spring). 2010;18:1801–4. pmid:20035278

⁵³ Singh AS, Mulder C, Twisk JWR, Van Mechelen W, Chinapaw MJM. Tracking of childhood overweight into adulthood: a systematic review of the literature. Obes Rev. 2008;9:474–88. pmid:18331423

⁵⁴ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

 ⁵⁵ Hastings G, Stead M, McDermott L, Forsyth A, MacKintosh AM, Rayner M, Godfrey C, Caraher M, Angus K.
 Review of research on the effects of food promotion to children. London: Food Standards Agency. 2003 Sep 22.
 ⁵⁶ Kraak VI, Gootman JA, McGinnis JM, editors. Food marketing to children and youth: threat or opportunity?.
 National Academies Press; 2006 May 11.

⁵⁷ Norman J, Kelly B, Boyland E, McMahon AT. The impact of marketing and advertising on food behaviours: Evaluating the evidence for a causal relationship. Current Nutrition Reports. 2016 Sep 1;5(3):139-49.

⁵⁸ Bradford-Hill A (1965). The environment and disease: association or causation? Proceedings of the Royal Society of Medicine, 58:295–300.

⁵⁹ Number of studies by country: UK (8), USA (3), Netherlands (5), Canada (4), Australia (1), Austria (1), Chile (1).

through a different medium. However, online advertisements may impact on children's food preferences in a different way. Online advertising can occur in many different settings and can often be targeted at individuals more effectively.

- 74. In 2016 the WHO produced a paper specifically looking at food marketing to children in a digital world (2016)⁶⁰ that we have used to gain some preliminary insight into the way online HFSS product marketing may impact children's food preferences.
- 75. Evidence suggests that, across product classes, combining online marketing with traditional broadcast and cinema advertising amplifies the effectiveness. Econometric analysis of 455 campaigns in Western Europe found that combining online marketing with television and cinema magnified the returns by 70% and 71% respectively.⁶¹ Furthermore, social media platforms say social media marketing can amplify the effects of broadcast marketing through increasing target audience reach, ad memorability, brand linkage and likeability.⁶²
- 76. Advergames are a form of content marketing in which a marketer commissions a video game featuring its brand and/or products and distributes this game for free. For example, Swizzels Matlow produced 'Squashies World', a mobile game in which players matched pairs of Squashies (sweets) by flicking them towards each other, at increasing levels of difficulty⁶³. Results from a meta-analysis of 15 articles⁶⁴ showed that advergames promoting unhealthy foods induced unhealthy eating behaviour among children. Although only a limited number of studies were included, the study shows that playing advergames that promote unhealthy foods affects attitudes, intentions, and/or consumption behaviour of unhealthy foods among children.
- 77. Furthermore, advergaming has been shown to increase children's food intake in the Netherlands with an effect size similar to that of television commercials in equivalent research.^{65,66,67,68} A separate paper, published by Public Health England,⁶⁹ identified a study that shows advergames were persuasive and highlights their action on the subconscious, stating that children as old as 15 do not recognise the advertising intent of advergames.⁷⁰
- 78. Whilst this evidence suggests that digital marketing is likely to be impactful and cost effective, the evidence only looks at individual campaigns, platforms, countries and time periods. Further evidence on the impact of online advertising is discussed in <u>Annex A</u>.

Children's food choice autonomy and pester power

79. Many children, especially younger children, will have limited control over their food choices. So regardless of how powerful advertising is, this will only impact a child's calorie intake when they are

⁶⁰ Tatlow-Golden, M, Boyland, EJ, Jewell, J, Zalnieriute, M, Handsley, E, Breda, J and Galea, G (2016) Tackling food marketing to children in a digital world: trans-disciplinary perspectives.

⁶¹ Exploring digital ROI for FMCG brands. New York, NY: Microsoft ; 2013

⁶² Brand awareness optimisation. In: Introducing new ways to buy, optimise and measure ads for a mobile world. Facebook website post, 30 September 2015 (https://en-gb.facebook.com/business/news/Ad-Week-UK).

⁶³ ASA Ruling on Swizzels Matlow Ltd, 2018 - available here https://www.asa.org.uk/rulings/swizzels-matlow-ltd-a18-410958.html

⁶⁴ Folkvord F, van 't Riet J. The persuasive effect of advergames promoting unhealthy foods among children: A meta-analysis. Appetite. 2018 Oct 1;129:245-251. doi: 10.1016/j.appet.2018.07.020. Epub 2018 Jul 20. PMID: 30031786.

⁶⁵ Folkvord F, Anschütz DJ, Buijzen M, Valkenburg PM. The effect of playing advergames that promote energydense snacks or fruit on actual food intake among children. Am J Clin Nutr 2013;97:239–45.

⁶⁶ Folkvord F, Anschütz DJ, Nederkoorn C, Westerik H, Buijzen M. Impulsivity, "advergames", and food intake. Pediatrics 2014;133:1007–12

⁶⁷ Folkvord F, Anschütz DJ, Wiers RW, Buijzen M. The role of attentional bias in the effect of food advertising on actual food intake among children. Appetite 2015;84:251–8.

⁶⁸ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." Obesity Reviews(2018)

⁶⁹ Public Health England (2015) Sugar Reduction: The evidence for action Annexe 3: A mixed method review of behaviour changes resulting from marketing strategies targeted at high sugar food and non-alcoholic drink.

⁷⁰ Nairn, A. and H. Hang, Advergames: "it's not an advert - it says play". 2012, Family and Parenting Institute: Bath, UK.

able to influence what they consume and what is purchased by their parents. For this reason, laboratory-based estimates of increased calorie consumption have been used with caution, as laboratory studies often represent a scenario where children have unlimited access to the food they want. This section explores how much autonomy children may have over their food choices.

- 80. While recognising that other lifestyle factors will influence children's food requests, such as socioeconomic status and behaviour of peers, there are multiple studies showing food advertising increases children's requests for advertised foods.⁷¹ Furthermore, there is evidence that parents are influenced by these food requests and change their purchases as a result. These studies come from a range of developed countries and the results are covered in more detail in <u>Annex A</u>.
- 81. A study into Australian parents' experiences of food marketing, for example, found that most of the items requested by children were HFSS products and 70% of parents purchased at least one food item requested during the shopping trip.⁷² Furthermore, parents may not fully realise the extent to which their purchases are driven by prompts from children. An observational study in Austria found that twice as many purchases are triggered by children than the parents were aware of.⁷³
- 82. A study⁷⁴ of parents and children in the UK found that each additional hour of TV watched by children was associated with a 22% increased likelihood of pestering their parents, this was slightly higher than the likelihood of children pestering their parents from an additional hour spent using the internet (19%). The study showed that the likelihood of pester power increased after more than 3 hours of watching TV or using the internet compared to children who watched little/no TV or used the internet.
- 83. There is evidence to suggest that children hold significant influence over their parents spending decisions and their own dietary choices. However, based on the evidence we have assessed, it is not possible to quantify the percentage of calorie intake over which children have autonomy, or whether this influence leads to increased calorie consumption.

Longitudinal impacts of advertising on children's preferences carried into adulthood

- 84. One means by which HFSS advertising consumed by children could significantly influence the occurrence of obesity related disease is if it were to shape food preferences that remain stable throughout the child's life. Measurement of such an effect is complex. It requires long-term tracking of children's diets against the backdrop of changing media consumption, advertising trends and food production.
- 85. Despite this, there is some evidence available in the literature which does look to understand how advertising during childhood may change children's long-term food preferences as they age into adulthood. Below is a summary of the evidence exploring the longitudinal effects of advertising and whether food preferences are carried forward from childhood more generally.

The longitudinal impact of children's unhealthy food advertising on dietary markers as adults

- 86. Several sources were identified that show some evidence of longitudinal impacts of television viewing and advertising exposure on child adiposity and dietary markers. However, none of the studies found were conducted over a long enough time period to track these impacts from childhood into adulthood.
- 87. The NIHR OPRU conducted a rapid literature search to identify research that looked at how food advertising impacts child preferences over time, including as they progressed into adulthood. The results we can draw from this literature search are limited. The primary reasons for this are: television viewing being used as a proxy for advertising exposure, low quality methodology, non-dietary markers as outcomes and not being conducted over a significant time period.

⁷¹ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

⁷² Campbell S, James EL, Stacey FG, Bowman J, Chapman K, Kelly B. (2012) A mixed-method examination of food marketing directed towards children in Australian supermarkets. Health promotion international. 2012 Nov 15;29(2):267-77.

⁷³ Ebster C, Wagner U, Neumueller D. Children's influences on in-store purchases. Journal of Retailing and Consumer Services. 2009 Mar 31; 16(2):145-54.

⁷⁴ Cancer Research UK (2018) See it, Want it, Buy it, Eat it. Available here:

https://www.cancerresearchuk.org/sites/default/files/see_it_want_it_buy_it_eat_it_final_report.pdf

- 88. The rapid literature search did find four papers which demonstrated a longitudinal relationship between television viewing in period 1 and BMI or another dietary marker in period 2. However, these studies ranged over 2-5 years and focused on television viewing being used as a proxy for advertising exposure. This means they can't inform us on the specific impacts of advertising over time as television viewing will likely be associated with a complex set of social and behavioural factors affecting BMI unrelated to advertising.^{75,76,77,78}
- 89. One study looking specifically at the impact of advertising between 1996 and 2000 for 3-11 year olds and 1997 to 1999 for 12-18 year olds found that an additional half hour of fast food advertising per week resulted in a significant increase in the probability of being overweight.⁷⁹

How children's food preferences impact their adult food preferences

- 90. Given the limited evidence on the longitudinal impacts of unhealthy food advertising on dietary behaviours, a logical extension is to explore how childhood diet is related to diet in adulthood. This in combination with the evidence of the influence of advertising on childhood consumption, could form a logical chain to determine how advertising influences health throughout life.
- 91. Within the literature, the idea that childhood diet is a significant influence on adult diet is common, although supporting quantitative evidence is limited. To try and overcome this evidence gap DHSC also commissioned the NIHR OPRU to undertake a further rapid search for evidence on food preferences tracking over time. Again, the results we can draw from this literature search are limited.
- 92. One systematic review identified 11 studies and found all studies found positive correlations between dietary behaviours in childhood and adulthood. However, these correlations ranged from very weak to reasonably strong (r = 0.009 to r = 0.66).⁸⁰ Furthermore, a study in Canada over 20 years found statistically significant poor-to-fair tracking of dietary patterns in males and females (0.19-0.28).⁸¹ The authors concluded that "healthy dietary habits established in childhood and adolescence could continue into adulthood." The dietary markers used were based on a Western diet and are similar to what we would expect in the UK.
- 93. A study carried out in Iceland focussing on the impact of diet in adolescence and adult breast cancer risk also tracked individuals' diets over time. The authors found that there were positive correlations for dietary intake between adolescence and mid-adulthood. Although it's important to note that the dietary behaviours measured are not immediately relevant for obesity (e.g. bread, vegetables, milk and fruit).
- 94. Results from four experimental studies show that childhood exposure to advertisements can lead to resilient biased product evaluations that persist into adulthood.⁸² Connell et al. highlights that because of the affective nature of child-oriented advertising and developmental constraints on processing, brand knowledge structures developed in childhood lead to more biased evaluations in adulthood than knowledge structures developed in adulthood. One of the studies highlights that biased product

⁸¹ Movassagh, Elham Z., et al. "Tracking dietary patterns over 20 years from childhood through adolescence into young adulthood: The Saskatchewan Pediatric Bone Mineral Accrual Study." Nutrients 9.9 (2017): 990.

⁷⁵ Barr-Anderson, D.J., Larson, N.I., Nelson, M.C. et al. (2009). Does television viewing predict dietary intake five years later in high school students and young adults? International Journal of Behavioral Nutrition & Physical Activity. 6. 7.

⁷⁶ Falbe, J., Rosner, B., Willett, W.C. et al. (2013). Adiposity and different types of screen time. Pediatrics. 132. 1497-1505.

⁷⁷ Falbe, J., Willett, W.C., Rosner, B. et al. (2014). Longitudinal relations of television, electronic games, and digital versatile discs with changes in diet in adolescents. American Journal of Clinical Nutrition. 100. 1173-1181.

⁷⁸ Rutherford, L., Brown, J.E., Skouteris, H. et al. (2015). Screen media, parenting practices, and the family environment in Australia: A longitudinal study of young children's media use, lifestyles, and outcomes for healthy weight. Journal of Children and Media. 9. 22-39.

⁷⁹ Beales, J. and Kulick, R. (2013). Does advertising on television cause childhood obesity? A longitudinal analysis. Journal of Public Policy & Marketing. 32. 185-194.

⁸⁰Craigie, Angela M., et al. "Tracking of obesity-related behaviours from childhood to adulthood: a systematic review." Maturitas 70.3 (2011): 266-284.

⁸² Paul M. Connell, Merrie Brucks, Jesper H. Nielsen, How Childhood Advertising Exposure Can Create Biased Product Evaluations That Persist into Adulthood, Journal of Consumer Research, Volume 41, Issue 1, 1 June 2014, Pages 119–134, https://doi.org/10.1086/675218

evaluations are not limited to the original endorsed product, but can carry over to line extensions, even if those line extensions are introduced when the individual is an adult.

- 95. Two retrospective studies of university students showed a correlation between perceived exposure to certain diets in adolescents and current consumption patterns.^{83,84} This led both sets of authors to conclude the importance of establishing a healthy diet in childhood. These results should be viewed in the context of the methodology used with respondents asked to recall their diet in childhood and therefore recall bias may be a significant factor. Additionally, participants are young adults or students, meaning even if there was a very strong influence between childhood diet and their current consumption, it remains uncertain if that would extend into ages where the ill effects of obesity become the most significant. Consideration must also be made for whether the studies reflect results that would also be found in the general population of young adults given that only university students were studied and the lifestyle choices of university students could be significantly different from those of the same age in the general population.
- 96. As established previously, advertising has a role in setting children's food preferences. Although the results we could draw from this literature search were limited, there is some evidence of moderate tracking of dietary behaviours from childhood to adulthood. The implication of this is that unhealthy food advertising in childhood may affect long term dietary behaviours into adulthood.

Impact of HFSS advertising on adults

- 97. Whilst the aim of the policy is to reduce children's exposure, the proposed restrictions would also significantly reduce adults' exposure to HFSS advertising.
- 98. The evidence investigating the impact food advertising has on adults is far less developed than the evidence base for children. Some individual studies did find that exposure to food and drink advertising increased adults' calorie intakes.^{85,86,87} However, despite these laboratory-based studies, both a systematic review (2013)⁸⁸ and a meta-analysis (2016)⁸⁹ were unable to find a conclusive impact of HFSS advertising on adults' food behaviour, attitudes or beliefs.
- 99. Due to a lack of conclusive evidence it has not been possible to draw firm conclusions on the impact of HFSS advertising on adults' food preferences and purchasing behaviour.

B(ii). Children's media consumption

Broadcast media habits

100. The latest figures show children aged 4-15 watched 7 hours and 56 minutes of television in a week, a decline of over an hour from 2018.⁹⁰ Despite this significant decline over recent years - children still spend a substantial amount of time watching TV. This is particularly the case for younger age groups

⁸³ Wadhera D, Capaldi Phillips ED, Wilkie LM, Perceived recollection of frequent exposure to foods in childhood associated with adulthood liking, Appetite, Volume 89, June 2015

⁸⁴ Lesakova D, Analysis of childhood habits influence on consumption behaviour in adulthood, Pardibuce, Issue 21, 2011,

⁸⁵ Zimmerman FJ, Shimoga SV. The effects of food advertising and cognitive load on food choices. BMC Public Health. 2014 Dec;14(1):342.

⁸⁶ Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. Health psychology. 2009 Jul;28(4):404.

⁸⁷ Koordeman R, Anschutz DJ, van Baaren RB, Engels RC. Exposure to soda commercials affects sugarsweetened soda consumption in young women. An observational experimental study. Appetite. 2010 Jun 1;54(3):619-22.

⁸⁸ Mills SD, Tanner LM, Adams J. Systematic literature review of the effects of food and drink advertising on food and drink-related behaviour, attitudes and beliefs in adult populations. Obesity Reviews. 2013 Apr 1;14(4):303-14.

⁸⁹ Boyland EJ, Nolan S, Kelly B, Tudur-Smith C, Jones A, Halford JC, Robinson E. Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults, 2. The American journal of clinical nutrition. 2016 Jan 20;103(2):519-33.

⁹⁰ Ofcom (2019). Children and Parents: Media Use and Attitudes report (p 9)

where it remains the main form of media. Ofcom research⁹¹ shows that children's viewing peaks in the hours after school, with the largest number of child viewers concentrated around family viewing time, between 6pm and 9pm. In this period children are watching programming not specifically aimed at them, with viewing taking place during adult commercial programming where restrictions on HFSS apply according to the child audience.

101. Although the TV set remains the home of broadcast TV, how children watch and what they watch is changing. As technology develops televisions can now be used to watch non-broadcast content, with many different video on demand (VoD) services competing for viewers, including broadcast on demand players (BVoDs) like All4 or ITV Hub, subscription video on demand providers (SVoDs) like Netflix, and video sharing platforms (VSPs) such as Youtube.⁹² In 2019 eight in ten children aged 5-15 (80%) watch some form of VoD content. By comparison, three-quarters of 5-15s watch live broadcast TV, meaning a quarter do not watch live broadcast TV at all. While no single VoD provider has surpassed viewing of live TV, children are more likely to watch subscription-video-on-demand (SVoD) services (used by 61% of 5-15s) than other types of VoD.⁹³ It should be noted these providers are unlikely to adapt their revenue model to rely on advertising. Many paid-subscription services are such that users can pay to avoid ad breaks.

Online media habits

- 102. Such has been the pace of change in children's media use that Ofcom has found that children aged 12 to 15 now spend more time online than watching broadcast TV.⁹⁴ Five to fifteen-year-olds are more likely to pick YouTube as their platform of choice over on-demand services such as Netflix, or TV channels including the BBC and ITV.⁹⁵
- 103. Most 5-15s had access to the internet at home in 2017 (96%), with 92% of this age group using the internet.⁹⁶ Tablets are used by a large number of children (65% for 3-4s, 75% for 5-7s, 80% for 8-11s and 78% for 12-15s), while mobile phone use is also significant (68% for 5-15s).⁹⁷



Figure 2. Projection of children's TV and online weekly media use

Sources; TV: BARB (aged 4-15); Online: Ofcom, Media Use and Attitudes Report 2018 (aged 5-15)

⁹¹ Ofcom (2017). Children and Parents: Media Use and Attitudes report, fig A1.5

⁹² Video Sharing Platforms have been defined by, and are in scope of, the revision of the Audiovisual Media Services Directive (which governs EU-wide coordination of national legislation on all audiovisual media), with the intention of creating a regulatory environment that is fairer for all players in the audiovisual sector.

⁹³ Ofcom (2019). Children and Parents: Media Use and Attitudes report (p 9)

⁹⁴ Ofcom (2017). Children and Parents: Media Use and Attitudes report (p 21)

⁹⁵ Ofcom (2019). Children and Parents: Media Use and Attitudes report (p 1)

⁹⁶ Ofcom (2017). Children and Parents: Media Use and Attitudes report (p 39).

⁹⁷ Ofcom (2017). Children and Parents: Media Use and Attitudes report (p 39).

104. Children aged 5-15 who use the internet spend more than 15 hours per week online, and online time has increased significantly in the last 10 years.⁹⁸ For comparison, this is now higher than television viewing on a television set, which averaged at 14 hours per week for 5-15 year olds. Ofcom's Digital Day report (2016) found that 91% of children's online activity occurs between 05:30 and 21:00.⁹⁹



Figure 3: Children's (6-15) internet activity by time of day

Source: Ofcom, Digital Day report 2016. Base: Children aged 6-15

- 105. The online world involves many different types of media including, websites, games, on demand players, VSPs, social media and other services offering many different types of content and experience. Survey data shows children aged 5-15 spent 10h6m watching YouTube in a week, and 11h48m using social media or messaging sites or apps in 2019.¹⁰⁰
- 106. Used by three-quarters of 5-15s, YouTube remains a significant player in the panorama of children's viewing. This is particularly true among older children; nine in ten 12-15s say they use the YouTube site or app.¹⁰¹ However no distinction is made with the use of YouTube kids.
- 107. Social media use is common among primary school children, despite many sites setting a minimum user age of 13. Just over one fifth of 8-11 year olds (21%) have a social media profile and this rises through the age group to 43% of 11 year olds. By the age of 13 (the minimum age restriction on most social media platforms) more than half have a profile; and by the age of 15, almost all have one.¹⁰²
- 108. Online gaming is becoming more popular; 59% of 5-15s now play games online, increasing from 53% since 2018 and 45% five years ago.¹⁰³
- 109. Children are showing increased awareness of how some internet content is funded. In 2019 nearly two thirds of children aged 12-15 (63%) are aware some vloggers or influencers are paid to endorse products or a service, up from 46% in 2015. Over half of both YouTube and Google users (54%)

⁹⁸ Ofcom (2017). Children and Parents: Media Use and Attitudes report (Figure 3)

⁹⁹ Ofcom, Digital Day 2016 Slide pack 2: Children's 3 day media and communications diary findings: <u>https://www.ofcom.org.uk/research-and-data/multi-sector-research/general-communications/digital-day</u> (accessed 06/03/2019)

¹⁰⁰ Ofcom (2019). Children and Parents: Media Use and Attitudes chart pack (p 6). This differs from 2018 where the survey reported the amount of time spent using the internet. Responses are taken from the child aged 8-15 rather than the parent.

¹⁰¹ Ofcom (2019). Children and Parents: Media Use and Attitudes (p 10)

¹⁰² Ofcom (2019). Children and Parents: Media Use and Attitudes report, chart pack (p 32)

¹⁰³ Ofcom (2019). Children and Parents: Media Use and Attitudes (p 22)

understand that these are funded by the companies that advertise with them – unchanged since $2018.^{104}$

110. There has been no change in children's recognition of advertising in search results. When shown an image of a Google search result, children gave various responses as to why the first four results were there (distinguished by a green box with the word 'Ad' written in it). Just over a quarter of 8-15s gave only the correct response of the results being adverts/paid to be there – unchanged from five years ago (24% in 2015).¹⁰⁵

B(iii). Current Food Advertising Regulations

Overview

111. Across all media, the Advertising Standards Authority (ASA) acts as the UK's independent advertising regulator. Existing rules mean that UK advertisements for HFSS products cannot be targeted at children in any media, and no medium with an audience that consists of more than 25% of under-16s should be used to advertise HFSS products. What this means in practice differs across media.¹⁰⁶ With most outdoor advertisements, the target is assumed to be the general population which at present time isn't considered to comprise 25%+ children unless the advertisement is placed near child-skewed locations such as schools. In cinema, advertisements (excluding film trailers) are normally pre-cleared by Cinema Advertising Association for audience suitability. The ASA takes a self-regulatory approach to breaches. In most cases, the ASA issues takedown requests and reputational sanctions (such as negative publicity) for errant advertisements. The ASA can also refer advertisers and broadcasters to co-regulatory bodies to issue formal sanctions for persistent offenses and non-cooperation.¹⁰⁷

Broadcast advertising

- 112. Broadcast advertising on TV and radio in the UK is regulated by the ASA through a system of coregulation with Ofcom. The ASA enforces the UK Code of Broadcast Advertising (BCAP Code)¹⁰⁸, which is drawn up, and regularly reviewed, by an industry committee and incorporates all relevant legislation. Overall, the BCAP Code sets standards for accuracy, honesty and social responsibility to which advertisers are expected to adhere.
- 113. Updates to the Code are subject to public consultation, consideration by an expert consumer advisory body, the Advertising Advisory Committee, and approval by Ofcom. If a complaint is made about an advert shown on TV, the ASA will consider that complaint against the Code and may subsequently require the broadcaster to withdraw, change or reschedule the advert. UK broadcasters are required by a condition of their broadcast licences to enforce ASA rulings. Broadcasters who do not comply may be referred to Ofcom who can impose fines and, in extreme cases, withdraw broadcast licences.
- 114. Since 2007, the scheduling of HFSS advertising around programming commissioned for or likely to appeal particularly to children has been prohibited. To determine whether a programme is likely to appeal particularly to children, broadcasters rely on 'audience indexing' in which BARB audience data is used to determine which programmes would attract a high percentage of children compared to the total audience watching. The 'particular appeal' prohibition applies throughout the broadcast day, including after 9pm. HFSS product placement in all TV programmes produced under UK jurisdiction is also prohibited by the Ofcom Broadcasting Code.

¹⁰⁵ Ofcom (2019). Children and Parents: Media Use and Attitudes (p 15)

¹⁰⁶ ASA guidance for HFSS placement across media:

¹⁰⁸The BCAP Code, The UK code of Broadcast Advertising:

¹⁰⁴ Ofcom (2019). Children and Parents: Media Use and Attitudes (p 14)

https://www.asa.org.uk/advice-online/food-hfss-media-placement.html#practice (accessed 09/02/2021)

¹⁰⁷ ASA guidance on sanctions across media:

https://www.asa.org.uk/codes-and-rulings/sanctions.html (accessed 09/02/2021)

https://www.asa.org.uk/uploads/assets/uploaded/526914b7-de7f-4cf6-86afe08684d22885.pdf (accessed 28/02/2019)

- 115. Where HFSS advertising is allowed, restrictions also limit the use of licensed characters (e.g. cartoon characters created by a movie studio) and celebrities popular with children are not allowed to be used to promote HFSS products. Advertisers are also prohibited from appealing to various emotions, such as 'pity, fear, loyalty or self-confidence', when advertising food and drink products to children, and must avoid condoning or encouraging poor nutritional habits, the excessive consumption of any food, or otherwise unhealthy lifestyles.
- 116. However, despite this regulatory protection we know that children watch all types of TV programming, not just shows aimed directly at them. The current system of BARB audience indexing also only considers the proportion of the total audience that are children, rather than the total number of children watching. Furthermore, as noted above, children's viewing time peaks between 6-9pm, when the programmes most likely to be broadcast are not children's programming, but instead 'family' or adult programmes. This means that some of the shows most watched by children, such as X Factor, Saturday Night Takeaway, or Great British Bake Off, are not captured by the current restrictions where the audience share is below 25%.

Non-broadcast advertising

- 117. Non-broadcast advertising in the UK including online, cinema, print, out of home and direct marketing is regulated by the ASA mainly through a system of self-regulation.¹⁰⁹ The ASA enforces the UK Code of Non-broadcast Advertising, Sales Promotion and Direct Marketing (CAP Code) which sets out the advertising rules in the same way as the BCAP Code does for broadcast, though there are important structural differences in the overall system.¹¹⁰
- 118. From July 2017, following public consultation, the CAP Code introduced new HFSS rules which aligned non-broadcast advertising with broadcast advertising. The new rules prohibit HFSS advertising in media of obvious appeal to children, or where more than 25% of the audience is under 16 years old.
- 119. Most online advertising is served based upon demographic and behavioural data gathered on individual users, including on social media websites. Such advertising can be targeted to audiences that share common demographics (e.g. age, gender, location etc.) or web-browsing interests (e.g. an interest in cars). It can also limit the distribution of advertising to times of day and frequency, and to certain publishers. For such advertising, the 25% rule is not relevant. If known data (demographics) and/or inferred data (web browsing interests) obviously identifies members of the audience as being under 16, HFSS advertising must not be targeted at them. CAP has produced a guidance note to help advertisers comply with this requirement.¹¹¹
- 120. Other online advertising continues to be contextually targeted, meaning that it is targeted to be relevant to the content of the website upon which it appears. In these circumstances, the 25% rule applies, and the advertiser must consider the totality of audience information to demonstrate that no more than 25% of the audience are under 16. This restriction applies, for example, to contextually placed advertising in advergames, social influencer videos, online apps, native advertising and other online advertising formats.
- 121. Given children are spending increasing time online, substantial levels of children's exposure to HFSS advertising may arise in content which does not breach the 25% audience threshold but which is nonetheless seen frequently by a high number of children.
- 122. The broader issue for HFSS rules online is the use of targeting tools to exclude children, which is subject to a number of uncertainties, including:
 - the use of devices, online profiles and accounts shared between adults and children;

¹⁰⁹ Video on Demand services regulated by Ofcom are subject to the same rules as other non-broadcast media, regulated by the ASA through self-regulation, and are also subject to additional rules reflecting legal requirements in the Communications Act 2003, which are regulated through the same system of co-regulation with Ofcom as TV. ¹¹⁰ Broadcast and non-broadcast advertising have significant regulatory differences. These include that: where broadcasters can be held liable for breaches of advertising rules, platforms do not have any liability as publishers; broadcast adverts are pre-cleared before transmission, whereas non-broadcast advertising generally is not; there are more restrictions on broadcast including rules on minutage; there are differences in maximum sanctions. ¹¹¹ CAP - Advertising guidance. Children and age-restricted ads online: https://www.asa.org.uk/resource/children-age-restricted-ads-online.html (accessed 06/03/2019)

- the communal viewing of content;
- the false reporting of users' ages, and
- predictive inaccuracy in using interest-based factors and other behavioural data as a proxy for age.
- 123. There is no comprehensive, independently verified means of audience measurement, which limits transparency and makes the rules more dependent on the accuracy of the tools used by each advertiser. Recent Australian research found an average targeting accuracy of only 59% in consumer profiles.¹¹²
- 124. It is also worth noting the complexity of the online advertising landscape, which incorporates content that has the effect of advertising (e.g. influencers), as well as more traditional forms of advertising such as banner or video ads. It also affords a more active role for consumers, with online users able to seek out content and publish adverts themselves. Near limitless advertising inventory with low barriers to entry makes the task of effective monitoring and complaints-led regulation more difficult.
- 125. The ASA has sought to keep pace with this complexity and the new challenges created by online advertising, for example publishing guidance for social media influencers on making advertising clearly identifiable. More recently, in November 2018 the ASA launched their new strategy 'More Impact Online'¹¹³ which aims to put the protection of consumers online at the heart of its work over the next five years, and makes innovative commitments to explore, for example, the use of machine learning and AI to improve regulation.

Trends in children's exposure to HFSS advertising since the regulations were introduced in 2017

- 126. Accurate measurement of children's exposure to HFSS advertising on TV is hugely complex and requires the marshalling of billions of data points from multiple datasets. Measurement needs to factor in the wide range of products on the market and the wide range of TV channels, and independent work to distinguish HFSS from non-HFSS product advertising and brand from product advertising. The identification of trends in children's exposure is further complicated by changing viewing habits.
- 127. For these reasons, exposure has only been measured periodically since the introduction of the current restrictions. Ofcom's final review of food advertising restrictions estimated that there were 12.1bn HFSS child impacts¹¹⁴ in 2005 (prior to advertising restrictions) and 7.7 billion impacts in 2009 (shortly after restrictions were brought in).¹¹⁵ The Institute of Fiscal Studies' analysis of HFSS advertising in 2015 estimated 5.7 billion HFSS child impacts, excluding supermarket and restaurant advertising.¹¹⁶
- 128. New research was commissioned from Kantar to support this assessment, which has aimed to incorporate and categorise supermarket and restaurant advertising and re-evaluated the likely volume of advertising children see based on current TV advertising expenditure. This suggests that there were 3.6 billion HFSS child impacts in 2017, of which around 2.6 billion were before the watershed.

¹¹² "How Effective Is Black-Box Digital Consumer Profiling And Audience Delivery?: Evidence from Field Studies" - Nico Neumann, Catherine Tucker and Timothy Whitfield - June 25 2018

¹¹³ Advertising Standards Authority - Corporate Strategy 2019-2023: <u>https://www.asa.org.uk/resource/more-impact-online.html</u> (accessed 06/03/2019)

¹¹⁴ A child impact is defined as one view of an advert by one child. Therefore, ten impacts could be ten views by one child or one advert viewed by ten children.

 ¹¹⁵ Ofcom (2010) HFSS advertising restrictions - Final Review (p32)
 <u>https://www.ofcom.org.uk/___data/assets/pdf_file/0024/31857/hfss-review-final.pdf</u> (accessed 01/03/2019)
 ¹¹⁶ Institute for Fiscal Studies (2018) Children's exposure to TV advertising of food and drink (Table 4.1)
 <u>https://www.ifs.org.uk/uploads/BN238.pdf</u> (accessed 01/03/2019)

Study	Period of Review	Estimated Child Food/Drink Impacts (bn)	Estimated Child HFSS Impacts (bn)	Estimated Weekly HFSS Advert Exposure per Child (mins) ⁱ
Ofcom	2005	15	12	9.1
Ofcom ⁱⁱ	2009	13	7.7	5.8
Institute of Fiscal Studies ⁱⁱⁱ	2015	15	5.7	4.3
Kantar 2017 ^{iv}	2017	8.5	3.6	2.7
Kantar 2019 adjusted ^v	2019	8.2	2.9	2.2

Table 2: Overview of TV HFSS advertising studies, 2005-present

¹ Assumes mean length of HFSS advertising at 21.3 seconds per impact, derived from Kantar analysis of 2017 advert lengths. Also assumes equal distribution across the child population.

^a Analysis of food advertising before and after the introduction of children's TV HFSS restrictions, using proxy of Nutrient Profile Model.
 ^a Analysis categorised products known to be HFSS based on Kantar World Panel data and Nutrient Profile Model, does not apply Nutrient Profile Model to supermarket or out-of-home market products or categorise them as HFSS.

^{iv} Analysis attempts to categorise supermarket and out-of-home market products using Nutrient Profile Model where possible.

v The 2019 impact assessment used a different definition of HFSS to this impact assessment, the bottom two rows of this table are not directly comparable

- 129. While acknowledging the different methodologies used, the main conclusion we can draw from these studies is that exposure levels have fallen significantly over time since restrictions were introduced. Although it's important to note that the rate of decline has slowed and there are still billions of HFSS child impacts on TV each year.
- 130. In its review of advertising restrictions in 2006, Ofcom judged that TV was the preferred channel for food and drink advertising for a number of reasons:
 - TV has near universal reach in the UK, which is important for mass-market advertisers such as manufacturers of fast moving consumer goods;
 - It has the ability to reach consumers rapidly, which is vital for manufacturers of goods that have a short shelf life or who want to build awareness of a product quickly;
 - The audio-visual environment offers powerful creative advertising possibilities for brand creation and strengthening;
 - There is a certain viewer attachment to it in the sense that TV content and advertising can be part of the discussion at work, home and school. Advertisers are able to benefit from such viewer attachment; and
 - As far as advertising targeted to children is concerned, TV is likely to be preferred to other media, both, because children are attracted to audio-visual content, and because they are not mature enough to respond to other media such as print advertising.¹¹⁷
- 131. Measurement of children's exposure to online advertising is even more complex. Coupled with many of the same challenges that apply to measuring TV advertising, there is lower transparency in the system reflecting the lack of comprehensive independent public data, widespread personalisation of advertising, and the sheer scale of the online advertising landscape.
- 132. Kantar's 2017 research in seeking to quantify children's HFSS advertising exposure online in the UK is largely unprecedented, and has been based principally on advertising expenditure. This research has been adapted by DHSC and DCMS to reflect trends between 2017 and 2019. There were an estimated 11.7bn HFSS child impressions¹¹⁸ online in 2019, consisting of 6.0bn video impressions and

¹¹⁷ Ofcom (2006). Television advertising of food & drink products to children - Impact Assessment (p.76)

¹¹⁸ A child impression is the expression of online advertising exposure - similar to a child impact on TV. It denotes each time an advert is served and displayed on a website, regardless of whether or not it is seen or clicked on
5.7bn non-video impressions. Impressions are not directly comparable to adverts shown on TV. These figures cover paid-for online advertising excluding search adverts, classified adverts and sponsored content.

133. <u>Section D(v)</u> describes the methodology used to estimate children's exposure to online advertising.

B(iv). Industry overviews

134. The following sectors have a direct relationship with HFSS advertising and will be impacted by any intervention.

Broadcasting

- 135. The UK is the main hub in Europe for audiovisual services. 1,203 TV channels are based in the UK, out of 3,005 in the EU28, and about two-fifths of these channels established primarily target another market. The number of TV channels established outside the UK but targeting the UK is very small. About half of on-demand services established in the UK primarily target another market. The UK also has considerable export success: PACT, the production trade body, estimated revenue of £1.5bn between April 2019 and March 2020 from the international sale of UK TV programmes and associated activities. Furthermore, DCMS economic estimates show that 211,000 people were employed in the UK's wider audiovisual sector between Oct 2019 Sept 2020.¹¹⁹
- 136. The UK broadcasting sector is primarily driven by the public service broadcasters (PSBs), who together spent £2.6bn on original programming in the UK in 2016,¹²⁰ and provide the central creative and economic impetus for a sector that also includes other commercial broadcasters, a growing presence of non-UK streaming services, and a vibrant independent production sector that generates revenues of c. £3bn a year.
- 137. The PSBs differ from other broadcasters in that they have set obligations to produce certain types of content, including impartial national and local news, current affairs, and content that informs our understanding of the world, stimulates knowledge and learning, reflects the UK's cultural identity and represents diverse and alternative views.¹²¹ As part of this, in the context of the UK's obesity problem, PSBs have sought to use their reach with large audiences to promote healthy eating and physical activity. For example, Channel 4's recent healthy eating programming has included Food Unwrapped, Jamie's Sugar Rush, and Dispatches investigations into sugar and salt consumption, ITV Feel Good campaign which is designed to inspire people to eat better and move more, and Veg Power is a major new advertising campaign aimed at encouraging people to eat more vegetables.
- 138. The PSBs do not just compete for viewers with a wide range of purely commercial channels, but now also with subscription video-on-demand services like Netflix and Amazon Prime Video (which are in a third of UK households¹²², and growing) as well as other online platforms such as Facebook and YouTube. Nine in ten people watched linear TV every week in 2017, for an average of 3 hours 23 minutes a day, but this was nine minutes less than in 2016.¹²³ To mitigate the impact of this shift in viewing, the PSBs have taken steps including placing greater emphasis on their own on-demand players and developing their production businesses.
- 139. Just under a third of the UK television industry's total revenue is generated by advertising, and this proportion has remained steady from 2012 to 2017. Over the same time period, TV has accounted for

¹¹⁹ DCMS Economic Estimates: Employment, 2020 <u>https://www.gov.uk/government/statistics/dcms-sector-economic-estimates-employment-oct-2019-sep-2020</u>

⁽accessed 22/02/2020)

¹²⁰ Ofcom PSB Annual Research Report 2017 (p3)

¹²¹ Ofcom review of public service television broadcasting, April 2004:

https://www.ofcom.org.uk/__data/assets/pdf_file/0023/25655/psb.pdf (accessed 06/03/2019)

¹²² Ofcom Media Nations: UK 2018 p13

¹²³ Ofcom Media Nations: UK 2018 p24

just under a third of total display advertising spend in the UK.¹²⁴ The main commercial TV broadcasters in the UK are ITV, which in 2017 had a 34.5% share of commercial impacts (SOCI), Sky with 25.5%, Channel 4 with 15.4%, and Channel 5 with 9.4%.¹²⁵ The three main TV ad sales houses - run by ITV, Channel 4, and Sky - sell advertising on their own channels and on behalf of other broadcasters.

- 140. The television advertising market has seen some inconsistent growth this decade, in the face of increasing competition from online platforms. Revenue climbed from £4.71 billion in 2012 to £5.21 billion in 2016.¹²⁶ It then fell to £4.9 billion in 2017. While figures for the first half of 2018 exceeded expectations¹²⁷ the outlook is uncertain due to factors including the structural market changes (technological, competitive and audience changes) and wider economic uncertainty.
- 141. According to Nielsen data, food was the second largest advertising category on TV, spending £559 million in 2017 (down 11.4% on 2016). Given the importance of food advertising, and these wider market challenges, there is the potential that the commercially-funded PSBs may not be in a position to absorb lost revenue resulting from additional advertising restrictions while maintaining current levels of public service output, particularly when considered alongside the impact of new broadcast restrictions on gambling advertising announced recently by the gambling industry.

Online

- 142. Digital advertising is managed by a small number of large companies (predominantly Google and Facebook, which generates over two thirds of UK digital advertising revenue), with 11 companies accounting for approximately 73% of the market; this is all concentrated in search engines, video sharing platforms and well-known social networks.¹²⁸ In the UK, IAB/PwC Digital Adspend data show that mobile phone advertising accounted for around 56% of total internet advertising in 2019,¹²⁹ up from just 2% in 2010.¹³⁰
- 143. Although there may be a degree of substitution between traditional and online media, some of the growth in online advertising expenditure comes from new advertisers, which have never spent money on advertising before (a high proportion of these are small businesses). Consequently, a large part of the increase in online advertising is incremental to the market and may not reflect movement across media.

¹²⁴ Ofcom Communications Market Report 2018 – p30

¹²⁵ Channel 4 2017 Financial Report and Statements (p174)

¹²⁶ Advertising Association/WARC Expenditure Report April 2018

¹²⁷ Advertising Association/WARC Expenditure Report <u>http://expenditurereport.warc.com/</u> (accessed 12/11/2018)

¹²⁸ Digital advertising in the United Kingdom (UK), Statista, 2018

¹²⁹ IAB/PwC Digital Adspend Report, 2019 p17

¹³⁰ Ofcom, 2018 Communications Market Report (p53)



Figure 4. Advertising expenditure by media channel (£m)





Source: IAB/PwC Digital Adspend 2019

Food and drink retailing and manufacturing

144. Many of the major supermarkets invest significant amounts of their promotional budgets in broadcast TV advertising, both to publicise their own brands and special offers they are running on other manufacturers products. This is particularly the case around national holidays, such as Easter and Christmas. The 'Big Four' retailers, Tesco, Asda, Sainsbury's and Morrisons, account for the majority of GB grocery sales, capturing around 67% of the market in the 12 weeks ending

29/11/2020.¹³¹ In contrast, retailers outside the top 9 identified by Kantar account for less than 5% of the market.

Retailer	Market Share
Tesco	27.0%
Sainsbury's	15.7%
Asda	14.1%
Morrisons	10.3%
Aldi	7.7%
Со-ор	6.3%
Lidl	6.2%
Waitrose	4.9%
Iceland	2.4%
Symbols and Independent	1.8%
Other	1.8%
Ocado	1.7%

Table 3: GB Grocery Market Shares, 12 weeks ending 29/11/2020¹³²

- 145. These market shares include the sales of some non-food and drink items such as health and beauty products. However, we expect these to be a reasonable reflection of shares within the food only market. In 2014, the GB food retail market was worth an estimated £88.5bn.¹³³ This includes products bought both in store and online, however a breakdown is not available in the data.
- 146. Much of grocery retail spend occurs within supermarkets and hypermarkets. IGD data for 2019 shows that large supermarkets accounted for 54.9% of all grocery sales.¹³⁴ Convenience stores account for 21.4% of grocery sales. Again, this definition of grocery captures non-food items. This results in a total 2019 UK market size of £193.6bn, compared to Kantar's food-specific GB estimate of £88.5bn (£96.3bn in 2019 prices). This IGD dataset captures non-food items, therefore Kantar data is used to estimate the value of the food and drink market.
- 147. Out-of-home food (OOH) businesses, such as fast food restaurants and takeaway delivery services, are also major advertisers on broadcast TV. However, it is often difficult to establish the size and composition of this market, with different datasets covering different sections of the eating out market. In contrast to food retail, the OOH sector is characterised by large numbers of small and micro businesses. Approximately 98% of the businesses¹³⁵ in the food and beverage service sector are considered to be either small or micro and together these represent around 45% of turnover in the

¹³¹ GB Grocery Market Shares, Kantar Worldpanel: <u>https://www.kantarworldpanel.com/en/grocery-market-share/great-britain</u> (accessed 10/12/2020)

¹³² Figures might not sum to 100% due to rounding.

¹³³ 2014 Kantar Worldpanel Purchasing Data

¹³⁴ IGD, UK food sales to grow by £24bn by 2024, (2019) https://www.igd.com/about-us/media/press-

releases/press-release/t/uk-food-sales-to-grow-by-24bn-by-2024/i/21868 (Accessed 10/02/2021)

¹³⁵ The Inter-Departmental Business Register contains information on the number of businesses in the eating out market and can be accessed using the NOMIS service provided by the Office for National Statistics: <u>https://www.nomisweb.co.uk/</u>

sector.¹³⁶ It's clear from the Nielsen advertising data that only a small number of large OOH businesses advertise on TV, with the significant costs involved in this form of advertising likely to be prohibitive for micro, small and medium businesses. This isn't the case for OOH businesses advertising online. Online advertising has lower barriers to entry, and therefore sees greater use by a range of micro, small and medium businesses.

148. Around half the food consumed in the UK is supplied domestically, with most of the food imported in 2017 coming from the EU.¹³⁷ Food and drink manufacturing is the biggest manufacturing sector in the country and exported around £22bn worth of produce in 2017.¹³⁸ As can be seen in Table 4 below, there are around 12,200 food and drink manufacturing businesses in the UK, with the vast majority of these being considered micro or small businesses based on their number of employees. However, in terms of sales, micro and small businesses only comprise less than 10% of turnover across the sector. In contrast, large manufacturers represent around 75% of the sector's turnover.¹³⁹

	Enterprises by no of employees				
SIC Code and description	Micro (0 to 9)	Small (10 to 49)	Medium (50 to 249)	Large (250+)	Total
101 : Processing and preserving of meat and production of meat products	630	300	135	100	1,165
102 : Processing and preserving of fish, crustaceans and molluscs	185	115	50	15	365
103 : Processing and preserving of fruit and vegetables	480	95	70	40	685
104 : Manufacture of vegetable and animal oils and fats	60	10	15	0	85
105 : Manufacture of dairy products	510	175	90	15	790
106 : Manufacture of grain mill products, starches and starch products	110	55	50	10	225
107 : Manufacture of bakery and farinaceous products	2,345	900	220	105	3,570
108 : Manufacture of other food products	1,655	445	230	110	2,440
110 : Manufacture of beverages	2,260	430	125	35	2,850
Totals	8,235	2,525	985	430	12,175

Table 4: Firms involved in the food and drink manufacturing sector in the UK, 2020^{140,141}

¹³⁹ Department for Business, Energy and Industrial Strategy (2020) Business population estimates, <u>https://www.gov.uk/government/statistics/business-population-estimates-2020</u> (accessed 10/12/2020)

¹³⁶ Department for Business, Energy and Industrial Strategy (2020) Business population estimates, https://www.gov.uk/government/statistics/business-population-estimates-2020 (accessed 10/12/2020)

¹³⁷ Department for Environment, Food and Rural Affairs - Food Statistics in your pocket: Global and UK supply <u>https://www.gov.uk/government/publications/food-statistics-pocketbook/food-statistics-in-your-pocket-global-and-uk-supply</u> (03/06/2019)

¹³⁸ Food and Drink Federation Stats at a Glance <u>https://www.fdf.org.uk/statsataglance.aspx</u>

¹⁴⁰ Data from the Inter-Departmental Business Register can be accessed using the NOMIS service provided by the Office for National Statistics: <u>https://www.nomisweb.co.uk/</u>

¹⁴¹ Note that manufacturers of prepared animal feeds have not been included in this table.

149. It's important to note that not all the food and drink manufacturers included in the table above will produce HFSS products and therefore be impacted by these proposals. Furthermore, it's clear from the Nielsen data that only a small set of large food and drink manufacturers typically advertise their products on broadcast television, with the significant costs involved in this form of advertising being prohibitive for other smaller businesses.

C. Scope and options overview

C(i). Scope

- 150. In the 2019 consultation, options were presented for broadcast TV and online media based on evidence of high use among children indicating that children are exposed to a considerable level of HFSS advertising, despite existing industry regulation in place to minimise this exposure. The consultation asked whether restrictions should be extended to other forms of advertising, e.g. radio, cinema, print and direct marketing. The Government has decided not to extend the restrictions to these forms of media as we cannot evidence high levels of children's HFSS exposure. However, as committed in Chapter 2 of the Childhood Obesity Plan, the NIHR OPRU will continue to review the evidence base of the effect of marketing and advertising on children, including in these areas. We also recognise the possibility that advertising restrictions for TV and online could displace advertising revenue to other channels, potentially weakening the effectiveness of the policy. We will be monitoring displacement and will address this as part of the post implementation review.
- 151. In the 2020 consultation, there were questions about the definition of online marketing communications and the scope of the restrictions for both TV and online. The Government has decided to apply the restrictions to paid-for marketing communications on broadcast television and online. The evidence available shows a link between viewing television advertising and an increase in immediate food consumption in children, and we have extrapolated this link to paid-for online video and advertising which shares some characteristics with television advertising. The forms of online marketing communications in scope include the following, where an advertiser pays for placement of ads in media or services:
 - Online display advertising, such as banner ads on news websites and apps
 - Online video advertising, such as video ads served before or during YouTube videos
 - Paid-for social media advertising, such as in-feed advertising on Facebook and Instagram
 - Paid-for search listings, such as sponsored links on Google or Bing
 - Paid-for listings on price comparison or aggregator services, such as sponsored listings on Uber Eats or affiliate links on www.latestdeals.co.uk
 - Paid-for influencer marketing, such Instagram influencer posts sponsored by a brand
 - Paid-for in-game advertising, such as banner ads in games apps
 - Paid-for newsletter advertising, such as banner ads in a cookery newsletter
- 152. We will also apply the restriction to online advergames, a form of content marketing where an advertiser produces an online game that integrates its products and marketing messaging.
- 153. The Government decided not to apply the restrictions to non paid-for marketing communications, including content on marketers' own websites and social media. We cannot evidence levels of child HFSS exposure on these platforms or the link to child obesity. In addition, these platforms enable food and drink businesses to communicate with consumers who actively seek information about their products.
- 154. Earned media, such as online content about a brand posted by the public or included in media coverage, will not be included in the restrictions, provided that this content is not paid for by the brand.

- 155. The watershed will apply to all On Demand Programme Services (ODPS) under the jurisdiction of the UK. This will apply to the time the programme is viewed on the UK On Demand Programme Service. As all UK ODPS are already regulated by Ofcom, the Government has decided it is appropriate to treat ODPS as one medium. In contrast Non UK On Demand Programme Services will be captured by the online restrictions of paid-for HFSS advertising, as they are not regulated by Ofcom. Online radio streaming services will not be included in the restriction, given that HFSS advertising on broadcast radio services will not be restricted. Audio advertising on other online services, such as Spotify, will not be restricted due to limited evidence about the child audience for these services, and the link between HFSS audio ads on these services and increased HFSS consumption.
- 156. Paid for advertising of a sporting event or charitable partnership associated to an identifiable HFSS product(s), on TV or online, is in scope of restrictions. However, the restrictions will not apply to the content within programmes. Therefore, HFSS items can be advertised, for example, on pitch banners in televised sporting events, as product placement of items within programmes is not in scope of restrictions.
- 157. The Government recognises the important role sponsorship plays to support our cultural capital across the UK. We want to give brands the space to reformulate their products. A brand that is currently synonymous with HFSS products may not be in the future. Including brand advertising in scope would restrict them from this opportunity. It should be noted that a brand is only able to advertise/sponsor if the advert does not include an identifiable less healthy food and drink product. The inclusion of a product(s) would mean sponsorship/advertising could not be used online or on TV before 9pm. By identifiable we mean that a food or drink product is recognisable to the extent the public would recognise what HFSS product was being advertised.
- 158. The proposed restrictions do not replace the ASA existing rules concerning sponsorship, which place clear and robust measures on markets to ensure sponsorship is not targeting children. For example, the use of mascots or celebrities of specific appeal to children would be considered a breach of the ASA rules.
- 159. The Government decided to exempt those small and medium advertisers (by which we mean those with 249 employees or fewer) whose business involves the manufacture or sale of HFSS products from this provision. This decision was made to ensure that these small and medium advertisers are not disproportionately impacted, and to mitigate wider market distortions. These advertisers increasingly make use of online advertising to promote their products and establish their business. This is because (in comparison to more traditional forms of advertising) online advertising is lower in cost and has limited barriers to entry.
- 160. Research conducted in 2020¹⁴² estimated that up to 45% of the UK's total digital ad spend comes from SMEs, equivalent to over £7bn. The research showed that eight of the ten most-used channels of advertising for SMEs are digital; and that SMEs use their own free social media more than any other type of advertising. If our proposed exemption was not in place, and these SMEs were banned from promoting HFSS products online, it is unknown how easily or feasible it would be for them to 'move' their spend to other forms of advertising. SMEs are likely to be charged 'rate card' pricing for any advertising space they do opt for. Rate card pricing is much more expensive and pricing generally gets reduced when customers take larger volumes or commit to larger spends across a set timeframe. SMEs are unlikely to be in the position to commit to these spending levels and therefore would not benefit from reduced rates, unlike larger companies who can commit ad spending per channel per annum in order to receive better ad rates.
- 161. In being able to promote their products, SMEs can compete in the market with larger established businesses that can use their brand recognition along with various marketing techniques to minimise the effects of the restrictions. It was considered that enabling brand advertising alone would not be sufficient for small businesses to establish themselves in a market, as in order to establish a brand, they must be able to demonstrate the value of their product to consumers. The continued entry and exit into food markets is essential for a well-functioning market that will deliver new products, innovation and lower prices to consumers. It is recognised that the health impacts of SME adverts could be the

¹⁴² "Digital advertising crucial to SMEs' recovery | IAB UK." 11 Jun. 2020, <u>https://www.iabuk.com/news-article/digital-advertising-crucial-smes-recovery</u>. Accessed 19 May. 2021.

same as those of larger businesses, and therefore this exemption is expected to reduce the health benefits of the policy. The Government has taken care to ensure that there is limited opportunity for the SME exemption to be gamed. This has been achieved through setting out that the qualifying business must not have more than 249 employees on the first day of the financial year, and that a franchise is to be treated as part of the franchisor business and is not separate for the purposes of determining the number of employees a business has. It should also be noted that the Government has included the power to amend the proposed policy exemptions. Therefore, should issues arise from this or any other of our proposed exemptions, the Government will be able to take action. The exemption for small and medium enterprises does not extend to other businesses in the advertising supply chain. For example, a large manufacturer of HFSS products could not commission advertising work from a small agency to circumvent the restrictions. While this will have wider implications for some small and medium enterprises, an exemption applied to them would result in a significant loophole that could undermine the policy objectives.

- 162. **Applying restrictions to all food and drink advertising categories.** We have assessed the current baseline of HFSS advertising on broadcast TV and online, as well as the amount of advertising for each food/drink category. In Ofcom's analysis (2006), they assessed that HFSS advertising was 80-90% of all food and drink advertising, and concluded that a complete ban of food and drink advertising would restrict and reduce incentives for the marketing of healthy products, incur higher costs for businesses and harm reformulation efforts. Kantar assessed that HFSS advertising was closer to 45% of the food and drink advertising market in 2017.¹⁴³ In light of Ofcom's previous assessment, and the advertising market now containing a higher proportion of healthier products, we believe that applying restrictions to all food and drink would be inefficient and create negative policy outcomes.
- 163. **Applying restrictions to all HFSS categories.** We plan on requiring a two-step approach to determining what products are classed as HFSS. First, applying to product categories listed in Table 5, which is taken from the product categories in scope of Public Health England's sugar and calorie reduction programme and the drinks in scope of the Soft Drinks industry Levy.¹⁴⁴ For products within these categories the Nutrient Profiling Model (NPM) 2004/05 should then be used to ascertain whether a product is HFSS or not.
- 164. Arriving at the food and drink categories in scope: Informed by Kantar's (2018) research, we have considered options that restrict all HFSS advertising, and assessed that approximately 28% of HFSS adverts shown on TV may have a negligible impact on children because of their limited appeal to children (e.g. cooking oils and low sugar dairy products). Restricting this advertising would also add considerable additional costs to broadcasters through lost advertising (Kantar estimate between £14-30m per annum). This would not deliver on our policy objectives of focusing on the products which contribute the most to childhood obesity and ensuring any economic impact is proportionate. Please see Table 5 below for a list of the product categories included.
- 165. The NPM is an evidence-based tool to classify products as being HFSS or non-HFSS. The NPM was created by the Food Standards Agency, in collaboration with health NGOs, academics and the food and drink industry to determine which products are able to advertise during children's programming. It has been used by advertisers since 2008 to implement BCAP and CAP Codes. The 2004/05 version is currently the most up to date published version of this model.

¹⁴³ The modelling process Kantar used to estimate the proportion of advertising which is HFSS can be found in <u>Annex C</u>

¹⁴⁴ Public Health England (2018) Calorie reduction: the scope and ambition for action <u>https://www.gov.uk/government/publications/calorie-reduction-the-scope-and-ambition-for-action</u> (accessed 30/01/2019) and Public Health England (2018) Sugar reduction: Achieving the 20% <u>https://www.gov.uk/government/publications/sugar-reduction-achieving-the-20</u> (accessed 30/01/2019)

Table 5. Products within the scope of the Soft Drink Industry Levy and Public Health England's Sugar and Calorie Reduction Programmes

Products included in PHE reduction programmes and SDIL			
 Soft drinks with added sugar Chocolate Confectionary Sugar confectionary Juice drinks with added sugar Sweet biscuits Ice cream Crisps and savoury snacks Pizza Cakes Breakfast Cereal Yogurts Morning goods 	 Pudding and dairy desserts Chips and potato products Complete main meals (ready meals) Family meal centres¹⁴⁵ Breaded and battered products Main meals (out of home) Starters/side dishes/small plates (out of home) Children's meal bundles (out of home) Milk drinks with added sugar Sandwiches (out of home) 		

C(ii). Options considered

166. This document considers 6 separate policy options. This builds on the options considered in the original IA accompanying the 2019 <u>consultation</u> and the <u>evidence note for the subsequent 2020</u> <u>consultation for online restrictions</u>. The many options reflect the fact that the Government could have chosen to introduce restrictions on one medium only, or on TV and online. The table below explains the different options. It is important to note that in all options, the current restrictions for HFSS advertising on child specific content on TV and online will remain. The Government's preferred option is F, a TV watershed between 21:00 and 05:30 and an online restriction for paid advertising with an exemption for SME advertisers.

Table 6: Modelled policy options

		Online options		
		Do nothing	21:00-05:30 watershed online	Online restrictions
	Do nothing	Option A	Option C	Option D
TV options	21:00-05:30 watershed on broadcast TV	Option B	Option E	Option F (preferred)

167. **Option A.** No additional regulation. This is the do-nothing scenario against which all other options are compared.

- Option A assumes that the current set of HFSS food advertising restrictions for TV and online media would be retained.
- As a result, under this option, it is assumed there are no changes in age-specific rates of overweight and obesity, but the average BMI of cohorts of individuals increases over time

¹⁴⁵ A main meal component that doesn't include carbohydrates (e.g. Fish fingers or a burger patty)

as they age. This increase in average BMI has been based on modelled estimates of current experiences.¹⁴⁶

- There was less food and drink advertising spend on television in 2019 than in 2017, but a consistent trend in reduced HFSS spend over time could not be established. Time-series data for online advertising is also limited, and a trend in HFSS spend over time could not be established. As a result, the do-nothing scenario assumes that there is no change in the current levels of HFSS advertising spend. It is, however, important to note that the advertising market may change significantly over time.
- There is substantial evidence that children are watching less broadcast television over time¹⁴⁷ and are therefore seeing less HFSS advertising on this medium. Conversely, they are spending more time online¹⁴⁸ and are likely to see more digital HFSS advertising. For comparison with other options, we have factored these trends into the estimated benefits by assuming that the gross level of children's exposure to HFSS advertising would change in line with these media usage trends for the next five years, with a flat trajectory thereafter.
- Due to the large number of uncertainties which would need to be considered, the do-nothing scenario does not attempt to quantify the future impact of the policies already announced as part of the 'Tackling Obesity' strategy, the 'Childhood Obesity: A Plan for Action',¹⁴⁹ or any other possible future actions by the Government.
- Several consultation respondents believed that the existing self-regulatory system involving the ASA is sufficient and noted the progress the ASA is making online. The ASA was not aware of a single case relating to existing HFSS advertising rules that would qualify as a 'serious and repeated breach' of the Code.
- 168. Option B. Advertising restriction on HFSS products that fall into categories of the SDIL, and PHE's Sugar and Calorie Reduction Programmes, listed in <u>Annex B</u>, applied on broadcast TV <u>only</u> via a 2100-0530 watershed. Retain current regulations online.
 - The restriction is based on the 2004/2005 NPM, applied only to the products listed in in <u>Annex B</u>.¹⁵⁰ This targets the products that are significant contributors to sugar and calories in children's diets, whilst ensuring that staples, such as oil, butter and cheese, are exempt.
 - Under this option, the current HFSS advertising restrictions would be retained online. The current restrictions applying to advertising around programmes of particular appeal to children would also still apply on TV.
 - Broadcasters in the consultation opposed a 9pm watershed but believed that, if there were to be one, a total online restriction is needed for consistency.
- 169. **Option C**. Retain the current set of food advertising restrictions for broadcast TV <u>and</u> introduce an online advertising restriction on HFSS products listed in <u>Annex B</u>, applied via a 2100-0530 watershed.
 - Under this option, we would retain the current regulatory environment on broadcast television but would introduce a watershed restriction (as per 'Option B') for online only to address concerns over children's exposure to HFSS advertising online and align with the shift of children's media habits.

¹⁴⁶ Ara et al. (2012) What is the clinical effectiveness and cost-effectiveness of using drugs in treating obese patients in primary care? A systematic review. Health technology assessment (Winchester, England);16(5):iii, <u>https://www.ncbi.nlm.nih.gov/pubmed/22340890</u> (accessed 28/06/2018).

¹⁴⁷ Ofcom (2018), Media Nations. Available at:

https://www.ofcom.org.uk/__data/assets/pdf_file/0014/116006/media-nations-2018-uk.pdf (accessed 05/02/2019) ¹⁴⁸ Ofcom (2018), Media Nations. Available at:

https://www.ofcom.org.uk/ data/assets/pdf_file/0014/116006/media-nations-2018-uk.pdf (accessed 05/02/2019) ¹⁴⁹ DHSC (2018) Childhood obesity: a plan for action, chapter 2,

https://www.gov.uk/government/publications/childhood-obesity-a-plan-foraction-chapter-2 (accessed 30/01/2019) and DHSC (2016) Childhood obesity: a plan for action,

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/546588/Childho od_obesity_2016_2_acc.pdf (accessed 30/01/2019)

¹⁵⁰ HMRC (2018), 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 01/03/2019)

- Responses in the consultation noted that a 9pm watershed tool is not well-suited to online, due to the difficulty or impossibility of applying it effectively. News publishers claimed that the open programmatic ecosystem has limited age or time based targeting capabilities.
- 170. **Option D**. Retain the current set of food advertising restrictions for broadcast TV <u>and</u> introduce online restrictions for paid advertising on HFSS products listed in <u>Annex B</u>.
 - Under this option, we would retain the current regulatory environment on broadcast television but would introduce online restrictions on paid for HFSS advertising only, to address concerns over children's exposure to HFSS advertising online and align with the shift of children's media habits. This accounts for there being a lack of transparency online, and no independent data source for the Government or parents and guardians to be confident in knowing what adverts children are being exposed to.
 - Online and advertising industry respondents in the consultation believed that a total ban would overreach Government's policy objectives and would not be proportionate to the nature or low risk of child exposure to HFSS advertisements. They noted that this would prevent advertising to adults and therefore make restrictions online stronger than on TV.
 - Some online platform respondents proposed online targeting-based solutions as an alternative.
- 171. **Option E.** Advertising restriction on HFSS products listed in <u>Annex B</u>. Applied via a 2100-0530 watershed on broadcast TV <u>and</u> online.
 - This restriction would be based on the same categories of products outlined in 'option B' for TV and 'option C' for online.
 - Responses in the consultation noted that a 9pm watershed tool is not well-suited to online, due to the difficulty or impossibility of applying it effectively. News publishers claim that the open programmatic ecosystem has limited age or time-based targeting capabilities.
- 172. **Option F.** Advertising restriction on HFSS products listed in <u>Annex B</u>. Applied via a 2100-0530 watershed on broadcast TV <u>and</u> online restrictions for paid advertising.
 - This restriction would be based on the same categories of products outlined in 'option B' for TV and 'option D' for online.
 - Broadcasters in the consultation opposed a 9pm watershed on TV but believed that, if there were to be one, a total online restriction is needed for consistency.
 - Online and advertising respondents in the consultation believed that a total online ban would prevent advertising to adults and therefore make restrictions online stronger than on TV.

C(iii). Alternative Options Considered

- 173. During the course of our work, a broader range of policy options, other than those set out above, were considered and discounted. We recognise that advertising is just one of a range of factors that influence children's HFSS consumption, and that any additional measures should be seen in the context of other interventions already in place or proposed. This includes current advertising and food restrictions, the other Government measures proposed in the Childhood Obesity Plan, and voluntary interventions by broadcasters, advertisers and product manufacturers. Though we have not modelled cumulative impact here, it is likely that measures are complementary and the whole is greater than the sum of its parts.
- 174. In light of policies that are in place or being developed as part of the Childhood Obesity Plan, we considered the following alternative options:
- 175. **Voluntary measures**. In the UK, HFSS advertisements have been regulated via co-regulatory arrangement since 2008, detailed in the BCAP Code. For non-broadcast (online) self-regulatory rules were tightened in 2017 to bring parity between broadcast and non-broadcast restrictions, detailed in the CAP Code. Neither to date have been enshrined in law, both Codes are created by respective committees comprised of advertising industry representatives. For Broadcast this arrangement is co-

regulatory: there is a line of responsibility between Ofcom, who the Government has entrusted the regulation of communications to and the Broadcast Committee of Advertising Practice. Whereas the Government has no control over the Committee of Advertising Practice.

- 176. Prior to 2018, when the UK Government published 'Childhood Obesity: A Plan for Action' the UK Government's policy approach to reducing childhood obesity was defined by encouraging voluntary compliance by the food and drink industry. The creation of the Public Health Responsibility Deal (RD) enshrined this principle. The RD was a partnership between Government and industry, where the Government challenged the food industry to take voluntary action on food on a range of pledges. No pledge was agreed to cover HFSS advertising. Independent analysis showed that the effectiveness of the RD was limited.
- 177. Based on the lack of engagement and impact achieved by a voluntary approach, the childhood obesity plan in 2018 marked a change in the Government's approach to reducing childhood obesity with regulations being explored.
- 178. **Further qualitative restrictions on advertising to children.** As previously outlined, the CAP and BCAP codes also restrict the content used to promote HFSS products (e.g. using licensed characters or celebrities popular with children), so that they are not deliberately targeted at children or exploit their credulity, loyalty, vulnerability or lack of experience. We have seen limited evidence challenging the effectiveness of these restrictions covering the content of HFSS adverts, and as a result we are not seeking to revise these rules as part of this consultation.
- 179. In the 2019 consultation we also outlined a number of alternative options for TV and online restrictions, which, given feedback to the consultation, we have not pursued further. These are outlined below:
- 180. Ladder of advertising restrictions on TV We consulted on introducing a ladder system for the TV restrictions which included three bandings for food products based on the NPM score, band 1 would have full advertising freedoms, band 2 would include reformulated or healthier products and would have advertising freedom and band 3 would not be allowed to advertise before the watershed. This was proposed as a way to encourage reformulation of products. This did not receive strong support in the consultation with only 12% of respondents favouring this option, with some stakeholders commenting that this was too complex to understand.
- 181. **Strengthen current targeting restrictions online -** This option proposed reducing the current 25% child audience threshold for HFSS advertising online to 10%. It also proposed strengthening targeted advertising to ensure only adults were exposed to HFSS adverts alongside prescribing a list of specific sources of evidence that advertisers would need to use to prove they had excluded under-16s from receiving their adverts. This option was least favoured at consultation and only 6% of respondents listed it as their preference. There was concern from the health sector that this option would not protect children who may falsify their age online and use shared devices, they also noted concerns with the lack of transparency.
- 182. The above option is similar to the alternative industry-led proposal that was submitted to Government in 2021, which would prohibit paid for HFSS ads online unless marketers could either demonstrate that: they have implemented robust measures to prevent under-16s from being exposed to dynamically-served ads or that children comprise less than 5% of the total audience of all audience ads. Concerns raised during the consultation at the option above would also apply to this industry proposal, as this method relies on accurate targeting and whilst some information was provided on the proportion of a target audience that adverts reached, there was not enough evidence to determine that targeting technologies would be effective in preventing online adverts reaching children for any type of product.
- 183. There is no universal independent measurement of who is viewing what, where and when in the online space. Previous research by PLUM¹⁵¹ commissioned by Government as part of the Cairncross

¹⁵¹ "Online advertising in the UK - Gov.uk." 21 Jan. 2019, <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777996/Plum_D</u> <u>CMS_Online_Advertising_in_the_UK.pdf</u>. Accessed 21 May. 2021.

Review¹⁵², published in 2019, highlighted this. In research cited in the 2020 consultation for this policy¹⁵³, Government was further concerned by the issue of children being able to circumvent age restrictions online. The scale of this is not entirely clear and as such it is not clear if voluntary measures in the online space are truly effective because there is no universal audience measurement and even if there was, it is not always clear who is accessing content.

- 184. The online advertising market is increasingly divided between the "walled gardens" of major internet companies, which have access to data from logged-in users, and the fragmented open internet, which faces challenges developing a joined-up view of users across devices and browsers. The implementation of GDPR appears to have strengthened the "walled gardens".
- 185. The online advertising industry is battling bad ads, brand-unsafe content and fraud using technology solutions and, in some cases, manual checks. But some bad actors have been able to slip through the net, given the high volumes of activity that needs monitoring (in terms of numbers of ads, publishers and content items, and volume of traffic), the complexity of the value chain and uneven quality assurance procedures across the market. There is very limited reliable data about the scale of these problems. The strong market position of Google and Facebook and high barriers to entry raise concerns around a potential lack of effective competition.
- 186. The 2020 consultation set out the rationale to legislate for a complete online restriction to eliminate exposure of children to HFSS advertising online the rationale for this approach as set out at the time was to address concerns about the accuracy of targeting away from children and independent data verifying audience make up online. Any alternative proposals will therefore need to meet a high bar in terms of protecting children online. As such, we consider the alternative industry-led proposal of a 5% child audience threshold as insufficient to meet the policy objectives.
- 187. **Mixed option online -** This option proposed implementing a 9pm watershed for video advertising (for video on demand services and video sharing platforms) to align with TV restrictions. For other types of advertising online it proposed strengthening the targeting restrictions as listed above. Only 14% of respondents favoured this option in the consultation.
- 188. Given the overall policy aims, and the evidence discussed above, we have assessed the options against the following principles to ensure that they:
 - focus on limiting HFSS advertising exposure to children;
 - give clarity to parents;
 - cover broadcast TV and online only;
 - are proportionate to the economic impacts.

D. Cost and Benefits methodologies

D(i). Overall Methodology

- 189. This section summarises the methodology used to calculate the costs to broadcasters, online platforms, retailers and manufacturers as well as health benefits. A supplementary methodology note is included at <u>Annex C</u>. This section explains the effects considered on these groups as well as the benefits to children's health. As there is currently insufficient evidence from which to infer an impact on adult calorie consumption, this methodology does not capture any resultant costs of benefits from the restrictions deriving from behavioural change among adults.
- 190. All analysis has limitations, and the specific limitations of this analysis are set out in full below. Significantly, this methodology assumes a baseline where the other measures as part of the

¹⁵³ "Total restriction of online advertising for products high in fat, sugar" 10 Nov. 2020, <u>https://www.gov.uk/government/consultations/total-restriction-of-online-advertising-for-products-high-in-fat-sugar-and-salt-hfss</u>. Accessed 21 May. 2021.

¹⁵² "Government response to the Cairncross Review: a sustainable" 27 Jan. 2020,

https://www.gov.uk/government/publications/the-cairncross-review-a-sustainable-future-for-journalism/governmentresponse-to-the-cairncross-review-a-sustainable-future-for-journalism. Accessed 21 May. 2021.

Government's obesity strategy are not yet in place. The potential effects of these other policies are considered in <u>Section F(i)</u>.

- 191. All analysis also includes some degree of subjective analytical choice, and we have made a number of assumptions in order to estimate both costs and benefits, particularly in areas where evidence is inconclusive. For example, there is uncertainty in our estimate of health outcomes due to the limitations in the evidence with respect to the longevity of any behaviour change resultant from reduced exposure to advertising. These are presented transparently throughout. In most cases we have erred on the side of overestimating business impacts, to test the policy *in extremis*. It has not been possible to conduct a full analysis of the price impacts, both the price of advertising and the price of food, as there are a number of different drivers affecting these. We therefore provide commentary on the likely direction of prices and make assumptions accordingly.
- 192. The methodology used to derive costs and benefits for our options is illustrated in Figure 6.





D(ii). Methodology - modelling the restriction on broadcast TV

Assessing the impact on the broadcasting sector

- 193. Our assessment of the impact of HFSS advertising restrictions on broadcasters is based on several factors and assumptions, including:
 - The direct effect of advertising restrictions on broadcasters will lead to a loss of revenue and therefore profit from food and drink manufacturers and retailers and OOH providers advertising HFSS products on their channels.
 - Considering the indirect effects, based on the reported return on investment, we assume that food and drink advertisers value television advertising and will employ reasonable mitigations to maximise the opportunities to promote their brand and products, by either amending HFSS adverts or rescheduling them, to continue advertising.
 - Advertising airtime is traded on the basis of how effectively it reaches its target audience. We assume that broadcasters and advertisers are selecting and scheduling advertising to achieve optimal profit. Restricting what can be advertised and when it can be scheduled would lower the price broadcasters could charge and the revenue they could generate, as well as reduce the demand for food producers' products (explored in <u>Section D(vi)</u>).
- 194. The direct impact of broadcasters is simply the revenue lost from adverts that would fall under the HFSS definition. The method to determine HFSS advertising revenue is set out in the broadcaster baseline section below.
- 195. The revenue lost by broadcasters is adjusted for indirect effects and while this does not contribute to the final cost benefit analysis, it is important to present the potential losses for each group affected in a dynamic market. It is also necessary in the methodology to calculate the changes in revenue as a result of advertiser mitigations as this is used in calculating the losses to advertisers examined in <u>Section E(i)</u> that are included in our final estimates.
- 196. To assess the impact of HFSS advertising restrictions on broadcasters, it is important to consider the operation of the TV advertising market. As Ofcom (2006)¹⁵⁴ highlighted in its assessment of food advertising restrictions, the trading of commercial airtime is driven by the supply of broadcaster airtime and the demand by advertisers and media buyers. The demand side of this equation will vary depending on the nature of the product or service being marketed. Hence, the price of airtime is usually based on how effectively it reaches the advertiser's target audience and the number of businesses demanding this airtime. The attention an advert receives is measured by the number of times an advert is seen by an audience, known as commercial impacts. Therefore, in assessing the costs to broadcasters, we do not assume that these result from HFSS advertising slots being vacant, but from broadcasters having to offer these slots to other advertisers for a lower price. This is because broadcast advertising is a mature market and any excess demand from existing advertisers is expected to be limited. A watershed may increase demand for unrestricted advertising airtime from 2100-0530 but, again, advertisers would only be willing to pay a premium if their adverts reach the right audience.
- 197. To evaluate each policy option it is necessary to: analyse the reasonable steps advertisers would take to continue advertising on television; determine changes to advertising pricing for advertising (HFSS, non-HFSS food/drink and other categories of advertising) pre and post watershed; determine the expected substitution of other advertising, and consider adjustments by broadcasters to reduce costs in light of a revenue loss.
- 198. However, the TV advertising market is complex and does not allow for a precise evaluation of the effects of a watershed for advertising HFSS products. There are hundreds of advertising campaigns on television, running across hundreds of channels, each seeking different target audiences, and it is not possible to provide a precise assessment of how the average price of advertising would change in the face of this type of restriction. This assessment will therefore assess the range of potential impacts

¹⁵⁴ Ofcom (2006). Food Advertising Impact Assessment (p.80): <u>https://www.ofcom.org.uk/___data/assets/pdf_file/0017/38222/annex6.pdf</u> (accessed 01/03/2019)

on broadcasters based on assumptions about broadcaster/advertiser behaviour in reaction to a watershed. This analysis is described in detail in <u>Annex C.</u>

- 199. The impact on broadcasters is measured against a 'do nothing' counterfactual, provided by Kantar. This counterfactual assumes current market trends for viewing numbers and advertising pricing will continue and that there are no regulatory interventions - that is zero costs and benefits. However, this assessment considers trends in children's use of media over the appraisal period, as children are watching less television, while spending more time online.
- 200. A negative impact on broadcasters may be mitigated by methods including lifting other regulatory burdens, or through the broadcasters themselves taking decisions to adapt. Broadcasters are subject to a broad range of regulatory interventions, including content and production requirements. However, these complex interventions have together been designed to help shape a carefully balanced broadcasting ecology that supports high quality public service content, a vibrant independent production sector, and a competitive and diverse market. As such, there are no easily identifiable regulatory mitigations at this stage. As a result, the focus here for likely mitigations is broadcasters making commercial decisions on where to cut costs.

Broadcaster Baseline

Creating a 2017 dataset of commercial TV impacts

- 201. TV advertising spending and the associated viewership for all food, drink and restaurant advertisers was sourced from Nielsen using their Addynamix (reporting software). This data is from 2017 and while it has not been possible to update this with the latest data, an adjustment has been made to expenditure, described below. The Nielsen data provided the most detailed publicly available list of the food and drink products which were advertised on television in 2017 accounting for £891m in reported TV advertising spend. Data for alcohol and infant formula advertising was captured in this set but removed at the beginning of the analysis reducing the total reported spending to £789m.
- 202. Further analysis of the Nielsen data revealed that 48% of the listed product adverts only represented 7.5% of market impacts. To support proportionate analysis this 'long tail' of values was separated out with Kantar focussing on pairing nutritional data to the remaining 52% of the reported 807 products, which represented 92.5% of the total market impacts. The observed nutritional composition of the 92.5% was later applied to the 'long tail' of advertising.
- 203. Nielsen viewership data was replaced with Broadcasters' Audience Research Board (BARB) actual (un-weighted) impacts for adults, children 4-15, children 4-6, children 7-10 and children 11-15. BARB data is the most robust source of TV viewing available and represents the UK industry standard for TV measurement. The data replacement was achieved by reporting all impacts for the same Nielsen-defined categories (food, drink, restaurants and bars) at a brand (product) level. Each line was manually checked where BARB product attribution for impacts was unclear, investigation of creative (recorded by Nielsen), film titles and codes (recorded by BARB), product categorisation (recorded by both) and campaign timings were used to attribute the correct BARB impacts to the Nielsen-defined advertisers. This analysis produced a database of adverts including information on advertiser spend, child impacts, the nutrient profile score and PHE/SDIL categories.

Calculating time of day distribution of impacts (for TV)

204. HFSS impacts were distributed according to the time of day the HFSS advertising spend was accrued, rather than solely assigning a proportion of impacts based on how many children were watching at the time. This gives an estimated delivery of HFSS impacts by daytime that takes into account the existing restrictions to HFSS products.

Calculating exposure in minutes

205. Kantar looked at the proportion of spend for HFSS advertising across differing lengths of adverts (in minutes) within the Nielsen dataset. The split for spend for different advert lengths was applied to impacts data to estimate the distribution of HFSS impacts by time length. Assuming each impact is a fully watched ad, Kantar multiplied impacts by time length to get total seconds and minutes of HFSS advertising seen by children in 2017. In summary: gross minutage = sum of (impacts x time-length).

Adjusting the 2017 baseline to reflect recent trends

206. More recent data shows that TV advertising spend, and children's viewership of TV have declined between 2017 and 2019. BARB viewing data indicates that the average child weekly TV viewing time has decreased from 10h00m in 2017 to 7h56m in the first half of 2019 - a decrease of 21%. AA/WARC. Expenditure report figures for 2017 and 2019 indicate that overall TV advertising expenditure decreased from £5,180m in 2017 to £4,930m in 2019 - a decrease of 3.5%. To account for these trends, our estimates for the revenue at risk on TV has been decreased by 3.5%. Estimates for the baseline number of child impacts of TV adverts has been decreased by 21%. This has been applied as a one-off change as these trends may not continue for the duration of the appraisal period.

Attributing Nutrient Profile Model (NPM¹⁵⁵) scores data to impacts for TV

- 207. NPM scores data was initially derived from existing Kantar Worldpanel datasets for 2017, and manually matched with impacts at a product level.
- 208. Kantar Worldpanel collects nutrition data from food labels on individual products via fieldworkers who visit retail stores on a rolling 4-6 monthly basis. This information is supplemented by product images from third party suppliers. Where nutrition data has not been collected for a product, Kantar Worldpanel imputes nutrition values based on similar products or with category averages. Fruit Vegetable and Nut scores are estimated at a category level, as this information is not captured in the Kantar Worldpanel data.
- 209. For this project, the nutrient values for September 2017 were used, with product level information provided where an advertisement was for a particular product. Where a precise product is unidentifiable either a) an average of the real largest selling products has been used or b) a sales weighted average (for large ranges or manufacturers). This has been specified where a sales weighted average figure has been used rather than just an average of the range and will reflect an average for the 52 weeks.
- 210. Using this approach, Kantar Worldpanel was able to assign NPM scores to 316 products advertised on TV, out of a total of 428. This was done to expedite the categorisation process – these 316 products represented 91.5% of the total food and drink advertising impacts. Public Health England (PHE) have also reviewed the TV dataset and categorised each product into the correct Soft Drink Industry Levy (SDIL) or PHE sugar or calorie reformulation category and NPM score. This was updated following the publication of the <u>final calorie categories</u> for their reformulation programme, to ensure the data accurately maps across to the PHE programmes.
- 211. For products that had tracked advertising activity but did not sit on existing datasets, NPM classification was applied manually using publicly available nutrition data. Where relevant, the advertisement was viewed to help guide categorisation.

Broadcast restrictions modelling methodology

Calculating revenues and impacts of pre-watershed adverts

212. The dataset described above was analysed to identify how much advertising spend fell into the scope of the watershed restriction, and the amount of commercial impacts (or the number of adverts that reached children) this represented. This was accomplished by identifying adverts and their corresponding number of views that are in scope according to the categories presented in <u>Table 5</u> and whether they are above the NPM thresholds for food and drink. This represented the highest amount of revenue and impacts within the scope of the restriction options. Following this step, the effect on revenues and impacts is adjusted according to anticipated behaviour by advertisers, including removing their adverts from TV entirely, and mitigations to maximise their revenues under the restrictions.

Possible reactionary responses from advertisers

213. There are several options available to advertisers to mitigate the impact of any restriction. Affected advertisers may choose to make changes to their products (i.e. reformulate their product), the construct

¹⁵⁵ Nutrient Profile Model (NPM) 2011. Available here: <u>https://www.gov.uk/government/publications/the-nutrient-profiling-model</u>

of their advertising (i.e. advertise a substitute product or the overall brand), or the time of day in which they advertise (shift spend to post-watershed), to be able to keep advertising outside of the restrictions.

- 214. In response to the restrictions, advertisers outside of the category (or indeed within the category but unaffected) may backfill the advertising space, and so therefore have a mitigating impact on the revenue drop for broadcasters.
- 215. **Reformulate product:** Some food producers might respond to these restrictions by reformulating their products in order to pass the NPM. If they were to do so they would be able to advertise more widely under the proposed restriction.
- 216. Reformulation is most likely in products that are close to the NPM threshold. These have the advantage of being generally more easily reformulated. Additionally, being able to bring that product under the NPM threshold would allow producers to advertise their product freely.
- 217. Feedback from the consultation from the food and drink industry highlighted that for products where the NPM score is far higher than the threshold the challenge and cost of reformulation is significant. As a result, some respondents felt that this policy could reduce the incentive to reformulate.
- 218. The complexities involved mean the degree to which reformulation takes place is difficult to model with certainty. Businesses may be able to adopt innovative technology, opening up the possibility to reformulate historically unhealthy products. Shifting consumer demand may also encourage further reformulation, even if it will not mean businesses can advertise the products on TV. The costs of any reformulation will also 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.
- 219. In response to other measures to reduce obesity, some companies have started to reformulate their products, and there has been progress in this space. The UK food and drink industry has a strong history of successful reformulation with 45,000 tonnes of sugar being removed from soft drinks as a result of the Soft Drinks Industry Levy and some categories delivering well against PHE's sugar reduction programme.
- 220. Due to the uncertainties surrounding these costs and the limited evidence from consultation responses, Kantar assumed that reformulation would only be possible for products within one point of the NPM threshold defining HFSS products, set at 4 for food and 1 for drink. This assumption was tested through the consultation and further stakeholder engagement, however no further evidence was submitted. We recognise that this is a conservative estimate, however this was chosen due to the large variances in reformulation available to different product categories. The technical guidance on the NPM (<u>Annex B</u>) illustrates the level of nutritional reformulation required to meet these criteria. A small proportion of the adverts in our TV advertising model, 2.6%, advertised a product which met the criteria for reformulation. These adverts represented 2.5% of all TV food/drink advertising spend.
- 221. Furthermore, any effort by brands to reformulate their products would only be pursued if the expected returns were greater than the cost of doing so for a profit maximising firm. As such, we expect the benefits of reformulation to outweigh the costs to brands. The cost of reformulation would be considered an indirect cost, as there is no requirement under this policy for brands to reformulate.
- 222. Overall, reformulation could deliver healthier food and drink products for consumers, and thereby reduce their calorie intake. Should the rate of reformulation be greater than that assumed in the analysis it would lead to an underestimate of health benefits in this Impact Assessment. This possibility is discussed further in the Key Assumptions and Limitations in the Exposure and Health Benefits Calculations section.
- 223. **Advertise a substitute product or the overall brand:** There are manufacturers and retailers who have a combination of products, some of which would or wouldn't be considered HFSS. Typically, these include large supermarkets, brands and restaurant chains with a wide product portfolio. A good example of this would be a soft drinks manufacturer who has a full sugar option and a diet / light option. Supermarkets have the option to change their advertised product mix from HFSS to non-HFSS goods. For these examples, we have assumed that spend could shift from advertising HFSS products to either advertising non-HFSS products or advertising the overarching brand with no products featured. There

may be some advertisers who cannot advertise their brand without advertising their product, and while this has taken some judgment in the analysis, these adverts are excluded from this mitigation option in the analysis. The analysis tries to replicate extant CAP/BCAP guidance on brand advertising, which would be retained in the policy options, but recognises that the CAP/BCAP clearance system for adverts may take a more robust approach.

- 224. Shifting adverts to after the watershed, or removing adverts from broadcast television: In response to the restrictions some advertisers may remove advertising completely from TV (also applicable to the online modelling), while others may be able to move some of their current spending that falls before the watershed, to after the watershed. Kantar's modelling of total revenue at risk makes assumptions about removing adverts and shifting adverts based on its assessment of the relative size of fixed costs of broadcast advertising to overall costs. In its analysis there were a number of advertisers with small (<30%) levels of investment post-watershed. Where these advertisers are affected by the regulation they can keep, reduce, or increase their spend post-watershed, or remove their spend from TV completely. Kantar's analysis assumes that even though the watershed allows advertisers to keep spending post 9pm, measurement of revenue at risk should include <u>entire campaigns being removed</u>, if over 50% of their advertising spend takes place before the watershed (between 0530-2100). It therefore assumes if over half of their advertising spend is already after the watershed, the advertiser will shift any spending pre-watershed to post-watershed so all of their spending occurs between 2100 and 0530. This assumption is born from three considerations:
 - Prohibiting an HFSS advert between 0530-2100 reduces the audience for HFSS adverts by an average of 60%; and
 - The cost of producing a TV advertisement is a significant proportion of an advertising campaign's cost, anywhere between 20-50% of the total cost of a TV campaign, with buying advertising space on TV accounting for the remaining spend;
 - An assumption that only campaigns that predominantly advertise from 2100-0530, could adapt to advertising during this time window and still reach their target audience.
- 225. The aforementioned factors would reduce the return on investment significantly; under a watershed restriction, advertisers would need to commit the same fixed cost to produce an advert that reaches only 40% of its pre-restriction audience.
- 226. These are simplifying assumptions necessary for the modelling as it is not possible to determine the overall price change of advertising, either overall or during different times of day. In practice advertisers will make decisions based on their own advertising costs and returns.
- Replacing lost HFSS advertising and cost mechanisms: In the event of advertising being pulled 227. from television, broadcasters would still have the option to keep an advert slot available for permitted adverts. Based on the analysis Ofcom conducted during the last review of food advertising restrictions on television, we understand from broadcasters that securing a 100% replacement of lost advertising is unrealistic. Advertising rates may also change, as supply and demand for commercial impacts changes. Broadcasters trade in commercial impacts, rather than advertising space/slots. Under advertising restrictions, HFSS manufacturers may be able to reach less of their target audience if forced to advertise at different times of day, which would reduce the price they are prepared to pay for advertising, as it would now take more advertising to achieve the same number of impacts. The price of slots vacated by HFSS adverts may fall because there is less competition for those slots in a mature market, and because the slots may not hit the target audience of other advertisers, therefore reducing the Return on Investment (ROI) and consequently the willingness to pay for that slot. Conversely, this option could create more demand for advertising after 2100, increasing prices at certain times (e.g. 2100-2200). The pricing mechanisms for advertising and the rates set by broadcasters are complex and subject to commercially sensitive information.
- 228. For these reasons, Kantar did not attempt a detailed quantification of the impact restrictions have on advertising price, and therefore the overall changes to broadcaster revenues. Instead, Ofcom used broadcaster feedback to assume a proportion of revenues lost from advertising restrictions were replaced by both existing and new advertisers, termed backfill in the industry. In 2019 Kantar therefore modelled a 10, 20 and 30% substitution effect to form high, central and low estimates of advertising revenue that could be replaced under a 2100-0530 watershed.

- 229. Responses to the 2019 Impact Assessment indicated that a 30/20/10% (low/mid/high) assumption may have overestimated the demand for vacated advert slots, and therefore price reductions may have been underestimated; suggesting broadcast revenue lost could be greater. Ofcom's analysis was conducted in 2006 and the advertising market is likely to be more competitive today, particularly with the ascent of digital advertising. However, the restriction proposed would be applied to a narrower set of products than Ofcom considered originally and there may be new advertisers in the market that would value the pre-watershed slots. As a result, we have revisited the backfill assumptions and considered the possible price effects.
- 230. For a scenario where the price effect is zero, that is, there is excess demand in the market such that broadcasters lose no revenue, this would be equivalent to 100% backfill. However, based on the feedback this would be an unrealistic assumption as the market is mature, there are high costs to entry and the return on investment is higher for established businesses, meaning there are few new entrants. At the other end of the scale if there is no backfill, no revenues are replaced, and this would be equivalent to a price reduction corresponding to the revenues of advert slots that would be demanded with no restrictions. It is not possible to determine the price reduction associated with this.
- 231. In practice the market will adjust to a new equilibrium which is likely to result in a small price reduction compared to the baseline. We have therefore revised our central scenario to 10% of revenues replaced through backfill, with 20% in the low-cost scenario and 0% in the high-cost scenario.
- 232. This assumption is predicated on alternative categories of advertising being available and demand to advertise on television. This could come from advertisers on television expanding their campaigns, advertisers on other media switching spend to television, or new advertisers buying inventory on television. In response to the 2019 consultation we heard that it would be unlikely that new businesses would advertise straight to TV. This is because of the high fixed costs mentioned above, and the benefits of TV advertising being greater for established businesses that are looking to build brand equity. New businesses are therefore likely to start with other media which is more cost effective in building awareness. In their analysis, Kantar assumed that this backfill of advertising spend would come from other media channels (e.g. print, radio, outdoor advertising). Therefore, while HFSS advertising spend may displace to other channels from television, the analysis assumes that there would be some influx of non-HFSS (and non-food/drink) advertising spend away from these channels in response.

Figure 7: Diagram showing backfill assumptions



Low, mid and high cost scenarios

- 233. The results will be calculated for a low, mid and high cost scenario:
 - Low: assumes that broadcasters and advertisers will take all possible mitigating actions and that there will be 20% backfill of the adverts which were lost due to the restrictions.
 - Mid: assumes that broadcasters and advertisers will take 50% of all possible mitigating actions and that there will be 10% backfill of the adverts which were lost due to the restrictions.
 - High: assumes that broadcasters and advertisers will take no mitigating actions and that there will be 0% backfill of the adverts which were lost due to the restrictions.

Exempting SME advertisers

- 234. The dataset of food and drink advertisements shown in 2017, provided by Kantar, did not include any SME advertisers. The adverts included in the dataset account for 90% of the total food and drink ad spend in 2017. This means that the upper limit on TV food and drink ad spend from SMEs in 2017 was 10%. When considering the effect of an SME exemption, we have taken a low/mid/high approach, assuming that the SME proportion of ad spend for food and drink on TV is 2.5/5/10%. We are therefore assuming that the share of HFSS adverts per pound spent on advertising is the same for large and SME business in the food and drink category. As stated earlier only 8% of SMEs use TV advertising though this wasn't broken down by product category.¹⁵⁶
- 235. The expected effects of excluding SME advertisers is addressed in the <u>Small and Micro Business</u> <u>Assessment Section</u>.

¹⁵⁶ Internet Advertising Bureau

D(iii). Methodology - modelling the online restriction

Assessing the impact on online platforms

- 236. Our assessment of the impact of HFSS advertising restrictions on online platforms is based on similar factors and assumptions to those used for the TV broadcast sector. The differences between our assessment of online platforms and our assessment for TV broadcasters are outlined below:
 - The online advertising market encompasses a wider range of different formats of advertising (classifieds, video, display, search, sponsored, native, etc). In assessing the scale of the online HFSS advertising market, we have accounted for the varying 'cost per thousand impacts' of different formats of online advertising.
 - In the case of an online watershed, we have assumed that 91% of child impressions of online adverts will be curtailed.¹⁵⁷ This follows Ofcom's Digital Day research, discussed in <u>Section B(ii)</u> indicating children spend most of their time online pre-watershed.
 - In the case of online restrictions, all child impressions of HFSS advertisements are curtailed (with the exception of those coming from SME advertisers, and those in search and classified adverts). In this scenario, we have removed the stage of the model where advertisers may mitigate by changing the time slot of their advertisements.
 - The average online advert is not viewed for the same duration as a TV advert. <u>Section D(iv)</u> discusses how advert length is treated for the online methodology.

D(iv). Estimating children's advertising exposure

Estimating HFSS TV advertising exposure

237. As outlined in <u>Section D(ii)</u> Nielsen data outlined food and drink products which were advertised on TV was used, accounting for existing restriction on HFSS products, the total children's exposure of HFSS adverts on TV was calculated, taking into account the decline in children's viewership of TV. There were an estimated 2.89bn TV child impacts for HFSS adverts in 2019.

Estimating HFSS online advertising exposure

238. The process to estimate the total number of child HFSS impacts in 2019 has five steps, labelled A-E outlined in Figure 8. Steps A and B use a significantly different approach compared to the 2019 consultation stage IA, while steps C-E are mostly unchanged.

Figure 8: Overall methodology for estimating the total number child HFSS impacts in 2019



Step A: Take the total size of the online advertising market in 2019.

239. The IAB UK & PwC Digital Adspend Study¹⁵⁸ is an annual census of UK media owners and advertising intermediaries and covers desktop and mobile advertising expenditure. The total size of the online advertising market was £13.6bn in 2019. Search and classified advertising spend is excluded from the total as these adverts are substantially different from video and display adverts, for which the available quantitative evidence relates. Firstly, these adverts tend to be in text form, and

¹⁵⁷ Ofcom, Digital Day 2016 Slide pack 2: Children's 3 day media and communications diary findings: <u>https://www.ofcom.org.uk/research-and-data/multi-sector-research/general-communications/digital-day</u> (accessed 01/03/2021)

¹⁵⁸<u>https://www.iabuk.com/adspend#:~:text=The%20latest%20IAB%20UK%20and,advertising%20to%20deliver%2</u> <u>0business%20results</u>

secondly these adverts usually relate to information an individual has actively sought out. Therefore, the effect of this type of advertising on consumption is much more complicated to measure. Removing search and classifieds, the total spend is £5.4bn.¹⁵⁹ This can be seen in Table 7 through the combination of the *online display* and *other* categories.

Туре	Adspend 2019 (£m)
Search	6,790
Online display	5,280
Online classified	1,450
Other	83
Total	13,603

Table 7: IAB/PwC Adspend report, 2019 headline figures UK

Step B: Estimate the total size of the food, drink and restaurant advertising market in 2019.

240. The IAB UK & PwC Digital Adspend Study gives an industry breakdown of the share of online advertising spend (adspend) in 2019. Figure 9 below shows each industry's share of adspend; with industries which advertise food and drink shaded in darker purple. These sectors are 'consumer goods' (also known as fast moving consumer goods, or FMCG), 'retail' (which contains supermarkets and grocers) and 'restaurants'.

Figure 9: Share of online display advertising in the UK by industrial sector, sectors with food and drink advertising shaded



Source: IAB UK & PWC Digital Adspend Study, 2019

¹⁵⁹ Search advertising contains a component of search-engine optimisation, which impacts the order of site search results and likelihood of directing children to HFSS advertisers, but does not constitute a HFSS advert. It has not been possible to estimate the child impressions associated with this form of spend. As per the 2019 consultation stage impact assessment

⁽https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786554/advertis ing-consultation-impact-assessment.pdf), search and classified ads have been excluded from the modelling. (Accessed: 02/10/2020)

- 241. The 'restaurants' category can be assumed to consist entirely of food and drink-based advertising. The remaining two categories, 'consumer goods' and 'retail', will contain adverts for non-foods. According to Statista/GroupM, 82% of FMCG advertising spend (across all media channels) is for food and drink products.¹⁶⁰
- 242. The dominant food and drink advertisers in the 'retail' category are the major supermarkets. Ebiquity's Advertising Report 2018 found the top six supermarkets accounted for 19.3% of all channel advertising spend.¹⁶¹ For both 'consumer goods' and 'retail' it is assumed that the food/drink proportion of adspend is the same for online advertising as it is for all-channel advertising.
- 243. Table 8 below uses these proportions to estimate the proportion of all food and drink-related online advertising spend giving 14%. The estimate for the total size of the online food and drink advertising market is therefore 14% of £5.4bn, or £743m.

Table 8: Calculating the proportion of internet advertising expenditure (adspend) which is for food and drink in the UK, 2019

Category	Share of total online adspend	Food/drink share of category	Food/drink share of total online adspend within category
Consumer goods	11.5%	82.0%	9.5%
Retail	11.2%	19.3%	2.2%
Restaurants	2.3%	100.0%	2.3%
Total	-	-	13.9%

Step C: Estimate the size of the total HFSS advertising market.

- 244. Evidence of the volume of HFSS advertising online is limited. The most reliable and accessible measure of what has been advertised and audience impacts, comes from ComScore. Their data covers display advertising on laptops and personal computers, which estimates show represents only 9% of the digital advertising market that would contain food and drink advertising. For the purposes of this IA, the same sample that was used for the 2019 consultation stage IA is being used.
- 245. This data and the proportion of food and drink adverts that were NPM failing in the ComScore sample is the basis of the estimation for the total online food and drink market. The proportion of online food and drink adverts which are NPM failing is 64% of online food and drink adverts. The 64% NPM failing figure is multiplied by 72%, under the assumption that the proportion of NPM-failing advertising that falls within the HFSS categories was broadly comparable to that seen on broadcast television (72%). Overall 46% of online food and drink adverts are in scope of HFSS restrictions. The estimate for the total size of the online HFSS food and drink advertising market is £339m (46% of £743m).

Step D: Estimate the total number of impacts from HFSS adverts.

246. To approximate the total amount of HFSS impacts online, the same methodology as the 2019 consultation stage IA has been implemented. This methodology takes the estimated value of the food and drink online market (£743m) and apportions shares of this to the different types of digital advertising available (e.g. mobile display, desktop display, video pre-roll etc.), proportional to their shares of the market. Following this, Kantar's estimates for a 'cost per thousand impacts/impressions' rate has been used, typical for each type of advertising, to derive the likely number of online impacts this level of spend may achieve. The results of this analysis are shown in Table 9.

¹⁶⁰ <u>https://www.statista.com/statistics/452411/advertising-expenditure-by-industry-sector-in-uk/</u>

¹⁶¹ <u>https://www.campaignlive.co.uk/article/tesco-above-the-line-adspend-surges-rivals-retrench/1461635</u>

Table 9: Estimates for all food and drink online advertising impacts in the UK, search and classified excluded, 2017

Ad category	Proportion of adspend	Estimated cost per thousand impacts (Wavemaker)	Estimated Split of adspend (£m)	Estimated Impacts (bn)
Display banners desktop	21.0%	£8.00	£155.9	19.4
Display banners mob	9.8%	£8.00	£72.9	9.1
Display video - pre roll	15.7%	£22.00	£117	5.3
Display video outstream	21.1%	£5.00	£156.9	31.4
Other display video	0.9%	£10.00	£6.6	0.7
Native	24.2%	£0.50	£179.9	359.9
Other display	2.4%	£4.00	£17.6	4.4
Other	2.0%	£5.00	£14.6	2.9

Step E: Estimating the number of child HFSS impacts.

- 247. ComScore cannot report advertising impacts for a given audience demographic. Kantar Consulting have therefore used a bespoke modelling tool CrossMedia to estimate levels of exposure for children based on the reported impacts for adults. Due to the panel-based approach of CrossMedia, this method should account for the current restrictions on HFSS advertising to audiences with high proportions of children. More information on CrossMedia's methodology can be found in Annex C of the <u>2019 consultation stage IA</u>.
- 248. The total estimated impacts of 433bn (sum of impacts in Table 9 above) is multiplied by 46% (the estimated percentage of online HFSS adverts), and then by 5.6% (the percentage of child advert impressions of total impressions from ComScore) to give the total child HFSS online impacts of 11.0bn.

Limitations of measuring children's exposure

- 249. The estimation of the exposure to advertising has been based on the best available data, however a number of assumptions and caveats have been required throughout the process. Often these have involved generalising limited data samples to larger sections of advertising and combining different sources. While this will introduce a degree of error, it is unclear whether this would have systematically led to bias in any direction. Therefore, it is believed to represent a reasonable estimate of the current situation.
- 250. The exposure for video and display adverts has only been analysed and therefore have not included search or sponsorship of social media posts or videos.
- 251. It has not been possible to explicitly account for the existing CAP regulations and how effective advert targeting is. Different levels of targeting efficacy are claimed but it is not possible to independently verify these, and the measurements don't give any indication about who adverts are reaching outside of the target audience. The Comscore data used is based on a panel survey and therefore may indirectly account for the level of advert targeting and compliance with the existing regulations.
- 252. For search advertising, only some of the adverts may have an advertising effect, and thereby change behaviour. For example, if a user searches for a fast food chain, the results may include both a text advert for that chain, and a link to the chain's website that is not labelled as an advert. In this case there is likely to be no advertising effect, as the user was already interested in finding more information from the fast food chain. Other searches not linked directly to a fast food chain may still, however, result in an advert being displayed. For example, if a user searches for a recipe and the food

chains advert is displayed as text above the search results. This situation may have some advertising effect, where the user is drawn to the advert and may change behaviour as a result.

- 253. It has not been possible to distinguish these two scenarios in the analysis as each search provider will have a different set of algorithms to deliver adverts and there are almost an infinite number of search terms and there is no way of determining how many would have an advertising effect.
- 254. For sponsored posts or videos, the data is not available, nor the method to identify the proportion of these that would be classed as HFSS. For both types of advert or promotion, it is not possible to apply the evidence presented for online video and display adverts, due to the different nature of these adverts and therefore how users may perceive and interact with them. Further research is required to understand how search and social media sponsorship affects user behaviour.
- 255. The number of online impressions has been estimated by using a 'cost per impressions' (CPI) rate card, provided by Wavemaker. This is a necessary step required to convert from adspend to impressions. However, online advertising is frequently sold on a 'cost per click' (CPC, sometimes called 'cost per action') rate. Ideally, the estimation of total HFSS impressions should account for the variety of ways in which online advertising is bought and sold. However, in order to convert adspend to increased caloric intake, the CPI method was required.

Advert viewing time

256. Online adverts may not be viewed or draw the attention of the user for the time in which they are viewable on a page. Evidence from Lumen has used eye tracking technology to estimate the average time that different types of advert, on different interfaces, are viewed. Their research also demonstrated that even if an advert is delivered, it is not always viewable, and is not always looked at. Results across desktop and mobile media are presented below for adults only and similar evidence is not available for children. This shows attention times are on average only a few seconds per viewed advert. Desktop pre-roll video adverts gain the most attention, perhaps reflecting minimum view times required before accessing content.

Table 10: Average attention time per viewed advert, seconds, 2020

Desktop pre- roll (video)	Desktop social newsfeed	Desktop MPU	Mobile pre- roll (video)	Mobile social news feed	Mobile MPU
4.6	3.5	1.3	3.1	3	1.4

- 257. <u>Similar research by Inskin Media</u> corroborates this finding and that for an advert to be looked at for up to one second, the advert needs to be viewable on the screen for 14 seconds. It also revealed that 25% of adverts defined as viewable, where 50% of the pixels are on screen for at least one second, are never looked at.
- 258. The Lumen research¹⁶² provides greater depth with analysis across advert types and is therefore used in the analysis. An assumption is therefore made that the attention times for adults and children are the same. As such a conservative estimate has been taken, only scaling the impressions by the viewed time, and do not scale for the proportion that are viewed. This means that our estimate is likely to overstate the volume of adverts that are viewed.
- 259. The categories for desktop and mobile in the Lumen research do not align with data on online advert spend. The total child impacts are weighted by a split of video and non-video (51% to 49% respectively)¹⁶³. The child impacts by video and non-video are then multiplied by the mean dwell time by advert type, 3.8s per video advert and 2.1s per non-video advert. The mean dwell time was calculated using the Lumen results in Table 10 and weighting by advert spend by type, with 44% of

¹⁶² https://www.lumen-research.com/blog/mary-meeker-time-spent-attention

¹⁶³ AA/WARC Expenditure Report April 2018

spend on desktop and 56% on mobile.¹⁶⁴ In 2019, the ONS population estimates showed there were 9.6 million children aged 4-15. Using this information, the child impacts of 11.0bn are converted to a time exposure per child of 0.15min per day.

260. The total number of minutes for TV impacts was calculated by using the average advert length of the adverts used in Kantar's model, 21.3 seconds. Figure 10 below shows the distribution of advert length in the dataset. The baseline TV impacts in 2019 is estimated to be 0.29 minutes per child per day.

Exempting SME advertisers

- 261. The online methodology uses a top down approach which means it has been necessary to use evidence on the overall proportion of SMEs advertising. The IAB's Powering Up report,¹⁶⁵ published 2020, estimates that between 34-45% of advertising spend online is from SMEs. When considering the effect of an SME exemption, we have taken a low/mid/high approach, assuming that the SME proportion of ad spend for food and drink online is 34/39.5/45%. We acknowledge that this approach is not category-specific to food and drink advertising. This approach has been taken due to the lack of category-specific data on the proportion of online food and drink advertising from SMEs.
- 262. The expected effects of excluding SME advertisers is addressed in the <u>Small and Micro business</u> assessment section.



Figure 10: HFSS advert length distribution

Source: Kantar analysis of Nielsen data, 2017

¹⁶⁴ IAB UK & PwC Digital Adspend Study 2019 accessed at:

https://www.iabuk.com/adspend#:~:text=The%20latest%20IAB%20UK%20and,advertising%20to%20deliver%20bu siness%20results

¹⁶⁵ IAB, Powering Up, 2020, <u>https://www.iabuk.com/poweringup</u> (accessed 15/02/2021)

Table 11: Baseline of child HFSS impacts and minutes of exposure online and TV in 2019

Type of advert	Impacts (TV) and impressions (online) (bn)	Minutes (bn)	Minutes per child per day
Online Video	5.62	0.35	0.10
Online Non-video	5.40	0.19	0.05
Total online	11.02	0.54	0.15
Total TV	2.89	1.03	0.29

Projecting children's media use into the future

- 263. Children aged 4-15 watched approximately 21% less broadcast TV in 2019 than they did in 2017 as illustrated in <u>Figure 2</u>. At the same time, they are spending an increasing proportion of their time online, with the pace of change being such that children aged between 12 and 15 now spend more time online than watching broadcast TV.
- 264. These trends suggest that children's exposure to HFSS food and drink advertising on broadcast TV is likely to decrease over the coming years, while HFSS advertising exposure online is likely to increase subject to the efficacy of current online advertising restrictions and of processes and systems available to advertiser to target adverts. Unlike food and drink advertising spend, there appears to be a consistent trend in children's media use and as a result we have attempted to take this into account in our modelling.
- 265. The amount of time children spend online is expected to increase by around 3.4% per year. This is based on Ofcom's 'Children and Parents: Media Use and Attitudes Report,¹⁶⁶ updated with results from 2018. More recent data (2019) is available showing a continued change in children's online consumption however it does not provide a comparable estimate for the time series used in the analysis, and therefore 2018 data has been used. TV viewing is expected to decrease by around 11% per year based on BARB data and in the first half of 2019 averaged 7h56m.
- 266. Like any forecast the further you project out into the future the more uncertain it becomes, with the rapidly changing nature of the industry adding even more uncertainty. As a result, we have decided to project children's TV viewing and online use for five years based on the trends above and assume a flat trajectory thereafter. If children's TV viewing continues to decrease and this is not substituted by increased online media use, then this would result in an overestimation of the benefits from the policy.

Taking into account advertising displacement

- 267. As advertising is a dynamic market, advertisers will use media platforms where they can get the greatest exposure and return on their investment for the budget they have available. It has been considered whether the proposed restrictions result in displacement to other media. This displacement is also assessed for its likelihood to offset a proportion of the health benefits were it to increase children's exposure to HFSS advertising.
- 36. With restrictions online and on TV, advertisers of HFSS products will face an incentive to use other forms of media to promote their products when several conditions are met:
 - the media is appropriate for the advertisers target audience;
 - an advertiser is not already using the form of media to reach its target audience, or has increased scope to use that media given available budget; and
 - the set up costs can be met by the available budget and return on investment for that media makes it worthwhile to invest in advertising on the media.

¹⁶⁶ Ofcom (20187). Children and Parents: Media Use and Attitudes report: https://www.ofcom.org.uk/research-and-data/media-literacy-research/childrens/children-parents-2017 (accessed 27/11/202001/03/2019)

- 268. The amount of displacement will depend on the combination of any restrictions introduced across broadcast and online, with possible shifts in spending between TV and online video advertising as well as to other forms of media such as radio, OOH (e.g. billboards), print media (e.g. newspapers), and cinema. The impact of these shifts will depend on children's use of these other types of media and the effectiveness of advertising campaigns on these other platforms. If HFSS advertising spend were to shift from platforms children use extensively, such as TV and online, to those which they do not, such as print newspapers, then the impact of displacement on children's exposure is likely to be small. Similarly, if HFSS advertising spend were to shift from platforms where it is less effective than the impact of displacement on children's calorie consumption is likely to be smaller.
- 269. Advertisers can also shift their marketing strategy to activity termed below the line, in sales channels such as promotions (e.g. price reductions or multi-buy and in shop marketing (e.g. product samples). This was raised as a possibility by some stakeholders during consultation. There they suggested that such activities could lower the price paid for HFSS products, increasing consumption and undermining the aims of the policy. No evidence was identified that would allow this effect to be incorporated into the central modelling. This is discussed further in the Key Assumptions and Limitations of the Health Benefits Calculations section below and the wider implications assessed in the <u>Sensitivity and Risk Analysis</u> section.

Impact of displacement on children's HFSS advertising exposure

- 270. **TV and Online.** The most popular devices children use are TV sets, mobile phones and tablets. Around 77% of children aged 5-15 say they use a TV set every day and approximately half use mobile phones and tablets.¹⁶⁷ We therefore assume that children will continue to be exposed to HFSS advertising were it to be displaced from broadcast television to online platforms or vice versa.
- 271. There is limited data on children's HFSS advertising exposure from other forms of media. Kantar's analysis estimated that there were 184m HFSS impacts in UK cinemas and 4.5bn impacts on radio, seen by children and adults in 2017. It is not possible to accurately estimate the impacts received by a child audience, this is demonstrated in the following observations:
- 272. **Cinema.** BFI audience data suggests that 7-14 year olds made up 13.6% of cinema audiences.¹⁶⁸ Based on this data we estimate that there were no greater than 25m HFSS impacts seen by children aged 7-14 in UK cinemas in 2017. Though the existing advertising restrictions should limit children's exposure below this level. Even extrapolating this data to cover 4-6 year olds (likely watching films where HFSS advertising is prohibited) and 15-16 year olds, this would be approximately 1% of the exposure calculated on television. Based on Kantar's estimate of displacement, this market could experience a doubling of the amount of food/drink advertising revenue, when a watershed restriction is imposed, but this would still result in a negligible increase in children's exposure relative to that estimated on television or online. We have assumed that the interaction of film classification with the Cinema Advertising Association's system of pre-clearance of HFSS advertising in cinemas helps to account for this limited exposure and prevents increases due to displacement.
- 273. **Radio.** Based on Ofcom's assessment of children's commercial radio usage, it is estimated that children make up a 6.2% share of HFSS impacts, which would result in 281m impacts in 2017.¹⁶⁹ While this estimate is significantly higher than that for cinema, it is just 38% of the number of estimated impacts online, and 8% of the number of impacts on TV. Given that it is a non-visual medium which does not enjoy the same reach as online media,¹⁷⁰ displacement and significant child exposure may be a relatively low risk, but we have nonetheless taken account of it below. There is no evidence on the effect audio adverts have on children's food consumption.

¹⁶⁷ Ofcom (2017) Children and Parents: Media Use and Attitudes Report (p40): <u>https://www.ofcom.org.uk/research-and-data/media-literacy-research/children-parents-2017</u> (accessed 01/03/2019)

¹⁶⁸ BFI Statistical yearbook Audiences 2016/17: <u>https://www.bfi.org.uk/sites/bfi.org.uk/files/downloads/bfi-statistical-yearbook-audiences-2016-2017-09-27.pdf</u> (accessed 01/03/2019)

¹⁶⁹ Ofcom (2016) Digital Day (p9): <u>https://www.ofcom.org.uk/__data/assets/pdf_file/0017/94013/Childrens-Digital-</u> <u>Day-report-2016.pdf</u> (accessed 01/03/2019))

¹⁷⁰ <u>https://www.radiocentre.org/74-of-9-14-year-olds-listen-to-radio-weekly/</u> (accessed 05/02/2019)

- 274. **OOH and direct mail advertising.** We have been unable to find any data which would allow us to estimate children's exposure to HFSS advertising from OOH media or direct mail advertising. However, it seems likely that any shift towards these forms of advertising would increase children's exposure to HFSS advertising and, as a result, we have decided to take this into account in our calculations below.
- 275. **Print media.** Ofcom's Digital Day report estimates that in 2016, 3% of 6-11 year olds read magazines and 1% read newspapers each week (print and digital). For 11-15 year olds, 4% read magazines and 10% newspapers each week.¹⁷¹ It seems reasonable to assume that HFSS advertising shifting to newspapers or magazines would have relatively little impact on children's advertising exposure. This is before taking account of CAP food advertising restrictions in publications that have a child audience of 25% or more, which would reduce HFSS exposure in print media further.
- 276. Table 12 below presents estimates by Kantar of the degree of offsetting behaviour for each of the modelled policy options and which sections of the media are assumed to have a direct impact on children's HFSS advertising exposure. This has been updated from 2019 for options C&D and the addition of option F to reflect the relative differences in ROI of different media channels, the cost of advertising on those channels and the level of food advertising on each channel at present. With online only restrictions the shift to TV advertising has been reduced from 2019 estimates. This is because 69% of food advertising spend is on TV, and the proportion is even higher for some food categories with Crisps at 78%,¹⁷² leaving little room for expansion. The costs of advertising on TV are also high compared to online and other media channels. This has meant reducing the online spend displaced to TV from 31% in the 2019 estimate to 5%.
- 277. Following the same assumptions in the 2019 consultation stage IA ('Monetised Health benefits' section), implies that displacing HFSS advertising to other forms of media will reduce the estimated calorie reduction by 30% under options B, C and D, 22% under option E and 20% under option F.

	% displaced i				
Direction of Displaced advertising spend	on TV but none online (Option B)	online but none on TV (Options C & D)	on both TV and online (Option E)	on TV and a total ban online (Option F)	Does it have an impact on children's exposure?
TV	0%	5%	0%	0%	Yes
Online	31%	0%	0%	0%	Yes
Direct Mail	2%	2%	3%	3%	Yes
Out of Home	18%	24%	26%	25%	Yes
Print	13%	18%	22%	22%	No
Radio	9%	10%	15%	14%	Yes
Cinema	9%	9%	15%	15%	No
Lost	18%	32%	19%	21%	No

Table 12: Displaced advertising spend and its impact on children's HFSS advertising exposure

278. It has not been possible to model the impacts of displacement to other marketing activity such as price promotions. The extent to which price promotions can take place depends on the return on investment of such a promotion, and this return may also be affected by the advertising restrictions which are expected to reduce demand. This is explored fully in the sensitivity analysis.

¹⁷¹ Ofcom (2016) Digital Day (page 17): <u>https://www.ofcom.org.uk/__data/assets/pdf_file/0017/94013/Childrens-Digital-Day-report-2016.pdf</u> (accessed 04/03/2019)

¹⁷² IFS (2017) The effects of banning advertising in junk food markets

D(v). Health Benefits Methodology

279. Monetised health benefits as a result of these interventions are due to expected reductions in calorie consumption in children where we have evidence of a link with advertising and a robust, established methodology for calculating the benefits. Other non-monetised benefits are outlined in Section E below.

Figure 11: The impact of HFSS advertising exposure on children's calorie consumption



- 280. To calculate the additional calorie consumption per minute of food advertising exposure, the evidence from the <u>NIHR OPRU meta-analysis</u> of experimental studies has been used, described in <u>Section B</u>. The child or parent-reported outcomes often used in the more 'real-world' studies do not allow us to estimate the calorie intake per minute of advertising exposure.
- 281. The weighted average additional calorie consumption from the meta-analysis has been used in the analysis rather than the standard average used in the 2019 <u>consultation stage</u> IA. This estimate has been revised following feedback through the consultation from the authors of the research who suggest that the weighted average reflects the relative importance of the outcome of each study reviewed and is thus more descriptive than a simple average.
- 282. Using the weighted averages, the meta-analysis shows 4.4 minutes of food advertising results in an additional 62.5kcal of consumption, compared to 60kcal when using standard averages. The 95% confidence interval of this estimate is 3.1kcal 116.9kcal. The wide confidence intervals represent the level of uncertainty around the estimates. This is due to the relatively small sample sizes of the included papers and varying measured effects. The wider confidence intervals are used in the sensitivity analysis.
- 283. The OPRU analysis does not demonstrate a linear relationship between exposure and calorie consumption. That means, whilst their meta-analysis shows 4.4 minutes of food advertising results in an additional 62.5kcal of consumption, we cannot conclusively say what effect a single minute of exposure, or multiples, would have on kcal consumption based on the findings.
- 284. For the purposes of modelling, we have assumed the relationship to be linear. This is an assumption necessary to allow incremental modelling of the potential health benefits that could result from advertising restrictions.

Table 13: Additional calorie consumption per minute of food advertising exposure

	Lower bound (95% confidence)	Central Estimate	Upper bound (95% confidence)
Additional calorie consumption caused by 1 minute of food advertising	0.70 kcal	14.20 kcal	26.58 kcal

285. Whilst the study type did not significantly determine the scale of the effect, those studies that allowed unconstrained eating for longer than 15 minutes observed much greater effect sizes. It is possible that these studies observing higher calorie intakes over 15 minutes are more reflective of the

real world. However, this will depend on a child's autonomy over their food choices, the duration of an advertising effect, and how much the short-term effect captured in the experiments is influenced by advertised foods being immediately available for consumption.

Modelling assumptions to quantify a calorie impact of food advertising online to children

- 286. There is very limited literature and data that could allow us to assess the marginal impact of online advertising on children's calorie consumption. Furthermore, the diverse nature of online advertising means impacts can be highly varied and the literature investigating these different impacts is not yet well developed.
- 287. We have modelled two types of online impact depending on whether children are viewing an online display or an online video advert. Our estimates for the marginal impact of each have been based on the meta-analysis investigating the impact of HFSS TV advertising conducted by the NIHR OPRU and outlined above.
- 288. This assumption is varied in the sensitivity analysis later in the document. The published metaanalysis includes some evidence on advergames, but the TV impact is used for both TV and online as advergames would not capture the full breadth of online advertising. In addition, the evidence for online adverts is not as extensive as it is for TV.
- 289. Children's online exposure in seconds is used from <u>Table 11</u> above to estimate the associated calorie intake.

Calorie impact of food television advertising to overweight children

- 290. The NIHR OPRU also investigated how children's starting BMI could impact these figures. They found that on average, 1 minute of food advertising exposure had a 13.3kcal (-3.3, 29.9) increase in consumption for non-overweight children and a 20.9kcal (3.1, 38.7) increase in consumption for overweight children.
- 291. This suggests that the effects of food advertising are likely to be more pronounced in overweight children. However, this additional meta-analysis used a smaller sample size and resulted in larger confidence intervals. For this reason, we are using the headline calorie estimates listed in the table above. If the effects are greater on overweight children, these inputs are likely to present an underestimate of the true effect of the restrictions and the health benefits which would accrue to these children.

The impact of displaced advertising on children's consumption

- 292. As mentioned in the <u>Taking into account advertising displacement section</u>, the impact of advertising displacement on children's consumption will also depend on the effectiveness of these advertising campaigns in other forms of media. Our working assumption is that food and drink businesses' current advertising campaigns on broadcast TV and online platforms have been planned to maximise their return on investment. Therefore, where an advertiser is required to change its marketing strategy in response to restrictions, it seems reasonable to assume that overall, this would be less effective at the margin and therefore have a smaller impact on children's food consumption. In practice advertisers are unlikely to have the perfect strategy as they are limited in how they measure their success.
- 293. The academic evidence investigating the impact of advertising on children's food preferences and consumption is mainly focussed around TV, with a limited amount of evidence investigating online advertising or other media. As a result, we have been unable to find any studies which would allow us to compare the impact of advertising campaigns across different forms of media.
- 294. Following the logic above suggests that shifting these campaigns to other platforms will deliver somewhere between 0% and 100% of the impact on children's food behaviours they previously had on TV and online. A lack of empirical research in this field necessitates an assumption, and we have decided to use the midpoint of this range in our calculations and assumed a 50% marginal reduction in their effectiveness.

295. There is a considerable amount of uncertainty around this assumption and it has a significant impact on the estimated health benefits. Sensitivity analysis using the maximum and minimum values in this range has been conducted to reflect this uncertainty.

Drawing conclusions from laboratory studies

- 296. Whilst the experimental studies used for quantification are conducted under laboratory conditions, and we have already discussed how both the autonomy of decisions and long-term impact are just two of the ways in which experimental conditions may not apply in the real world, they nonetheless offer the best available evidential basis to allow for quantification of the marginal effect of advertising on calorie consumption.
- 297. Because food and drink advertising exposure is just one component in a complex adaptive system causing excess calorie consumption, it would be prohibitively difficult to ascertain the marginal effect of HFSS advertising on dietary intake in an observational study.
- 298. Laboratory studies allow us to do this by isolating specific nodes of the system, with the notable caveat that we cannot say with certainty how comparable they are to the real-world environment. However, whilst laboratory experiments only address immediate short-term consumption, the 'non-experimental' studies the NIHR OPRU analysed provide good evidence to suggest that TV food advertising is "positively associated with and predictive of dietary intake in children".¹⁷³
- 299. Mytton et al.¹⁷⁴ analysis looking at HFSS TV advertising restrictions assumes that the reduction in mean BMI would persist into later life, reflecting the observational data^{175,176} that shows that childhood weight status tracks into adult life. Whilst the calorie reduction does not persist into adulthood, the analysis does consider that the health benefits resulting from young people's reduced exposure would be meaningful across the lifespan. In the absence of longitudinal data on the long-term impact of advertising exposure, the modelling assumption has been made that individuals exposed to the proposed regulations throughout their childhood (defined as those aged between 4 and 15 years to be consistent with Kantar Consulting's modelling of HFSS advertising exposure calculations) will maintain the same absolute average calorie reduction as adults, however this will be a smaller proportion of an adults daily calorie intake. This assumption is further explored in the <u>Sensitivity and Risk Analysis</u> section.
- 300. For children who are partially exposed to the policy, a further assumption is required. In the absence of any evidence of long-term impact, we have assumed that children exposed to the policy for at least half of their childhood between the ages of 4-15 years (i.e. exposed for at least 6 years) will have the full benefits of the policy, and those exposed for less than this will receive no benefits from the policy. This has been done for simplicity and is a necessary assumption for the modelling. This may be a source of underestimation if a shorter period of reduced exposure to HFSS advertising is needed to embed the effects of reduced calorie consumption, or an overestimation if the full benefits are not sustained.

Estimating Health Benefits from a Calorie Reduction

301. The calculations of the quantified benefits (including Quality Adjusted Life Years (QALYs)) are done within the DHSC Calorie Model. The model is a cohort-based Markov model that follows a generated population over a specified period of time. The effects of the policy are measured by comparing the two scenarios, a control arm that looks to project forward the status quo, and a treatment arm that mimics the policy having been implemented. The difference in calorie consumption between the two

¹⁷³ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." *Obesity Reviews*(2018).

¹⁷⁴ Mytton OT, Boyland E, Adams J, Collins B, O'Connell M, Russell SJ, et al. (2020) The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: A modelling study. PLoS Med 17(10): e1003212. https://doi.org/10.1371/journal.pmed.1003212

¹⁷⁵ Gordon-Larsen P, The NS, Adair LS. Longitudinal trends in obesity in the United States from adolescence to the third decade of life. Obes (Silver Spring). 2010;18:1801–4. pmid:20035278

¹⁷⁶ Singh AS, Mulder C, Twisk JWR, Van Mechelen W, Chinapaw MJM. Tracking of childhood overweight into adulthood: a systematic review of the literature. Obes Rev. 2008;9:474–88. pmid:18331423

scenarios leads to differences in BMI, that influences the incidence of disease ('morbidity') and death ('mortality').

- 302. The main input parameter used in the model is the change in calorie consumption per person, per day, between the control and treatment groups. This has the advantage of being frequently reported in the literature and easily calculated, allowing the model to be used to produce estimated impact values for a wide variety of policies. The main disadvantage of using average daily calorie intakes is that it only captures one element of the complex relationship between food and health. Wider impacts of reductions in the consumption of high calorie food on health will not be captured, e.g. the positive impact of lower levels of salt consumption. Importantly, this means that estimates of health benefits are likely to be conservative, or systematically undercounted; or put another way, policies are tested under pessimistic assumptions and thus any positive Net Present Value gives an increased degree of confidence.
- 303. The average daily calorie reduction estimated for each policy option is converted into a weight reduction using the equations developed by Hall et al.¹⁷⁷ The wider probabilities of developing the obesity related disease conditions dependent on BMI status is drawn from the literature.
- 304. For a full description of the calculations and the set of assumptions see <u>Annex D</u> and the DHSC Calorie Model Technical Consultation Document.¹⁷⁸
- 305. Version 3 of this model is used in the analysis compared to version 2 which was used in the 2019 consultation stage IA. The updates to the calorie model have been done independently from this consultation process. This version added liver disease to the model, added a limited capability for measuring comorbidities, extended the scope of the economic productivity analysis to reflect the effects of morbidity as well as mortality on economic output, and improved the accuracy of the health outcome calculations by reflecting the deterioration in health that naturally occurs as a person ages. These changes were made to increase the accuracy of the model by including more consequences of obesity and current best practice in health outcome calculations using QALYs.
- 306. This modelling approach is also used in the Restricting promotions of food and drink that is high in fat, sugar and salt impact assessment¹⁷⁹ and the Calorie labelling for food and drink served out of home impact assessment¹⁸⁰.

Figure 12: Illustration of modelling the health benefits resulting from a calorie reduction



- 307. It was necessary to make some changes to this modelling approach to allow us to estimate the health benefits that would specifically accrue to children.¹⁸¹ A writeup of the changes which have been made to create the DHSC Calorie Model V3 is included in <u>Annex D</u>.
- 308. The Calorie Model relies on data from the Health Survey for England and as a result it only considers the health benefits to individuals in England. To take into account the fact that this policy will apply across the whole of the UK, we have scaled up the outputs from the model on a population basis,

¹⁷⁹ Restricting promotions of food and drink that is high in fat, sugar and salt consultation is available from: <u>https://www.gov.uk/government/consultations/restricting-promotions-of-food-and-drink-that-is-high-in-fat-sugar-and-salt</u> (accessed 17/02/2021)

¹⁷⁷ Hall KD, Butte NF, Swinburn BA, Chow CC. Dynamics of childhood growth and obesity: development and validation of a quantitative mathematical model. The Lancet Diabetes & Endocrinology. 2013 Oct 1;1(2):97-105. ¹⁷⁸ https://www.gov.uk/government/publications/department-of-health-and-social-care-dhsc-calorie-model

¹⁸⁰ <u>Calorie labelling for food and drink served outside of the home - GOV.UK (www.gov.uk)</u>

¹⁸¹ DHSC Calorie Model: Technical consultation document. Available at:

https://www.gov.uk/government/publications/department-of-health-and-social-care-dhsc-calorie-model (accessed 30/01/2019)

using England's 85%¹⁸² share of the under 16 UK population, in which there are not major differences levels of obesity prevalence.

309. The simulation models a 25-years policy lifetime and a 100-year appraisal period. That is, we assume an active policy lifetime of 25 years, and that its legacy lasts a further 75 years. A 100-year appraisal period was chosen to account for the timing of health benefits. While ill effects of poor diet and excess weight in childhood are known, most health consequences are not experienced until later in life. This means that there is a significant lag between implementation of policies to tackle childhood obesity and the health benefits. A figure of 100 years is sufficient that, given current life expectancy, the majority of children exposed to the policy are expected to have passed away at the end of the modelling run. This effect can be seen in Figure 13. As can be seen in the sensitivity analysis section, benefits increase steadily throughout the 100 year appraisal period, meaning a shorter window would run the risk of significantly underestimating the full scale of benefits.



Figure 13: The cohort population experiencing a calorie reduction¹⁸³

- 310. Figure 13 shows that the number of individuals in the model rises quickly over the early years of the policy period, and then slowly falls away as individuals die, leaving only a fraction of the population alive at the 100-year point.
- 311. A 25-year policy period was selected for consistency with other obesity related impact assessments, which also model a 25 year policy period.^{184,185} However, both these policies also had a 25-year appraisal period. An important distinction between the policies is the population impacted. Other policies are also expected to deliver health benefits for adults, while this is expected to primarily deliver health benefits in those who are currently children. This shortens the period between implementation and the accumulation of benefits significantly. Given the advertising restrictions primarily benefits children, a different appraisal period is required to capture the benefits of the policy. The use of a 10 year policy period has been explored in sensitivity analysis, where it can be seen that

¹⁸² ONS Population Estimates 2017. Available at:

https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (accessed 30/01/2019)

¹⁸³ The DHSC calorie model operates by projecting the population of England into the future. This can then subsequently be adjusted to represent the UK as a whole. Therefore the graph represents an English population run under scenario F.

¹⁸⁴ Restricting promotions of food and drink that is high in fat, sugar and salt, DHSC 2020, available at:Restricting promotions of food and drink that is high in fat, sugar and salt - GOV.UK (www.gov.uk)

¹⁸⁵ Calorie labelling for food and drink served outside the home, DHSC 2020, available at: Restricting promotions of food and drink that is high in fat, sugar and salt - GOV.UK (www.gov.uk)
the shortening of the policy period has minimal effect on the break-even point, adding further justification to the use of a longer period in this case.

- 312. For the reasons above it was felt that the default of a 10 year policy and appraisal period was insufficient to appropriately capture the costs and benefits of the policy. However, as indicated above the impact of varying the length of the policy and appraisal periods are further explored in the sensitivity analysis section.
- 313. The average BMI determines the likelihood of the following six conditions associated with obesity, which in turn have a fatality rate and a reduced quality of life: type 2 diabetes, coronary heart disease, stroke, colorectal cancer, liver disease and breast cancer. The savings to the NHS are calculated from the reduced treatment of each disease. Reductions in mortality are used to calculate the impact on economic output from an increased workforce. The costs of social care savings are calculated due to a reduced proportion of overweight, obese, and morbidly obese individuals and hence fewer people needing social care in the treatment scenario. Changes in QALYs are calculated from the reduced number of deaths and the reduction of people living with the diseases. These are then converted into monetised QALY using a conversion of how much society values a QALY.

Defining the Eligible Population

Model Run Time

- 314. The quantification of costs and benefits in this Impact Assessment is for the policy options to be in place for 25 years. However, the health benefits derived from a reduction in the six obesity related conditions tend to develop later in adulthood. This means that children alive today will not realise the health benefits of a lower BMI until many decades in the future.
- 315. To compare the costs and benefits of the policy over the same time period we have taken a cohort approach. In modelling terms, the benefits only apply to the cohort of children who are alive or born into the model over the 25-year period. For this cohort, the benefits to them are modelled for 100 years from introduction of the policy. This is to ensure the health benefits accruing to our cohort of children are fully considered.

Adjustment for Partial Exposure

- 316. To account for partial exposure to the policy, we have assumed that only children exposed to the policy for at least half of their childhood will have the full benefits of the policy, and otherwise they will receive no benefit. To model this, we create a cohort of children who are exposed to the policy for at least 6 years, using the table below.
- 317. Furthermore, to take into account children who are born into our cohort over 25 years, we multiply ONS population estimates by a single year of age for 4 to 15 year olds by the population growth projections for the 0-15 population.

Table 14: Children who will be included in the cohort by age and year of the policy.

Whe recei	Where 1 are those who receive the full benefits of the policy, and 0 are those who receive none of the benefits of the policy													
	Age								Percentage of					
		4	5	6	7	8	9	10	11	12	13	14	15	total population
	1	1	1	1	1	1	1	0	0	0	0	0	0	53%
	2	1	1	1	1	1	1	1	0	0	0	0	0	61%
	3	1	1	1	1	1	1	1	1	0	0	0	0	69%
	4	1	1	1	1	1	1	1	1	1	0	0	0	77%
	5	1	1	1	1	1	1	1	1	1	1	0	0	85%
L	6	1	1	1	1	1	1	1	1	1	1	1	0	93%
feal	7	1	1	1	1	1	1	1	1	1	1	1	1	100%
در در	8-18	1	1	1	1	1	1	1	1	1	1	1	1	100%
oli	19	1	1	1	1	1	1	1	1	1	1	1	1	100%
-	20	0	1	1	1	1	1	1	1	1	1	1	1	91%
	21	0	0	1	1	1	1	1	1	1	1	1	1	82%
	22	0	0	0	1	1	1	1	1	1	1	1	1	73%
	23	0	0	0	0	1	1	1	1	1	1	1	1	65%
	24	0	0	0	0	0	1	1	1	1	1	1	1	56%
	25	0	0	0	0	0	0	1	1	1	1	1	1	47%

318. This cohort of children is then fed into the DHSC Calorie Model V3 to estimate the health benefits over the appraisal period.

Key Assumptions and Limitations in the Exposure and Health Benefits Calculations

Key Assumptions

- 319. There are a large number of assumptions that feed into the overall health benefit calculations. The key assumptions are summarised below and more detail is provided in other parts of the document.
- 320. **Calorie (kcal) impact per TV broadcast advert.** This is taken from a published meta-analysis¹⁸⁶ which provides an expected value and 95% confidence intervals. The studies used within the metaanalysis are generated from experimental studies that may lack generalisability to real world settings. In particular, the following issues have been noted:
 - Consumption impacts were only studied during and immediately after exposure to HFSS adverts. This may mean that snacks are more readily available than is realistic, but it also means that long term consumption effects are not captured.
 - Given the experimental nature of the included studies, the availability of food and the autonomy of consumption may differ from natural settings.
- 321. Overall, the authors do note that the number of included studies is relatively small, and variability large, leading to large confidence intervals around the central result. However, overall the studies do find a clear link between food advertising and calorie consumption. This is the best identified evidence and uncertainty around the result is explored through sensitivity analysis.
- 322. In using the evidence from laboratory based experiments it is also assumed that **children have some influence over their own and their parents' food purchasing decisions**, and that these laboratory results translate to real world situations. As presented in <u>Section B</u>, there is limited evidence on children's influence of their parents purchasing decisions and that it is not possible to determine how changes in children's exposure to HFSS adverts will impact parental decisions.

¹⁸⁶ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." *Obesity Reviews*(2018).

- 323. **Calorie (kcal) impact per online advert.** The estimates for the impact of online advertising on calorie intake is based on the same meta-analysis as TV broadcasting adverts. No additional evidence was identified on the impacts of online advertising on calorie consumption. We have therefore assumed that the effect of TV advertising is a suitable proxy for display and video advertising, but not for other forms of online advertising such as search. The published meta-analysis includes some evidence on advergames, but the TV impact is used for both TV and online as advergames would not capture the full breadth of online advertising. In addition, the evidence for online adverts is not as extensive or mature as it is for TV.
- 324. Linear reduction in consumption based on time of exposure. The average duration of exposure to adverts from the studies included in the meta-analysis was 4.4minutes (range: 45 seconds to 8 minutes). In order to model the exposure for online and television adverts, analysis has estimated the average time of an advert, and the total time a child is exposed to adverts in a day. The meta-analysis findings do not provide for adjusting the additional calorie consumption by time of exposure. It is therefore assumed that the results can be applied linearly several assumptions have been applied to adjust for the differences in the length of exposure to advertising impacts on the two different types of media.
- 325. Children aged 4-15 and exposed to the regulation for at least 6 years maintain the same average calorie reduction for their entire adulthood. It has therefore been modelled that the health benefits are present until an individual in the model dies, with a maximum time frame of 100 years. Although there is some limited longitudinal evidence linking advertising exposure to obesity related outcomes and of moderate tracking of dietary behaviours from childhood to adulthood, the long-term impact of the restrictions is a significant area of uncertainty in our analysis. If the behaviour change diminishes, the health benefits will also diminish. The longevity of calorie reductions throughout life is discussed further in the <u>sensitivity and risk analysis section</u>.
- 326. Calorie reductions from reduced exposure to HFSS advertising are not offset by additional consumption elsewhere, e.g. at main meals. The evidence on the issue is insufficient to determine with certainty what the degree of this compensation would be. A single study on children and their exposure to advertising does indicate that there may be no compensatory behaviour¹⁸⁷. The wider evidence and the possible implications of altering this assumption are covered in the <u>sensitivity and</u> risk analysis section.
- 327. **HFSS advertising campaigns displaced to other forms of media have 50% of the impact they previously did on broadcast TV or online.** Food and drink businesses current advertising campaigns on broadcast TV and online are expected to maximise their return on investment. Therefore, it seems reasonable to assume that shifting this advertising to other forms of media will be less effective than it was previously. However, we have been unable to find any academic evidence comparing the effectiveness of advertising on different forms of media and, as a result, this remains a significant area of uncertainty in our analysis. This assumption has been varied in the sensitivity analysis later.
- 328. **Parameters used to calculate the health benefits from a calorie reduction**. There are a variety of assumptions including average height, population projections, mortality rates, and incidence rates which must be included in the model. These are all based on published academic papers and official statistics which are provided in the write-up,¹⁸⁸ but there are limitations to this modelling approach which are given below.

Key Limitations

329. The limitations discussed below may result in either an under or overestimate of the health benefits. It has not been possible to determine the total size of these impacts or whether one will outweigh the other.

¹⁸⁷ Norman J, Kelly B, McMahon A, Boyland E, Baur L, Chapman K, King L, Hughes C, Bauman A (2018) Sustained impact of energy-dense TV and online food advertising on children's dietary intake: a within-subject, randomised, crossover, counter-balanced trial, International Journal of Behavioural Nutrition and Physical Activity ¹⁸⁸ DHSC Calorie Model; Technical consultation document. Available from:

https://www.gov.uk/government/publications/department-of-health-and-social-care-dhsc-calorie-model (accessed 30/01/2019)

Limitations that are expected to understate the benefits

330. **Underestimate of the benefit accruing to overweight and obese children.** The NIHR OPRU meta-analysis¹⁸⁹ suggests that overweight children consume 57% more calories than healthy weight children after being exposed to HFSS advertising. Due to the small sample sizes and wider confidence intervals we decided to use the headline average figures across all children. If overweight and obese children <u>are</u> more affected by advertising, we will have significantly underestimated the benefits for these groups. This likely underestimates health benefits.

331.

- 332. The DHSC Calorie Model only considers a narrow range of benefits. The DHSC Calorie Model V3 only considers benefits that accrue from obesity related instances of diabetes, stroke, chronic heart disease, liver disease and colorectal and breast cancer. The link between being overweight or obese and a multitude of other conditions that will have associated health decrements is known. However, these remain unmonetised for modelling transparency and due to a lack of understanding of the interactions and comorbidities between conditions. This likely underestimates health benefits.
- 333. **Improvements to productivity are not included.** The economic output benefits are derived only from additional economic output from having a larger population in the treatment group, due to fewer obesity related deaths. However, preventing obesity related ill health will also result in a healthier workforce, which is likely to be more productive, take fewer sick days and reduce illness related to early retirement. This impact is not estimated quantitatively in the model due to the difficulties in putting in parameters to quantify this improvement in productivity. We currently do not have strong evidence to justify these parameters and as a result remains unmonetised. This likely underestimates economic benefits associated with good health.
- 334. **Reinvesting NHS savings back into the health service are not included.** As highlighted earlier, lower levels of obesity related ill health are expected to reduce demand for NHS healthcare compared to the counterfactual, generating cost savings for the health service and additional resources which can be used to treat patients. Given there are waiting lists for NHS treatments and demand for care overall is expected to continue to increase as the population ages, it seems likely that any spare capacity in the system would be backfilled with additional treatments. The estimated monetised value of the additional health benefits these treatments would generate is outlined in the <u>sensitivity and risk analysis section</u>. This would be an indirect benefit and be contingent on government spending decisions. This subjective analytical choice underplays the *potential* health benefits.
- 335. The monetised health benefits are only based on reduced calorie consumption. The advertising proposals involve restricting the promotion of high fat, salt and sugar products. The modelling only considers the benefits from reduced calorie consumption and does not estimate any benefits that may accrue from reduced salt, sugar or fat intake. Too much salt consumption, for example, can raise blood pressure which increases the risk of heart disease and stroke.¹⁹⁰ Because of this, it's been estimated that reducing excess salt consumption could prevent premature mortality and save the NHS millions of pounds annually in treatment costs.¹⁹¹ These impacts, as well as the other significant benefits associated with reduced fat and sugar consumption, are not estimated in our model and have not been accounted for in our analysis. This likely underestimates health benefits.
- 336. Short durations of reduced HFSS advertising is assumed to have no effect. As outlined in the Section D(v), the policy is assumed to only be effective on children who have lived half their life with reduced HFSS advertising. Analytically this means that any child who is exposed to the policy for less than 6 years is assumed to maintain their present consumption patterns. If the influence of HFSS advertising exposure quickly diminishes, then this would represent an underestimate of benefits.

¹⁸⁹ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." *Obesity Reviews*(2018).

¹⁹⁰ Bibbins-Domingo K, Chertow GM, Coxson PG, Moran A, Lightwood JM, Pletcher MJ, Goldman L. Projected effect of dietary salt reductions on future cardiovascular disease. New England Journal of Medicine. 2010 Feb 18;362(7):590-9.

¹⁹¹ New PHE data on salt consumption levels, PHE press release 2016. Available at: <u>https://www.gov.uk/government/news/new-phe-data-on-salt-consumption-levels</u> accessed (02/01/2019)

- 337. There are no monetised benefits resulting from adults' lower advertising exposure. Due to the inconclusive and undeveloped evidence base we have been unable to estimate any benefits which might accrue from reducing adults' exposure to HFSS advertising. If this reduction in HFSS advertising were to result in a calorie reduction or improve nutritional intakes, then this would have health benefits across the population occurring sooner in the appraisal period. An important element to note is that the method used to estimate costs to HFSS advertisers does not limit its focus to the impacts of children's consumption. If that method captures reduced consumption by adults that has not been factored into the estimation of benefits, that would lead to a systematic underestimation of the cost-effectiveness of the policy.
- 338. Reformulation of products may result in additional calorie reductions and nutritional benefits. If advertising restrictions are introduced there will be an incentive for brands to reformulate their HFSS products so they can continue to be advertised. If calories are removed from products to allow them to be advertised, this would reduce the calorie intake of all adults and children consuming those products. This could result in significant health benefits that we have not accounted for. However, the costs and benefits of reformulation are uncertain, highly commercially sensitive and product specific. All of which makes any quantification difficult. For modelling the costs, Kantar assumed that a small number of HFSS products will be reformulated so they are still allowed to be advertised (those within one point of compliance with the NPM model). The nutritional benefits which are generated by this reformulation remain unquantified and are likely to be highly dependent on the incentives created by each policy option. This conservative threshold was chosen mindful that there are large variances between what is possible between product categories, and likely underestimates health benefits.

Limitations expected to overstate the benefits

- 339. **Projecting children's broadcast TV and online media use.** Children's broadcast TV viewing is declining over time and their online media use is increasing. To take this into account, we have projected children's TV viewing and Online use for five years based on the trends above and assume a flat trajectory thereafter. If children's TV viewing continues to decrease and this is not substituted by increased time spent online then this would represent an overstatement of the benefits from the policy. While the two data sources presented in Figure 2 are not directly comparable, they do appear to show an inverse relationship between TV viewing and online activity. This informs our assumption that overall viewing levels may remain relatively constant into the future.
- 340. **Compensating behaviour by food and drink retailers and manufacturers.** It's possible that retailers and manufacturers might decide to invest their advertising budgets in alternative ways of promoting HFSS products. The way products are marketed can be split into several elements often known as the 'four Ps': product; price; place; and promotion. These proposals only restrict businesses' ability to promote HFSS food and drinks on broadcast television/ online and leave open the possibility of increasing sales using other techniques, e.g. price promotions or reductions. Any compensating activity by retailers and manufacturers would offset the benefit of the policy, by encouraging HFSS consumption, and with it some of the lost profit to these businesses. Stakeholders raised the possibility that there would be an increased use of price promotions in consultation responses. The overall effect on changes in consumption will depend on the relative sensitivity of demand to prices. The extent to which additional promotions are used and the overall impact on consumption remains highly uncertain, and so has not been captured in the central analysis. They are discussed further in the <u>Sensitivity and risk analysis</u> section.
- 341. It is important to note that the Government's latest obesity strategy '<u>Tackling obesity: empowering</u> <u>adults and children to live healthier lives</u>' announced proposals to restrict the use of volume and location promotions to promote HFSS products. These policies would significantly limit the number of alternative marketing strategies available.
- 342. **Reduced prices.** Connected to, but distinct from, an increased use of promotions, restricting advertising is expected to reduce brand equity and so brands may not be able to charge as much for their products, further reducing prices. Any effect on prices will depend on both the level of brand equity and price elasticity of demand. Determining the overall price direction would require a significant amount of data and further assumptions. As above, this could reduce the effect of the policy, and therefore mean benefits are overstated as would the costs to manufacturers and producers. This has not been factored into the central analysis, but is addressed in the Sensitivity and risk analysis section.

- 343. **Reformulation that has already occurred.** As we have taken advertising and nutrition data from previous years, any reformulation that has taken place since then may mean some products are now below the NPM threshold. This may overstate the benefits but by a small amount.
- 344. **Substitution in purchasing decisions.** One mode of reduced calorie intake would be to substitute a product for a healthier alternative. For some advertised HFSS products there may not be close, healthier substitutes available. The ability to substitute products will also depend on household income and with HFSS products cheaper on average, low income households may continue to purchase these products whether or not they are advertised. We have not factored in household income or the ability to substitute to these calculations. As children from low income households have a higher prevalence of being overweight or obese, the benefits could be overestimated for this group.

Assessing the overall level of uncertainty

345. Due to both the uncertainty around a number of parameters and assumptions, and the long appraisal period, we have conducted critical value and sensitivity analysis to illustrate the potential benefits required to make the policy cost effective. However, given the large number of assumptions and the significant limitations of the modelling, these are only illustrative and cannot provide a complete picture of the uncertainty of the calculations.

D(vi). Methodology- modelling advertisers lost return on investment (ROI)

346. There are different approaches that can be used to determine the lost profit to advertisers (manufacturers, retailers and out of home food services in this case) as a result of the restrictions. Following a review of the 2019 IA methodology, an approach that uses the ROI advertisers receive from the ad-campaigns has been used. This offers a more holistic approach than the previous method in the 2019 IA, which used lost sales as a result of the child calorie reduction. It does have some limitations including that in itself it does not separate the rivalrous effect of advertising from that aimed at expanding the market overall but this is adjusted for in the analysis. This section explains what we mean by ROI, some of the factors that influence it, our method for calculating the lost ROI and the limitations of the methodology.

Defining ROI

- 347. ROI is used by advertising agencies to understand how their expenditure turns into revenue. Advertisers may utilise ROI to benchmark their campaigns or understand which media or platforms work best for their brand. ROI can be calculated depending on the 'return' the advertiser seeks to measure by. For example, there can be ROI for website traffic, content engagement, brand awareness or leads generated.
- 348. However, we have chosen to use the traditional definition of ROI that measures financial returns to model the costs associated with HFSS restrictions. We measure ROI as the incremental gross margin divided by the cost of the media campaign. The incremental gross margin is calculated as the incremental revenue arising from an advertising campaign multiplied by the gross margin percentage for the product advertised.
- 349. It is important that we discuss the advertising category definitions we have used as these definitions align with the available data sets used to calculate ROI. The food and drink industry marketing tends to fall under different advertising categories. The two most relevant categories for HFSS are either FMCG or Retail. FMCG can be defined as consumer packaged goods,¹⁹² these are goods which are purchased frequently and are often priced low in order to incentivise sales. Examples of FMCG goods would include milk, butter, chocolate, chewing gum etc.
- 350. FMCG goods advertising is based around the idea of building a brand. Their ads will aim to build loyalty with the consumers so that when they purchase, they choose their brand's product. Often

¹⁹² https://www.investopedia.com/terms/f/fastmoving-consumer-goods-fmcg.asp

FMCG goods do not have a physical space to purchase their goods, i.e. they do not have a shop. Rather they will be stocked and sold within a retail setting such as a corner store or supermarket.

- 351. FMCG loyalty is incredibly important to establish but difficult to do in practise. To convince consumers that your brand is going to be the best for them takes a long time and a lot of resources. The prolonged investment of FMCG has greater long-term benefits for the manufacturer or advertiser. Aligning this to mental shortcutting gives a clear understanding of the power of FMCG advertising in the long term.¹⁹³ Having their brand as a preference when the consumer chooses to buy from a range of products justifies taking a long-term investment view of advertising and ROI.
- 352. In advertising, retail is defined by the approach of getting consumers to the store. The sale of any specific brand is not the concern of the retailer. Adverts in this space are often price driven, they will have offers which drive consumers to their store. They will also want to display their breadth of products and the convenience of coming to their store.
- 353. Takeaway chains and restaurants straddle the above definitions. On the one hand, takeaways and fast food chains are FMCG goods as they are consumed quickly and advertised based on their experiential qualities and easy consumption. Restaurants slightly sway towards the retailer definition as they are more about the consumer coming to their space to enjoy their product range.

Factors that influence the measurement of ROI

- 354. Measured ROI can have a very wide range which in part reflects the challenges of its measurement but it also reflects the multiple factors that influence the effectiveness of advertising against an advertiser's objectives.
- 355. The ROI will vary depending on the nature of the advertised goods. FMCG adverts do not generally contain a strong, sales driven, call to action (CTA). For instance, an advert for margarine would rarely finish with a sales led message about where to get their brand. In this case it therefore means they cannot directly attribute ROI specifically to sales as there is not a trackable voucher. Whilst they can experience a spike in sales or a higher engagement rate, it is difficult to establish this as a direct causal link.
- 356. However, in the retail space, adverts are promotion led and may say 'buy one get one free on X product'. As a result of this CTA, it is more possible to attribute any increased sales to the ad, therefore, indicating there is a more causal link for the ROI model to be based upon.
- 357. Secondly, the content and creative aspects of the advertisement are linked to their ROI. If the advertiser or creative agency does not create an ad which specifically targets their consumer or does not align with their brand values, it is likely that they will see poor ROI. This is not necessarily a reflection of the media which the ad is hosted on, but the content of the advert itself.
- 358. Other variables include aspects such as timing and measurement windows. Evidence from a Thinkbox report demonstrates that in the short term, 70% of TV advertising campaigns deliver a profitable return. During the 3 years after ad campaign finishes, this increases to 86% of TV advertising campaigns delivering a profitable return.¹⁹⁴
- 359. ROI is also based on the cost of advertising space. In the case of TV, there will be competition for prime-time advertising slots. This means that the media owners will be able to charge more for those ad spaces as they know they are in demand. One way the advertiser can get around these rates is to commission long term deals. As we have already seen there is a value in taking a long-term

¹⁹³Thinkbox (2018) Profit ability: The business case for advertising. Available at:

https://www.thinkbox.tv/research/thinkbox-research/profit-ability-the-business-case-for-advertising-download-thefull-report/

¹⁹⁴Thinkbox (2018) Profit ability: The business case for advertising. Available at:

https://www.thinkbox.tv/research/thinkbox-research/profit-ability-the-business-case-for-advertising-download-thefull-report/

perspective in advertising spend. In this instance, the media platform will have a 'rate card' which will have their, usually inflated, rates for the individual companies, or SMEs that approach them.

- 360. However, if the advertiser agrees to take a media deal (i.e. cross platform) or acquire a number of advert slots over a prolonged period of time, they will often get substantial discounts. A response received in the consultation reported that, of those advertising HFSS in prime time, 80% have been doing so for 20+ years. Agencies will leverage their clients' possible spend to negotiate greater discounts. This benefits the media owner as they have guaranteed revenue which they can put into their baseline and there will be reduced pressure on their sales team to fill the slots.
- 361. In the case that these large deals are lost, there will be a couple of alternatives for the media owner. Option 1 is that they can fill the slots with individual advertisers and therefore not offer reduced rates, therefore arguably presenting an increase in their revenue but the costs of sales may increase. Option 2 will be that another advertiser will replace the slots for a similar rate, one of our consultation responses stated that up to 20% of broadcaster revenue will be retained from bigger brands who can advertise non HFSS products in their suite. They also noted that these non-HFSS products may have lower ROIs as they are targeted at a more niche audience and account for a smaller segment of their product suite. There will also be costs associated with creating new collateral (adverts) to promote these products, again, this will reduce ROI.
- 362. It is worth mentioning the SMEs' approach to ROI, with the restrictions coming into force. Generally, SMEs do not have the same tools or marketing programmes to capture ROI and therefore the data is somewhat limited. However, it is generally agreed that SMEs will simply not be able to easily transfer spend to other media, which is more expensive, less easy for them to buy, and does not offer the hyper-local targeting capability that they need in order to maximise the return on their investment. Acknowledging these limitations provides further justification for including an exemption to SMEs.
- 363. ROI is an established, industry wide, approach to measuring the success of advertising campaigns and feels appropriate for measuring the impact of HFSS restrictions. However, it is important that we acknowledge the limits of using ROI and consider the different variables which may contribute to the accuracy of ROI.

Estimating lost returns from advertising restrictions

364. To estimate the returns lost as a result of the advertising restrictions, ROI data for fast moving consumer goods is used as this makes up the highest share of food advertising online. Table 15 below presents both short term ROI and long term ROI. It can be seen that long term returns are much higher than in the short term. This data has been estimated from an analysis of 606 campaigns between February 2014 and May 2017 and therefore provides an average static ROI. In the market ROI is dynamic and the returns to individual media may vary based on the mix of media used and the purpose of the campaign. We take the long term returns, net of advertising costs as the derived profit as this reflects the long term nature of the intervention.

		Total ad-ge years)	nerated prof	it (within 3	Short term ad-generated profit (within 3-6 months)			
	% of budget	% of profit	Average ROI	Profit likelihood	% of profit	Average ROI	Profit likelihood	
TV	74%	87%	£1.69	67%	85%	£0.60	18%	
Out of Home	12%	7%	£0.89	40%	7%	£0.30	1%	
Print	7%	3%	£0.59	16%	3%	£0.25	4%	
Online video	4%	3%	£1.02	57%	3%	£0.38	7%	
Radio	1%	0%	£0.71	35%	1%	£0.36	8%	
Online display	1%	0%	£0.10	5%	0%	£0.10	1%	

Table 15: ROI for Fast moving Consumer Goods campaigns across different media

All media	100%	100%	£1.49	52%	100%	£0.53	11%

Source: Thinkbox 'Profit-ability' with analysis by Ebiquity and Gain Theory

- 365. We assume that advertisers select a marketing strategy that maximises their returns in the long run. With advertising restrictions removing the option to use TV advertising during the watershed and online, the advertiser will select an alternative marketing strategy that will maximise its profits. In using ROI to demonstrate this, it is expected that the overall ROI with intervention will be lower than the ROI without.
- 366. The ROI data above will not account for how these returns change for individual businesses and their campaigns. Depending on their current advertising spend per channel, advertisers may see diminishing returns as they spend more. The data above do not capture the potential returns to alternative advertising activity such as brand advertising, though the data are likely to capture campaigns that used this form of advertising.
- 367. It is important to note that for the purposes of this impact assessment we are interested in the overall industry impact while the ROIs will used will be for a specific company. Where returns are based on the rivalrous effect of advertising rather than expanding the market overall this would not be a net loss of profits to industry as a whole. That is if individual brands take market share from others, the total ROI for the sector will be lower. Furthermore, it is important that profit impacts are broadly consistent with the falls in consumption and so health benefits to ensure a fair assessment is made on the net effects of options considered. An adjustment in the calculations is made to account for these factors and is described further below.
- 368. In calculating the **direct lost profit**, the advertiser loses the total value of returns made from advertising on TV or online and the use of alternative media or mitigations are not included. From the table above we can see that for TV this equates to 69p for every pound spent on advertising but is only 2p for online video adverts. These returns are applied to the HFSS advertising in scope for each option and presented in section E.
- 369. Estimating the **lost profit net of indirect effects** requires a further set of assumptions and analysis. The indirect effects of advertiser mitigations, displacement to other media and removed advertising spend are considered.
- 370. The net change in return on investment will vary according to the actions taken by the advertiser and to calculate the total returns lost the advertising spending removed from TV and online is split into three categories, these are:
 - Mitigation spend representing the amount of spending advertisers can take mitigating action on
 - Displaced spending where other media are substituted for TV and online media
 - Lost spending which is removed from advertising and represents the limits of advertisers' ability to undertake mitigating actions and use alternative media.
- 371. As discussed above, advertisers can reduce the effects of the advertising restrictions by undertaking various mitigations including reformulation, shifting to brand advertising, advertising an alternative product, and in the case of a watershed move advertising after 9pm. These mitigations are likely to result in a lower return, either because these mitigations have costs to implement, or because the effectiveness of mitigated advertising is reduced, or a combination of the two. It is therefore assumed that the return to the advertising spend associated with mitigations will be lower. There is no means to calculate an adjusted ROI in this instance and therefore we assume the ROI decreases by 20p, equivalent to the difference in ROI for TV and all media. This is taken as a conservative assumption of an indirect effect. As advertisers use multiple media channels for a campaign it is hard to attribute cost changes from mitigations such as reformulation to changes in the return to advertising.
- 372. To calculate the lost returns for mitigated advertising, we take the proportion of spend that will be attributed to mitigations from the broadcast and online methodologies in <u>Section D(ii)</u>, and apply the 20p to give the lost profit. For broadcast TV and online watershed mitigated advertising spend is about 16% of the total advertising spend removed, for the online restriction this is 3.5%. The calculations and assumptions are set out in <u>Section E</u>.

373. Advertisers can also use a different mix of media discussed in the displacement section above. The analysis of these displaced advertising spending is used with the difference between the ROI for TV and online video media and the alternative media used to represent the opportunity cost of a marketing mix without the use of TV and/or online. As can be seen in Table 16, in the case of online video, the difference with TV advertising is positive. This reflects one of the limitations of the data and methodology as the ROIs used are static but in practice the ROI for a media category is expected to diminish as spending on that category increases.

	Difference between TV ROI and other media	Difference between online video and other media
TV	£0.00	£0.67
Out of Home	-£0.80	-£0.13
Print	-£1.10	-£0.43
Online video	-£0.67	£0.00
Radio	-£0.98	-£0.31
Online display	-£1.59	-£0.92
All media	-£0.20	£0.47

Table 16: Difference in ROI for restricted media and other media

374. To get an average ROI for each policy option, the differences in ROI above are weighted by the displacement figures in Table 17. As the displacement media categories do not align with the ROI media categories, further assumptions are made. It is assumed that cinema advertising has the same return as TV, although this is expected to be an overestimate if TV reaches much wider audiences. Direct mail advertising is assumed to have the same return as print advertising as the closest proxy. This gives the following displacement weighted average ROI for each option and for each media it applies to.

Table 17: Weighted average difference in ROI between online and TV media and other media by option.

	Options C & D,			Option F, TV	Option F, TV
	Online	Option E, TV	Option E, TV	watershed and	watershed and
Option B, TV	watershed &	and online	and online	online	online
watershed,	restrictions,	watershed,	watershed,	restrictions,	restrictions,
difference from					
TV ROI	Online ROI	TV ROI	Online ROI	TV ROI	Online ROI
-0.81	-0.08	-0.08	-0.11	-0.77	-0.10

- 375. The differentials in ROI are applied to the advertising spend removed from each media minus the spending following mitigations and apportioned to the level of displacement.
- 376. For lost spending, that which is removed from advertising, no assumptions have been made about how this spending would be used by an advertiser and therefore we assume the advertiser loses the full return it would have made if it spent this proportion on TV or online, that is the 69p or 2p respectively. The lost spending is that which remains after displacement and mitigations have been factored to the total spending removed from the restrictions.
- 377. The lost returns for each of these spending categories are summed to give the total cost net of indirect effects. As stated above, the ROI figures are unlikely to account for the rivalrous aspects of advertising meaning at industry level they would substantially overestimate the lost profits.

Furthermore, in line with the health impacts, where we have assumed (based on research) that there is no loss in consumption of HFSS products for adults we need to scale the back the profit impact on advertisers accordingly. The estimates are therefore adjusted down by 50% in the central scenario. The central scenario is based on the following:

- The Thinkbox article we take the ROI from states that on average 50% of advertising budget is aimed at brand promotions
- Two consultation respondents stated that advertising and marketing in the sector are aimed at competing for market share suggesting that much of the lost profit would be at the expense of others in the industry.
- 378. Particularly given the exclusion of adult HFSS consumption and health impacts, even with this adjustment, it is likely that there is a degree of inconsistency between the health benefits and profit loss leading to a conservative estimate of net benefits of the options considered.
- 379. This method is unable to account for all the dynamic changes that would occur in the market. For example, we do not account for the level of backfill from other advertising, nor the overall effects of the changes on the pricing of advertising. It also does not allow for alternative marketing strategies that do not use traditional media to promote products, such as 'below the line' activity including price promotions.
- 380. As described in <u>Section D(v)</u>, the modelling for health benefits only covers children's immediate consumption, and any health effects on adults are not monetised due to lack of conclusive evidence. Using the ROI differential captures all purchasing (both adults and children) derived from advertising, including any effects of a price premium. This means if a reduction in adult viewing of adverts reduces adult purchases there is likely to be a reduction in consumption that is not captured by the estimated benefits. This would mean our calculations of the net benefit are an underestimate. Unfortunately given the available evidence, the presence and magnitude of this effect cannot be estimated more definitively and may mean the overall net benefit of the options are conservative.

Benefits to non-HFSS advertisers

- 381. Non-HFSS advertisers could benefit in a number of ways from the proposed regulations. In response to the prohibition of HFSS advertising across TV and online platforms, the cost to advertising products outside of the defined scope may decrease. This would form a saving for non-HFSS advertisers, should they already be undertaking advertising activities. Alternatively, the cost of advertising may fall to the point where non-HFSS manufacturers can afford the upfront cost and generate higher profits from the exposure.
- 382. More widely, non-HFSS manufacturers may see high sales as a result of consumers switching towards healthier substitutes.
- 383. In both cases insufficient evidence has been identified to allow for these effects to be quantified. As such, they remain uncertain and have been listed in the <u>Non-monetised Benefits section</u>.

E. Options Assessment

384. As outlined previously a range of options have been proposed for restricting HFSS advertising on broadcast TV and online. This creates several combinations in which these options could be implemented. Due to data limitations and practicality we have only been able to model 5 of these combinations in this IA. Table 18 below outlines the costs and benefits captured in the analysis for each option, holding everything else equal.

Monetised costs	Transition costs associated with businesses familiarising themselves with the new regulations and to train the relevant staff.
	Direct costs are the lost returns for advertiser spending and the lost profit from this spending to ad agencies, broadcasters, online platforms and intermediaries.
	Costs with indirect effects are the reduction in returns for advertisers
	The cost of enforcing the regulations.
Non-monetised costs	Potential price changes passed onto consumers.
	The effects on content producers and social media users.
	Indirect costs to advert production as a result of reduced HFSS advert demand.
Monetised benefits	A reduction in children's exposure to HFSS advertising and therefore calorie consumption, with a consequent reduction in childhood obesity prevalence.
	A reduction in obesity-related morbidity and mortality, resulting in NHS and social care savings, and an increase in economic output.
Non-monetised benefits	The benefits of preventing obesity-related ill health over and above the 6 obesity-related health conditions included in the model.
	Nutritional benefits from consumers making healthier choices in addition to reduced calorie consumption.
	Reduction in mental health issues resulting from overweight children being at higher risk of bullying, stigmatisation and low-self esteem.
	Improvements in oral health
	The additional benefits from adults' lower exposure to HFSS advertising.
	Benefits as result of reformulation of products.
	Impact on productivity from preventing obesity related ill health.
	Profits for non-HFSS food manufacturers

385. The figures presented below are based on our central estimates of the costs to business and the health benefits these restrictions would generate. High and low estimates are considered in the Sensitivity and risk analysis section towards the end of this document.

Appraisal Period

386. As described in <u>Section D(v)</u> the net present values of the options are assessed over a period of 100 years, with the policy assumed to have been implemented for 25 years. In modelling terms, this means that the benefits are only applied to the cohort of children who are alive or born into the model, within the 25-year period from the introduction of the policy and are exposed for half their childhood (i.e. at least 6 years). As the benefits occur over the lifetime of children in the cohort, the benefits to them are modelled for 100 years from the policy's introduction.

- 387. Industry costs resulting from the regulations are modelled over a 25-year period. This is for consistency with other policies being developed as part of a suite of measures to help tackle obesity.^{195,196}. The length of the policy and appraisal period are further discussed in the sensitivity analysis section.
- 388. All the cost and benefits are discounted at the appropriate long-term discount rates and in accordance with standard practice set out in the HMT Green Book.¹⁹⁷ This way, benefits received in the future can be compared against the costs which occur much sooner. Unless otherwise stated all costs and benefits are in real terms in 2019 prices.¹⁹⁸

E(i). Costs to Business

Transition costs

- 389. The transitions costs (familiarisation and adjustment to new restrictions) will impact broadcasters, online platforms, advertising agencies, regulators and retailers / manufacturers as they will need to understand how the new rules affect how their products can be marketed on TV and online.
- 390. The transition costs estimated here are based on a number of assumptions covering the time it will take and the level or grade of the staff with this responsibility.
- 391. **Manufacturers / retailers / OOH businesses.** We assume that on average, it would take a professional marketing manager in a food/drink company between 8-16 hours to read and become familiar with the regulations and a further 8-16 hours to assess their relevance to their marketing activities and implement changes. This is an increase on the previous impact assessment's estimate of 1-3 hours. This is a pragmatic assessment, noting that the option is an extension of existing advertising restrictions that companies are already familiar with. However, there may be companies that have devolved all responsibility for compliant marketing to advertising agencies and faced no previous challenges advertising in adult airtime; 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 a range of stakeholders will need to be briefed. The median gross hourly wage rate for a professional in the UK is £21.14 per hour based on the 2019 Annual Survey of Hours and Earnings (ASHE).¹⁹⁹ This is uprated by 22%²⁰⁰ to £25.79 per hour to account for non-wage labour costs such as national insurance and pensions. The wage rate will also vary by business depending on the size and scale of the organisation.
- 392. The number of affected businesses has been estimated based on UK businesses count.²⁰¹ Based on the most likely Standard Industrial Classification of Economic Activity (SIC) codes, the number of large businesses involved in the manufacture, retail and out of home sale of food and drink is estimated to be 1,350. The number of manufacturers is presented in <u>Table 4</u>, while the number of retailers and OOH businesses are below in Tables 19 and 20.

¹⁹⁵ Restricting promotions of food and drink that is high in fat, sugar and salt, DHSC (2020), available at: <u>Restricting</u> promotions of food and drink that is high in fat, sugar and salt - GOV.UK (www.gov.uk)

¹⁹⁶ Calorie labelling for food and drink served outside the home, DHSC (2020), available at: <u>Calorie labelling for</u> food and drink served outside of the home - GOV.UK (www.gov.uk)

¹⁹⁷The Green Book: appraisal and evaluation in central government. Available at:

https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent (accessed 30/01/2019)

¹⁹⁸ https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-november-2020spending-review

¹⁹⁹ 2019 Annual Survey of Hours and Earnings, ONS. Available from:

https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation 2digitsocashetable2(accessed 08/02/2021)

²⁰⁰ RPC guidance:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/827926/RPC_sh ort_guidance_note_- Implementation_costs__August_2019.pdf

²⁰¹ Nomis business counts (2020): UK Business Counts - Data Sources - home - Nomis - Official Labour Market Statistics (nomisweb.co.uk)

Table 19: Businesses retailing food and beverages in the UK (2020)

	Enterprises by no. of employees							
SIC Code and description	Micro (0 to 9)	Small (10 to 49)	Medium (50 to 249)	Large (250+)	Total			
471 : Retail sale in non-specialised stores	38,760	20,200	3,405	875	63,240			
472 : Retail sale of food, beverages and tobacco in specialised stores	25,760	4,340	110	5	30,215			
Totals	64,520	24,540	3,515	880	93,455			

Table 20: Businesses selling food and beverages out of home in the UK (2020)

	Enterprises by no. of employees					
SIC Code and description	Micro (0 to 9)	Small (10 to 49)	Medium (50 to 249)	Large (250+)	Total	
561 : Restaurants and mobile food service activities	76,965	28,135	2,485	40	107,625	

- 393. Therefore, we estimate the costs of familiarisation to be in the region of £0.6m-£1.1m and considered a one-time additional cost.
- 394. There may be slight discrepancies between the estimated numbers of businesses presented above and the number businesses impacted by proposals. Codes may contain businesses that do not produce or advertise HFSS products, meaning they fall outside of the scope of the policy. There may be some businesses that would advertise HFSS products, but which fall under alternate codes, as food and beverage manufacture or retail is not their primary function. Despite this, business counts are the best available means by which to approximate the number of businesses affected.
- 395. **Advertising agencies.** Advertising agencies act as the intermediary between manufacturers (their clients) and broadcasters/publishers (suppliers), developing advertising campaigns and brokering the purchase of advertising impacts/impressions for their clients. There are an estimated 16,500 advertising agencies in the UK with 110,000 employees.²⁰² It is assumed that at least half of an advertising agency's staff would need to be trained on the new regulations. This is assumed to take between 1-3 hours for each employee. Using the same wage rate as for manufacturers and retailers, we estimate transition costs between £2.8m-£4.2m. This does not take into account any increase in due diligence required by agencies to ensure adverts sought by SMEs meet the exemption.
- 396. **Broadcasters.** Broadcasters provide the schedule capacity for advertising and would need to comply with new restriction guidance; accommodate client/agency demand for commercial impacts outside the watershed; and make changes to their schedules and rate cards (costs per thousand impacts). However, no evidence was provided in consultation responses that would allow us to estimate the transition costs from these changes. We have estimated the familiarisation costs based on the assumption of 1,170 broadcasters being impacted by new TV broadcast rules under option B, based on the number of businesses under SIC code 60.2 'Television programming and broadcasting activities'.²⁰³ in the high scenario. In the low scenario, we assume this will affect 460 channels.²⁰⁴ These

²⁰² IBIS World: <u>https://www.ibisworld.com/united-kingdom/market-research-reports/advertising-agencies-industry/</u> (accessed at 05/03/2021)

²⁰³Nomis business counts (2020): <u>UK Business Counts - Data Sources - home - Nomis - Official Labour Market</u> <u>Statistics (nomisweb.co.uk)</u>

²⁰⁴ Statista, Number of television channels available and established in the United Kingdom (UK) as of December 2019, by genre. Total of 470, subtracting 10 BBC channels from the estimate as they do not broadcast advertisements. https://www.statista.com/statistics/436944/tv-channels-by-genre-in-the-united-kingdom/

range between £94,000-£482,00 for all broadcasters based on 8-16 hours of a relevant professional reviewing the new rules and discussions among senior managers on any changes to internal policy or processes. This does not take into account any increase in due diligence required by agencies to ensure adverts sought by SMEs meet the exemption.

397. **Online platforms.** Platforms will not be required to implement any changes in response to the regulations, however they may still need to familiarise themselves with the requirements placed on advertisers. There is no definition of online platforms in general or for those involved in the advertising market. It has therefore not been possible to provide an estimate specific to online platforms. We therefore assume these costs would be in the same range as those for broadcasters and therefore double the broadcaster costs to account platforms.

Costs to business from removed advertising spend

- 398. The direct costs include the removed advertising spending to broadcasters and online platforms (If we assume the marginal changes in advertising costs to broadcasters are zero as the supply of advertising is inelastic, this lost revenue represents an upper bound on the lost profits to these organisations), and the returns advertisers would have received from this spending.
- 399. As set out in <u>Section D(vi)</u>, the returns are based on the return on investment figures for TV and online video. The calculations of advertising spend removed as a result of restrictions for broadcasters and online platforms are calculated using their respective methodologies, which is then used to estimate the returns lost to advertisers. We have assumed zero marginal cost for this analysis, however there is a chance that there could be some savings to broadcasters from any costs of advertising.
- 400. The costs net of indirect effects are also based on the spending removed and accounting for advertiser mitigations. For simplicity the mitigated advertising spend is presented alongside the total HFSS spending in the broadcast TV and online sections below.

HFSS advertising spend on broadcast TV

401. Under Option B, Kantar (2018) drew on available independent data (Nielsen) and assessed that £214.7m of advertising spend on broadcast television was for products considered to be HFSS by the 2004/05 NPM. This baseline figure is updated to account for the trends in TV advertising spend between 2017 and 2019. The AA/WARC advertising reports for 2017 and 2019 indicate that TV advertising spend decreased by 3.5% in this period.²⁰⁵ Lowering Kantar's estimate by 3.5% gives £207.2m per year and is a one-off adjustment. A proportion of this advertising revenue will be used by broadcasters to manage the selling of advertising space.

HFSS Advertising spend removed on broadcast TV

- 402. As set out in the methodology section, the data set of adverts included the details on when the advertising spending took place to enable identification of spending that takes place during the watershed period. The total value of spending during the watershed for products in the PHE/SDIL categories and failing the NPM threshold is £92.3m.
- 403. As an SME exemption is applied, the HFSS advertising spend is adjusted by the proportion of SMEs that advertise on TV as the closest proxy available. In our mid estimate this is 5% and means the value of non-SME HFSS adverts in the baseline is £204m, with £87.7m of HFSS adverts removed by the watershed. That £87.7m is taken as the direct cost to broadcasters and represents the upper bound of total profits at risk. Profits are likely to be smaller than revenue loss, once operational costs have been accounted for. As these operational costs remain uncertain, the decision was taken to be conservative towards the cost effectiveness of the proposed policy for the direct effects.

Advertiser mitigations on broadcast TV

404. TV advertising provides a good return on investment for HFSS manufacturers, but they will have a range of options available to them to achieve similar commercial outcomes; they can advertise in different mediums, market alternative products or brand adverts that are compliant with this restriction,

²⁰⁵ AA/WARC Expenditure Report, April 2018 & AA/WARC Expenditure Report, April 2020

or invest in promotion at point of sale. In contrast, broadcasters will have limited options to mitigate lost advertising revenue: the main ones are by scheduling advertising outside of the restrictions or find alternative categories of advertising to fill their commercial breaks. As explained in the <u>Cost</u> <u>methodology</u> section above, HFSS manufacturers would likely pursue the following actions to limit the impact of restrictions under 'Option B':

- **Reformulate the product to meet restriction guidelines** Kantar's working assumption that food products with an NPM score of 4 and drinks with an NPM score of 1 would reformulate.
- **Replace their adverts -** Manufacturers replacing their adverts for HFSS products with ones for non-HFSS products within their portfolio, or switching to a brand advert that is compliant with BCAP/CAP.
- Switch advertising spend to watershed hours Advertisers switch to campaigns that run solely between 2100 and 0530. Kantar's research assumes that advertisers committing most of their spend 2100-0530 could shift all their advertising to this time window.
- Switch adverts to a different medium If none of the mitigations above were viable, then the manufacturers may choose to invest in a different form of advertising or marketing at point of sale. Kantar assessed that there would be a limit on the amount of HFSS advertising displaced online, with much of the remaining advertising being displaced to channels such as print media, OOH, direct mail, radio and cinema. We do not believe that where this displacement occurs would affect the overall revenue lost by the broadcasters under this option, but it could have a subsequent effect on the returns HFSS manufacturers derive from their advertising investment.
- 405. The first three mitigations outlined above are not mutually exclusive; more than one could be applied to a HFSS advert to make it compliant with the proposed watershed restriction. Therefore, Kantar determined the total amount of advertising revenue that could be preserved through these steps combined, rather than individually, which amounted to £28m in total. The most common mitigation would be a shift to advertising a non-HFSS product or brand advert.
- 406. Based on these assumptions, Kantar assessed that of the £87.7m of advertising revenue at risk, up to £28m of this could also be mitigated if all HFSS manufacturers optimised their advertising to remain on television. However, we cannot be sure that HFSS manufacturers would base their investments on these assumptions and they may base decisions on other factors unique to their products and market. For the purposes of this analysis, we have therefore assumed a scenario where £14m of advertising revenue at risk is retained through aforementioned mitigating actions. This is halfway between manufacturers making no action and the maximum mitigation possible to preserve their advertising spend on television; this would leave £73.7m at risk, before the final mitigation replacing lost HFSS advertising. This represents the HFSS revenue that could displaced to other advertising media or be retained by HFSS advertisers.

Replacing lost HFSS advertising and cost mechanisms

- 407. Kantar initially assumed that 20% (as a central estimate) of lost HFSS advertising revenue could be backfilled by spend from other advertising categories. Based on feedback to the previous impact assessment, we have revised this figure to 10% (with 20% in the low cost scenario and 0% in the high cost scenario). This analysis also assumes that this spend would come from other forms of advertising media. So, while £73.7m of HFSS revenue may be displaced from television to other media, Kantar estimated that £7.4m of non-HFSS advertising spend would be displaced to television from other media in response.
- 408. Overall, our <u>final central estimate for advertising revenue lost by broadcasters is £66.3m per annum</u> <u>after accounting for the SME exemption.</u> Table 21 summarises the restriction steps of the option, mitigations and the impact on advertising revenue.

Restriction and mitigation steps	Change to advertising revenue at risk	Residual broadcaster revenue at risk
1. 2017 Baseline: All HFSS advertising on television	-	184.2
2. Including smaller channels not covered by dataset	+19.8	204
3: Adjust for 2019- new baseline	-7.1	196.9
4. Restricting all HFSS advertising 0530-2100 (defined by NPM only)	-81.4	115.5
5. Applying HFSS category definition	-27.8	87.7
6. 50% of Advertiser mitigations taking place	-14	73.7
7. 10% replacement of lost advertising revenue by broadcasters (final estimate)	-7.4	66.3

Table 21. Effect of mitigation options for broadcast revenue (£m)

- 409. **Impact on broadcasters' advertising revenue:** £66.3m represented approximately 1.3% of UK TV advertising revenue in 2019. As mentioned in the overview of the broadcasting industry section, these impacts would be against a backdrop of recent TV advertising market decline, increasing restrictions in other areas (i.e. gambling advertising) and economic and market uncertainty. To absorb these losses, commercial PSBs may therefore have to reduce their public service output.
- 410. The table below summarises the low, mid and high scenario costs to TV broadcasters resulting from a watershed restriction.
- 411. The results are shown for a low, mid and high cost scenario:
 - Low: assumes that broadcasters and advertisers will take all possible mitigating actions and that there will be 20% backfill of adverts lost due to the restrictions.
 - Mid: assumes that broadcasters and advertisers will take 50% of all possible mitigating actions and that there will be 10% backfill of adverts lost due to the restrictions.
 - High: assumes that broadcasters and advertisers will take no mitigating actions and that there will be 0% backfill of adverts lost due to the restrictions.

Table 22: low, mid and high scenario annual costs modelling summary for TV broadcasters with indirect effects

£m	Low	Mid	High
Cost to TV broadcasters	47.8	66.3	87.7

Online platforms

- 412. As presented in <u>Section D(iv)</u>, HFSS advertising spending online is estimated to be £339m in 2019. Removing SME advertisers, where the proportion of SMEs online is estimated to be 39.5% in the mid scenario, this is adjusted to £205.2m. With an online restriction for paid advertising, all of this spending would be removed and is therefore the direct costs to online platforms.
- 413. For an online watershed this amount is adjusted by the amount of time spent online during the watershed period. From Ofcom's report, children spend 91% of their time online during watershed

hours, while adults spend 75% of their time in the same period.²⁰⁶ Weighted by the population of children and adults (9.6m and 54m respectively) this gives an weighted average proportion of time spent online during the watershed of 77%. Applying this to the online spend gives £272.5m. With the SME exemption this is £158.8m.

414. In both cases this lost revenue will be an upper bound of lost. For online platforms delivering the adverts there would be some reduced costs from the removal of advertising that has not been possible to account for, therefore the figures presented above are likely to be an overestimate.

Advertiser mitigations online

- 415. As with the TV broadcast options in the 2019 <u>consultation stage IA</u>, we have applied the following assumptions around mitigation and advertising substitution:
 - Similar mitigations would be available to HFSS manufacturers to retain their advertising online (circa 16% of spend retained in a watershed scenario and 3.5% in a total ban scenario);
 - As per broadcast television, online platforms could see advertisers substitute 20/10/0% of HFSS advertising with non-HFSS advertising, as per the backfill assumptions, in a low/mid/high cost scenario.
- 416. The table below summarises the remaining cost to businesses after these assumptions have been applied. These have been calculated for both a watershed option and a total ban option.

	Mid		Low		High	
£m	Watershed	Total ban	Watershed	Total ban	Watershed	Total ban
Total value of HFSS online ads	£262.6	£339.1	£262.6	£339.1	£262.6	£339.1
Total value of non-SME HFSS						
online ads	£158.8	£205.2	£144.4	£186.5	£173.3	£223.8
Mitigations	84%	97%	68%	78%	87%	100%
Backfill	90%	90%	80%	80%	100%	100%
Cost to platforms	£120.2	£178.3	£78.7	£116.7	£150.9	£223.8

Table 23: low, mid and high scenario annual costs modelling summary for online platforms

Advertising Agencies

- 417. We have limited evidence on how advertising agencies, the intermediaries between HFSS manufacturers and broadcasters, would be impacted by this restriction. If agencies are acting on behalf of their manufacturers, then they are still likely to work with these clients and support them to advertise in unrestricted media. We postulate that agencies would lose revenue if advertising spend was retained by HFSS manufacturers and retailers, presumably reinvested into other parts of their businesses.
- 418. Based on Kantar's modelling (<u>Table 12</u>), we believe that up to 18% (approximately £20.1m) of displaced advertising spend could be lost to this route. However, we cannot generalise the commission, contracts or payment mechanisms agencies and HFSS manufacturing clients agree. For the purposes of this analysis, we have assumed that agencies would forgo a 7.5% commission on this lost advertising spend, approximately £1.7m per annum; £29m over the appraisal period.

Lost profits to advertisers including manufacturers, and retailers and out of home food providers

Direct lost profits to advertisers

419. Using the ROI method the direct costs to advertisers are the returns to the advertising spending they would have made if no restrictions were in place. We use the long-term ROI (profit generated over 3 years) reflecting the appraisal period and that it can take time for the full benefits of an

²⁰⁶ Ofcom Digital Day, 2016

advertising campaign to be realised due to the effects of brand equity. We assume that this long-term ROI is stable after 3 years. For TV the ROI is £1.69 for each pound of advertising spend. We take the 69p as the return to the advertiser, and the £1 is equivalent to the advertising revenue to broadcasters. The equivalent for online video ROI is £1.02 for each pound of advertising spend, where 2p is returned to the advertiser. Scaling this up for the level of HFSS spending removed from the interventions gives the direct costs below:

	TV Watershed	Online watershed	Online restrictions
Advertising spend by large advertisers	£87.7m	£158.8m	£205.2m
ROI	1.69	1.02	1.02
Total returns lost	£60.5m	£3.2m	£4.1m

Note: as the long term ROI used, removal of advertising spending in one year will have effect in future years. These annual figures are therefore for a steady state.

420. Our analysis does not take into account the costs of advert production as the data only covers the advertising revenue received by broadcasters and online platforms. We understand the ROI figures include the total costs of advertising.

Indirect lost profits to advertisers

- 421. There are limits to how we can account for the dynamic nature of the market. To assess the indirect costs to advertisers the effects of advertiser mitigations and changing media strategies displacing advertising to other media are considered.
- 422. As in <u>Section D(iv)</u> we model the difference in ROI of moving to other media, representing the forgone revenues from a profit maximising marketing strategy with no intervention. We also consider the forgone returns from mitigated spending and those from advertising spending that no longer takes place.
- 423. The displaced spending is based on the advertising spending removed once mitigation spending is taken away and is based on the total displacement to other media for each option presented in Table 25. Lost spending is the remaining spend that is not displaced or used for advertising once mitigating action has been taken.

_		-			
	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
Removed advertising spend before mitigations	£87.7m	£158.8m	£205.2m	£246.5m	£292.8m
Mitigated spend	£14m	£25.3m	£7m	£39.3m	£21.1
Advertising spend removed after mitigations	£73.7m	£133.5m	£198m	£207.2m	£271.8m
% of advertising spend displaced to other media	82%	82%	82%	81%	79%

Table 25: Mitigated, displace and lost advertising spending by option

Displace spend	£60.4m	£109.6m	£162.4m	£167.8m	£214.7m
Lost spend	£13.3m	£24m	£35.7m	£39.4m	£57.07

424. For mitigated spending there is an assumption that advertisers will incur increased costs from carrying out mitigation action such as reformulations or see a reduced return for that type of advertising, such as brand. They may also see both increased costs and reduced effectiveness of their advertising campaigns in driving sales. The return is assumed to be lower by 20p, which is equal to the difference between TV and All media ROIs. There is no way of verifying this and as mitigated spend is a small proportion of overall spend the final results will be less sensitive to changes in this assumption.

Table 26: Return on investment lost from advertising spending following mitigations

	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
Return on advertising spend lost	£2.8m	£5.1m	£1.4m	£7.9m	£4.2m

425. The advertising spend displaced to other media is assumed to have a reduced return on investment based on the difference in ROI between TV and online spending and the alternative media. Using the weighted ROI difference, presented again in Table 27, and the spending produces results presented in Table 28.

Table 27: Weighted average difference in ROI between on and TV media and other media by option.

	Options C & D,			Option F, TV	Option F, TV
	Online	Option E, TV and	Option E, TV	watershed and	watershed and
Option B, TV	watershed &	online	and online	online	online
watershed,	restriction,	watershed,	watershed,	restriction,	restriction,
difference from	difference from	difference from	difference from	difference from	difference from
TV ROI	Online ROI	TV ROI	Online ROI	TV ROI	Online ROI
-0.81	-0.08	-0.78	-0.11	-0.77	-0.10

Table 28: Return on investment lost from advertising spending displaced to other media

	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
TV return lost	£48.78m	-	-	£46.42m	£45.11m
Online return lost	-	£7.26m	£10.78m	£11.66m	£16.42m
Total return on advertising spend lost	£48.78m	£7.26m	£10.78m	£58.08m	£61.53m

426. TV advertising is expensive to purchase, and large advertisers are likely to already use this media alongside online advertising. As spending on a media category increases, the incremental return on investment decreases. That is, each additional advert an audience sees for the same product is likely

to have a smaller effect on the overall likelihood of purchasing action being taken following that advert. Any increase in demand for TV advertising is expected to increase the price, everything else equal.

427. Lost advertising spending, that which is not displaced to other media or used following mitigations is applied to the ROI for TV (69p) and online (2p) and reflects that this is the full opportunity cost of not undertaking that activity. While advertisers may use their available budget on other activities to promote their products, such as price promotions, it would require speculation as to how it would be spent. There is also insufficient data on the potential returns for other activities. We use this to represent an upper bound on the lost return but this could be larger if the proportion of lost spending is higher.

	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
Return on advertising spend lost	£9.2m	£0.5m	£0.7m	£10.2m	£11.51m

Table 29: Return on investment lost from lost advertising spending

428. Adjusting the costs to account for the ROI data not capturing the sector wide effects and reflecting a proportion of rivalrous effects between brands. In all cost scenarios we reduce ROI by 50%.²⁰⁷ Bringing these three elements together gives the total costs to advertisers accounting for indirect effects.

 Table 30: Total annual return on investment lost to advertisers (£m)

	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
Direct low, medium and high costs	£30.24	£1.59	£2.05	£31.83	£32.30
Total net indirect low cost	£26.27	£6.26	£6.24	£35.51	£36.86
Total net indirect medium cost	£30.36	£6.59	£6.73	£38.05	£38.63
Total net indirect high cost	£34.46	£8.35	£9.35	£41.71	£42.12

429. The table below shows the total annual ongoing costs for business. Direct costs include the lost revenue to broadcasters, online platforms, and advertising agencies; and the lost returns to advertisers. When accounting for indirect effects the lost revenues are not included as these would be displaced to other media and marketing activity. The indirect costs relate to advertisers adjusted returns following mitigations, displacement and spend removed from advertising.

²⁰⁷ Thinkbox 2018, Profit-Ability

	Option B - TV watershed	Option C - Online watershed	Option D - online restriction	Option E - TV and online Watershed	Option F - TV Watershed and online restriction
Direct low, medium and high costs cost	£124.48	£172.35	£222.61	£296.83	£347.09
Total net indirect low cost	£26.27	£6.26	£6.24	£35.51	£36.86
Total net indirect medium cost	£30.36	£6.59	£6.73	£38.05	£38.63
Total net indirect high cost	£34.46	£8.35	£9.35	£41.71	£42.12

Table 31: Total ongoing annual direct and indirect costs of policy options (£m)

E(ii). Costs to government

430. **Regulators.** Ofcom, the statutory regulator for media markets and for enforcement of broadcasting advertising restrictions in the UK, is the preferred statutory backstop regulator for HFSS advertising. Ofcom will be able to delegate day-to-day frontline monitoring and enforcement to an appropriate regulator. Based on consultation with relevant parties, we have set out initial estimates for set up and ongoing enforcement costs in the table below. These costs have been provided by Ofcom and the ASA and are based on an estimated 300 enforcement cases per year and associated staff and non-staff costs. The ASA have provided this estimate based on the cases that were received the last time they made significant changes to regulations in this space (in 2017). They expect that the majority of cases referred will focus on online breaches with minimal broadcast cases. These costs will be funded by the Government.

	2022	2023	2024 and onwards
Set-up costs			
Staff costs	470	210	0
Non-staff costs	50	30	0
Total set-up costs	520	240	0
Ongoing costs	0	0	0
Staff costs	0	340	410
Non-staff costs	50	130	110
Total ongoing costs	50	470	530
Grand total costs	570	710	530

Table 32 [.] Pro	iected costs	for enforcement	(f'000s)
1 abie 52. 1 10	jecieu cosis	IOI EIIIOICEIIIEIII	(20003)

Non-monetised costs to business

Costs to content creators, including social media users and production companies

- 431. There is no data on the extent to which HFSS adverts currently support content creators online, where such adverts can make up a substantial proportion of content creators' incomes. It could be expected that certain types of content are associated with food and drink adverts, such as food blogs, and that these may therefore be affected to a greater extent than other types of content. Content producers and advertisers will still be able to substitute away from HFSS adverts.
- 432. The restrictions could lead to an impact on businesses involved in the production of TV adverts if the overall demand for adverts falls. The scale of this is difficult to estimate, and so is being treated as a non-monetised cost.

The impact on wholesalers

- 433. In addition to the impact on manufacturers and retailers, there could be an impact on wholesalers as the reduction in sale of HFSS products would reduce their profits. We assume that larger retailers work directly with manufacturers, and therefore wholesalers are not usually part of the supply chain for large retailers. However, if smaller manufacturers do supply larger supermarkets it is possible that there could be a potential cost to wholesalers. Stakeholder engagement highlighted that in instances where larger retailers work with small and micro manufacturers, the supply chain could vary from smaller manufacturers being part of active programmes to attract challenger brands or supply could be localised to a couple of stores. Due to commercial sensitivity of the data, stakeholders were not able to share information on the 1:1 business relationship. As we were not able to gather any further information, the impact on wholesalers has not been quantified.
- 434. The lost profit for ingredient suppliers involved in the supply chain has not been monetised as it is a second order effect. We do not think it's proportionate to monetise this impact as the impact on profit to these businesses could be due to a number of other factors (e.g. reformulation programmes) and therefore it is difficult to understand the impact on their profits as a result of this policy alone. In addition, we currently do not have data on the number of ingredient suppliers working with manufacturers affected by this policy and this information was not possible to gather from stakeholders. It is possible that ingredient suppliers are small and micro businesses who may be disproportionately impacted by the policy, however without any further data this impact has been captured as a non-monetised cost.

Wider economic impacts

- 435. We recognise that the loss in profits for broadcasters, online platforms, advertising agencies, OOH, retailers and manufacturers could have wider economic impacts.
- 436. For example, lower profits for the OOH sector, retailers and manufacturers could lead to them decreasing investment in new machinery or premises and/or reducing the number of staff they employ. This would have a negative knock-on impact on the aggregate demand and employment in the economy. It is also possible that this policy creates an opportunity for non-HFSS manufacturers and OOH businesses selling non-HFSS products, who may see an increase in demand if adverts of non-HFSS products are shown pre-9pm to promote non-HFSS products, which could increase employment and investment.
- 437. These types of wider economic impacts have not been monetised. We do not think it is proportionate to monetise them as investment and employment decisions by these businesses are likely to be influenced by a wide range of factors (e.g. interest rates, wage costs and implications on trade). This means it would be very difficult to identify the specific wider economic impact advertising restrictions of HFSS products would have. Similarly, there are potential wider economic *benefits* such as increased productivity as a function of improved health, that are not monetised.

Impacts on Consumers

438. We do not expect there to be any costs to consumers of this policy. However, it is possible that businesses could choose to pass on the costs of complying with restrictions by increasing the price of

HFSS products. Further analysis of the consultation responses highlighted that retailers, manufacturers and OOH businesses are most likely to respond to the restrictions with:

- Price cuts
- Alternative below the line marketing
- Reformulation
- Advertising a substitute product or overall brand
- Shift HFSS advertising spend to post-watershed
- Advertising spend displaced to other forms of media
- 439. **Price cuts:** Due to the significant competition from retailers' own products, known as private label products, and discounters, manufacturers and retailers are likely to use price cuts to remain competitive on price. The likelihood and extent to which businesses would reallocate advertising budgets to price cuts to offset the loss in sales will depend on how effective price cuts are at driving sales, and the level of price cuts businesses can afford in terms of profit margins and brand equity.
- 440. Consultation responses highlighted that manufacturers would increase the use of price cuts, and therefore it appears likely that retailers, manufacturers and OOH businesses will shift at least some of their TV and online advertising spend to price cuts. However, the price elasticity of demand for HFSS foods appears to be inelastic^{208,209} indicating a smaller than proportional rise in consumption as prices fall. It is also the case that profit margins in HFSS food manufacturer and sale are small,²¹⁰ leading to questions on the sustainability of price reductions over the medium and longer term.
- 441. The extent to which this would happen and the consumption levels of HFSS products that would result are uncertain. This issue is discussed further in the <u>Sensitivity and Risk Analysis</u> section.
- 442. Alternative below the line marketing²¹¹: In response to further restrictions to TV and online advertising of HFSS products retailers, manufacturers and OOH businesses may decide to use alternative forms of below the line marketing to offset some of the loss of sales. This could include, increased shelf space, preferential aisle positioning and posters / banners and in-store samples. Businesses may prefer these types of marketing to price cuts, because they will not have the same negative impact on profit margins and brand equity. Although there is some financial cost to marketing, such as paying retailers for preferential shelf space, compared to price cuts it is likely to have less of an impact on HFSS businesses profit margins.
- 443. Similar to price cuts, the likelihood and extent to which alternative forms of below the line marketing are used will depend on how effective these types of marketing are at offsetting the loss in sales. However, as they would not provide a reduction in prices for consumers, this response is likely to be less effective at driving sales compared to price cuts.
- 444. Consultation responses highlighted that businesses would increase spend on below the line marketing and some respondents were explicit that this would not only include price cuts.
- 445. Based on consultation responses and the expected effectiveness of alternative forms of below the line marketing suggests it is likely that this would form at least part of retailers, manufacturers and OOH businesses response to further TV and online advertising restrictions. However, as with price cuts, we do not have evidence to estimate the extent to which businesses would shift TV and online advertising spend to alternative forms of below the line marketing. Alternative forms of below the line marketing

²⁰⁸ Department of Health and Social Care (2018) Restricting volume promotions for high fat, sugar and salt (HFSS) products. Available at

<u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770705/impact-assessment-for-restricting-volume-promotions-for-HFSS-products.pdf</u> (accessed 23/02/2021)

²⁰⁹ Andreyeva T, Long MW, Brownell KD. The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food. *Am J Public Health*. 2010;100(2):216-222. doi:10.2105/AJPH.2008.151415

²¹⁰ 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, <u>https://www.foodstandards.gov.scot/downloads/FSS-_Final_Report_June_1st_2017.pdf</u> (accessed 14/09/2018)

²¹¹ 'Below the line marketing' is marketing outside of traditional advertising formats, such as price promotions.

are intended to provide businesses with an increase in sales. This means that although an increase in the use of alternative forms of below the line marketing would not change the average price of HFSS products, it would still increase the consumption of HFSS products relative to the situation if businesses took no actions in response to the further advertising restrictions. We cannot quantify the increase in the consumption of HFSS products because we do not know the extent to which businesses would respond by using alternative forms of below the line marketing.

- 446. **Reformulation:** Businesses may decide to reformulate some of the products in scope of the restrictions to allow them to continue to advertise them on TV and online without any further restrictions.
- 447. If there is any reformulation in response to the restrictions, the impact it has on the average price of HFSS products depends on how businesses choose to recover the costs of reformulation. Possible options include:
 - Increase the price of reformulated products: This would have no impact on the average price of HFSS products, given the reformulated products would no longer be in scope of the restrictions.
 - Increase prices across portfolio: The retailer, manufacturer or OOH business could recover its costs by increasing the price of products across its portfolio, which would include any HFSS products that haven't been reformulated. This response would increase the average price of HFSS products.
 - No change in prices: Businesses may not need to change prices to recover the cost of reformulating products. The additional sales they can generate by being able to advertise the reformulated products could offset any costs they incur.
- 448. As explained above, feedback from the consultation highlighted that for products where the NPM scores is far off from the threshold to exclude them from the policy, there would be very little incentive for brands to reformulate products. We still consider it reasonable to expect there to be some reformulation of HFSS products that are close to the threshold.
- 449. Consultation responses highlighted that manufacturers and OOH businesses find it difficult to pass cost increases onto retailers and consumers, which suggests that these businesses would also find it difficult to pass on any costs of reformulation. As a result, it can be assumed that there is a low likelihood that any reformulation of products in scope of the restrictions would increase the average price of HFSS products.
- 450. If there is some reformulation, we can assume that it would not change the price of reformulated or non-reformulated products. If a manufacturer or retailer responds to restrictions by reformulating its products it is reasonable to assume that it is doing so because it wants to be able to use advertising slots for reformulated products and expects the benefits of doing so to outweigh the costs.
- 451. Although there is some uncertainty on the impact reformulation would have on the average price of HFSS products, either outcome would result in a reduction in consumption compared to the situation where businesses take no actions in response to further TV and online advertising restrictions. If the costs of reformulation are passed onto consumers there will be a reduction in consumption due the products in scope of the restrictions becoming more expensive. While, if there is no change to the average price of HFSS products there will still be a reduction in consumption as consumers replace HFSS products with healthier reformulated products.
- 452. Advertising a substitute product or overall brand: This response would allow businesses to offset the loss in sales of HFSS products with sales of other products in its portfolio or through brand advertising. However, some brands will not be able to advertise the brand alone without the product and have made adjustments for this in the analysis. This response would see HFSS adverts on TV and online replaced by non-HFSS adverts and brand adverts. But relative to the scenario where further restrictions are already in place for HFSS adverts on TV and online it would not lead to a further change in the amount of HFSS adverts people are exposed to, and therefore, would not change the consumption of HFSS products.
- 453. **Shift HFSS advertising spend to post-watershed:** As highlighted in the <u>Taking into account</u> <u>advertising displacement</u> section we assumed that HFSS retailers, manufacturers and OOH businesses could choose to shift some of their advertising spend on TV and online to post-watershed.

This response would not provide any discounts to consumers, this means that compared to the scenario in which businesses do not take any actions in response to the further TV and online advertising restrictions it would have no impact on the average price of HFSS products. By shifting some of their advertising spend on TV and online to post-watershed businesses would be allowed to continue to advertise its HFSS products, thus providing businesses with an incentive to choose this response.

- 454. Consultation responses highlighted that businesses would repurpose a proportion of their TV advertising spend within TV, this would also include shifting a proportion of HFSS advertising spend on TV and online to post-watershed. However, responses did highlight that this may not be possible for all businesses as there is only a limited number of slots available post-9pm and the price of these slots will likely increase due to the increase in demand for them. As a result, it is possible that businesses may pass on the increase in price of advertising slots to consumers. Although the ability to shift HFSS advertising spend on TV and online may be limited it still seems reasonable to assume that at least some businesses would use this response. This means there would be more HFSS adverts on TV and online compared to a scenario where there is no shift to advertising spend to post-watershed, resulting in an increase in consumption of HFSS products however fewer children would be exposed to them.
- 455. **Advertising spend displaced to other forms of media**: As outlined in <u>Table 12</u> we assumed that HFSS retailers, manufacturers and OOH businesses could choose to shift some of their advertising spend on TV and online to other forms of media that would not be subject to the further advertising restrictions proposed.
- 456. This response would not provide any discounts to consumers, this means that compared to the scenario in which businesses do not take any actions in response to the further TV and online advertising restrictions it would have no impact on the average price of HFSS products.
- 457. As highlighted earlier in <u>Section D(iv)</u>, the return on investment for other forms of media is likely to be lower than it is for TV and online, meaning other forms of media are likely to be less effective at driving sales. Despite this it still seems reasonable that at least some HFSS retailers, manufacturers and OOH businesses would choose to shift some of their advertising spend to unrestricted forms of media. This assumption is supported by consultation responses, which highlighted that current spend on TV and online would be relocated to other media.
- 458. As a result, there would be more HFSS adverts on other forms of media compared to the scenario where no displacement occurs, resulting in an increase in consumption of HFSS products. Although it should be noted that we expect these other forms of media to be less effective at driving sales than TV and online advertising and are not the top media platforms used by children.
- 459. The assessments above considered the impact of each response in isolation. In reality, HFSS retailers, manufacturers and OOH businesses are likely to choose multiple responses to offset the loss of sales due to further TV and online advertising restrictions for HFSS products and therefore the impact on consumers would be dependent on how businesses respond to the proposed restrictions.

E(iv). Benefits

Monetised Benefits

460. In line with the costs, benefits have been separated between direct and net benefits, considering direct and indirect effects. These are addressed separately below.

Estimated direct reduction in HFSS advertising exposure

- 461. The direct effect of advertising restrictions is the removal of all advertising under scope of the policy.
- 462. As mentioned previously, children's television viewing is on a downward trend and as a result their exposure to HFSS adverts on this form of media is expected to decrease over the next few years. In

contrast, the amount of time children spend online has been increasing rapidly. Taken over five years this suggests that children's exposure to HFSS advertising will decrease by around 21% on TV.

- 463. Using the projections for children's media use outlined in <u>Figure 11</u>, we expect the amount of time children spend watching television to decrease by around 11% annually and their online media use to increase by around 3.4% per year.
- 464. The calculation of the number of impacts that are expected to be reduced as a direct impact of a TV watershed are presented in Table 33.

Table 33: Calculation for how many child HFSS impacts would be prevented under a TV watershed

Restriction and mitigation steps	Change to child impacts	Child HFSS impacts 'at risk' (bn)
1. 2017 Baseline: All HFSS advertising on television	0.00	3.20
2. Including smaller channels not covered by dataset	+0.26	3.46
3. Adjust for 2019 baseline	-0.72	2.75
4. Restricting all HFSS advertising 0530-2100 (defined by NPM only)	-0.76	1.99
5. Applying PHE HFSS definition	-0.56	1.43
Total	-1.77	1.43

- 465. The research conducted by Kantar²¹² suggests that the average length of a television advertisement, when weighted by thousands of impacts, is around 21.3 seconds or 0.36 minutes (see <u>Figure 10</u>). Therefore, the TV watershed option, we estimate 1.43bn impacts is equivalent to approximately 508m minutes.
- 466. The direct results on childhood exposure from an online watershed and total online restriction are presented in Table 34. As outlined in the <u>Advert viewing time</u> section, Lumen research suggests that the average length of an online advert is 3.8s per video advert and 2.1s per non-video advert. The child impacts are converted to a time exposure per child per day by the approximately 9.3m 4-15 year old's in the UK.²¹³

Table 34: reduction in exposure to HFSS in child minutes per day based under an online watershed and online restrictions

	Type of advert	Impacts (bn)	Minutes (bn)	Minutes per child per day
	Video	0.36	0.19	0.05
Online watershed restrictions	Non-video	0.35	0.10	0.03
	Total	5.94	0.29	0.08
Total online	Video	4.02	0.25	0.07
restriction	Non-video	3.86	0.14	0.04

²¹²A write up of the methodology used by Kantar can be found in Annex C.

²¹³ ONS Population Estimates – MYE 2017 MYE2 – All. Available from:

https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (accessed 16/11/2018)

Total	7.88	0.39	0.11
-------	------	------	------

467. Overall an online watershed is estimated to remove approximately 300m minutes of advertising from children's exposure and a total restriction would remove 329m minutes

Estimating children's reduction in calorie consumption

468. Multiplying our estimates of the daily reduction in exposure by our estimate of calories per minute gives us the average reduction in children's calorie consumption per day (although of course this is just an average and will vary from child to child, with obese children more likely to see a greater reduction).²¹⁴ For the analysis a central estimate of 14.2kcals per min is used, with a range generated the 95% confidence interval points on that estimate of 0.7kcals per minute and 26.6kcals per minute.

Table 35: Calorie reductions directly resulting from policy options before adjusting for indirect effects

		Option B: TV watershed	Option C: Online watershed	Option D: Online restriction	Option E: TV and online watershed	Option F: TV watershed and online restriction (preferred)
Daily reduction in HFSS exposure	(mins per child per day)	0.144	0.101	0.111	0.181	0.191
Reduce calorie	High	2.14	2.68	2.94	4.82	5.08
per day	Medium	1.14	1.43	1.57	2.57	2.71
	Low	0.06	0.07	0.08	0.13	0.13

Monetised Direct Health Benefits

- 469. These calorie values were entered as inputs into the DHSC calorie model to generate estimates of the resulting health benefits.
- 470. The model is constructed on an England basis. After scaling up the outputs for the UK population, the total health benefits for all options are outlined in the table below. The discounted health benefits are from reduced mortality and morbidity accruing to our cohort of children. Changes in Quality Adjusted Life Years (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 (£60,000 per QALY).²¹⁵
- 471. Reduced morbidity would also result in reduced cost pressures to the NHS. Savings to the NHS are calculated from the reduced treatment requirements for each of the six diseases captured in the calorie model.²¹⁶
- 472. Costs of social care savings are calculated due to a reduced proportion of overweight, obese, and morbidly obese individuals and hence fewer people needing social care in the treatment scenario. This assumes that the probability of requiring social care increases with BMI. The NHS and social care

²¹⁴ The NIHR OPRU also investigated how children's starting BMI could impact these figures. They found that on average, 1 minute of food advertising exposure had a 13.3kcal (-3.3, 29.9) increase in consumption for non-overweight children and a 20.9kcal (3.1, 38.7) increase in consumption for overweight children. Available here: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent https://www.gov.uk/government/publications/

²¹⁶ To calculate the additional health benefits to the population from reinvesting savings back into the NHS we adjust the estimates produced by the modelling process in the sensitivity analysis.

savings have been uprated to 2019 prices using the GDP deflator,²¹⁷ which is in accordance with the standard practice outlined in the HMT Green Book.

- 473. Economic productivity effects are assessed in two categories. First, reductions in mortality are used to calculate the impact of mortality on economic output from an increased workforce. This is done by considering everyone within a cohort to earn the median wage of a person of that age and gender, with a larger workforce present in the treatment scenario.
- 474. The summarised results from the medium scenario for each option is presented in Table 36 below.
- 475. Further information on what is captured when calculating the different types of benefits is outlined in <u>Annex D</u>.

Benefit	Option B: TV watershed	Option C: Online watershed	Option D: Online restriction	Option E: TV and online watershed	Option F: TV watershed and online restriction (preferred)
Quality Adjusted Life Years ²¹⁸	18,580	23,294	25,535	41,820	44,112
Monetised health benefit	£1,115m	£1,398m	£1,532m	£2,509m	£2,647m
NHS savings	£27m	£34m	£37m	£61m	£64m
Social care savings	£22m	£27m	£30m	£49m	£52m
Economic output	£65m	£81m	£89m	£146m	£154m
Total benefits ²¹⁹	£1,238m	£1,540m	£1,688m	£1,884m	£2,916m

Table 36: Present value direct benefits over a 100-year appraisal period

Adjusting for indirect impacts

- 476. The direct effects presented above reflect the situation where all HFSS advertising in scope of the policy is removed. In reality, it would be expected that advertisers would undertake a number of mitigations, as described in Section D.
- 477. Part of these mitigations have the effect that advertisers can continue to advertise on TV and online, for example reformulations of products, the use of brand advertising and where applicable shifting spending to after the watershed. These would counteract the direct effects described above and increase the level of expense for children on TV and online. The effects of these mitigations are expected to reduce the number of impacts removed from children's viewing by 0.06bn on TV and 0.43 bn online.
- 478. The other factor at work is displacement of advertising spend from one form of media to another. As mentioned previously, it is likely that a proportion of the HFSS advertising campaigns previously on broadcast TV and/or online platforms will be displaced to other forms of media. This would lead to a subsequent increase in children's exposure to HFSS advertising and offset some of the calorie reduction from the restrictions in the process, particularly for TV only options.

²¹⁷ GDP deflators at market prices, and money GDP November 2020 (spending Review), 2020, https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-november-2020spending-reviewhttps://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdpnovember-2020-spending-review

²¹⁸ Quality adjusted life years discounted by 1.5% in line with HMT Green Book methodology

²¹⁹ Figures might not sum to total due to rounding.

- 479. Based on Kantar's estimate of advertising displacement, illustrated in <u>Table 12</u>, under all options we expect around 82% of HFSS advertising spend removed from broadcast TV or online to be displaced to other forms of media. The impact of these shifts on children's exposure to HFSS advertising will depend on their use of these other forms of media.
- 480. As outlined above, we have assumed that only displacement to TV, online, out of home, radio and direct mail advertising will have a significant impact on children's HFSS advertising exposure. Table 12 suggests how much advertising spend would be displaced to other forms of media.
- 481. The effect of these shifts will also depend on the impact of advertising campaigns on these other platforms. Our working assumption is that food and drink businesses' current advertising campaigns on broadcast TV and online platforms have been designed and planned to maximise their return on investment. As a result, it seems reasonable to assume that shifting these campaigns to other forms of media (e.g. radio, OOH etc.) will be less effective at the margin and therefore have a smaller impact on children's food behaviours.
- 482. Due to the lack of academic evidence comparing the impact of advertising campaigns across different forms of media we have assumed that HFSS advertising campaigns displaced to other forms of media have 50% of the impact they previously did on broadcast TV or online (assumption outlined in <u>Section D(v)</u>).
- 483. Multiplying the proportion of spending shifting to other forms of media outlined in Table 12 for each option, it's assumed effectiveness compared to TV and online advertising (50%) implies that displacing HFSS advertising to other forms of media will reduce the estimated calorie reduction by the proportions outlined in the table below.
- 484. The modelled levels of exposure to HFSS advertising and the associated calorie reduction, taking into account the direct and indirect effects is presented in Table 37 below.
- 485. These figures take into account displacement of adverts to other media and the projected trends in child TV and online viewership. The methodology is outlined in <u>Section D(v)</u>. This reduces the calorie effect on TV by 44% and increases the calorie effect online by 18%. This step of the calculation was not clearly explained in the online evidence note, published November 2020, and a number of respondents noted confusion about the 18% increase for the online calorie effect. The low, mid and high scenarios cover both the uncertainty in the calorific effect of advertising exposure and the uncertainty in the SME proportion of food/drink advertising spend.

		Option B: TV watershed	Option C: Online watershed	Option D: Online restriction	Option E: TV and online watershed	Option F: TV watershed and online restriction (preferred)
Daily reduction exposure (mins per day)	in HFSS per child	0.054	0.077	0.088	0.146	0.148
Reduce	High	1.43	1.96	2.06	3.89	3.94
calories per day	Medium	0.77	0.96	1.10	2.08	2.10
	Low	0.04	0.04	0.05	0.10	0.10

Table 37: Calorie reductions directly resulting from policy opti	ions after a	adjusting for	indirect
effects			

Monetised Net Health Benefits Accounting for Direct and Indirect effects

486. As above, these calorie values were run through the DHSC calorie model in order to generate estimated health benefits.

Benefit	Option B: TV watershed	Option C: Online watershed	Option D: Online restriction	Option E: TV and online watershed	Option F: TV watershed and online restriction (preferred)
Quality Adjusted Life Years ²²⁰	12,524	15,655	17,914	33,831	34,153
Monetised health benefit	£751m	£1064m	£1221m	£2,029m	£2,049m
NHS savings	£18m	£26m	£29m	£49m	£50m
Social care savings	£15m	£21m	£24m	£40m	£40m
Economic output	£44m	£62m	£71m	£118m	£119m
Total benefits ²²¹	£828m	£1,172m	£1,346m	£2,237m	£2,258m

 Table 38: Present value net benefits over a 100-year appraisal period

E(v). Non-monetised Benefits

- 487. There are additional benefits that have not been monetised and/or included in our assessment of the overall net present value of the policy, and that would if included likely result in a significantly increased estimate of Net Present Value. These are outlined in turn below:
 - Preventing obesity-related ill health that is likely to occur in addition to the 6 obesityrelated health conditions included in the model.
 - Nutritional benefits from consumers making healthier choices in addition to reduced calorie consumption e.g. through the reduced consumption of salt.
 - Being overweight in childhood is associated with a higher risk of bullying, stigmatisation and low self-esteem.²²² Those in turn may lead to worse mental health outcomes for overweight children, relative to their healthy weight peers. This may generate quality of life benefits and some NHS savings.
 - A reduction in the consumption of food and drink high in sugar would be associated with a reduction in the incidence of childhood tooth decay that would generate some savings to the NHS.
 - There may be additional benefits from adults' lower exposure to HFSS advertising if they too saw a reduction in the consumption of HFSS food. As previously highlighted, current evidence is insufficient to establish a link between adult exposure to HFSS advertising and calorie consumption. However, further research is needed to better establish whether a relationship does or does not exist.
 - Reformulation of products may result in additional calorie reductions and nutritional benefits, although the effects of the intervention on the reformulation of products remains uncertain.

²²⁰ Quality adjusted life years discounted by 1.5% in line with HMT Green Book methodology

²²¹ Figures might not sum to total due to rounding.

²²² Gatineau M, Dent M. (2011). Obesity and mental health. National Obesity Observatory: Oxford UK

- Improvements to economic productivity resulting from a healthier workforce are not included.
- Reinvestment of NHS savings to generate health with a societal value much higher than the marginal cost.
- Should there be a shift in consumption away from HFSS to non-HFSS food, non-HFSS manufacturers would stand to benefit from the increased demand.
- 488. There are significant uncertainties in all the estimated benefits, including some factors which have been identified as potential overestimates (see <u>Key assumptions and limitations in health benefits</u> <u>calculation</u> section). For this reason, the non-monetised benefits need to be understood in the context of the very significant uncertainty in the estimate of benefits.
- 489. Due to both the uncertainty around these figures and the long appraisal period, we have conducted critical value and sensitivity analysis to illustrate the potential benefits required to make the policy cost effective.

E(vi). Summary of Options

Option A - No additional regulation. Retain current set of HFSS advertising restrictions for broadcast TV <u>and</u> online.

- 490. Option A is the do-nothing scenario against which all other options are compared. The costs and benefits of this option are therefore zero by definition.
- 491. It is worth acknowledging that there are other actions being taken by the Government to reduce childhood obesity, alongside this intended action. Further discussion of the interactions is provided in the <u>Interaction of policy effects</u> section. No explicit quantitative adjustments have been made for these.

Option B - Advertising restriction on HFSS products HFSS products listed in Annex B, applied on broadcast TV only, via a 2100-0530 watershed. Retain current regulations online.

Table 39: Summary of costs and benefits – Option B

Group affected	Impact	Present value,
		£m
		Displacement
		adjusted
Costs		
Broadcasters	Transition Costs	0.3
Online platforms	Transition Costs	0.0
	Transition Costs	1.2
HF35 advertisers	HFSS profit lost	517.9
Advertising agencies	Transition costs	2.8
Enforcement conto	Transition costs	0.8
Enforcement costs	Enforcement costs	8.5
Present Value Costs		531.5
Benefits		
Government	NHS Savings	18.2
	Social Care Savings	14.7
Consumers	Health Benefits	751.4
	Economic Benefits	43.8
Present Value Benefits	828.0	
Tot	296.5	

Option C. Retain the current set of food advertising restrictions for broadcast TV and introduce an online advertising restriction on HFSS products listed in Annex B, applied via a 2100-0530 watershed.

Group affected	Impact	Present value, £m
		Displacement adjusted
Costs	·	
Broadcasters	Transition Costs	0.0
Online platforms	Transition Costs	0.3
UESS advortisors	Transition Costs	1.2
HFSS advertisers	HFSS profit lost	112.4
Advertising agencies	Transition costs	2.8
	Transition costs	0.8
	Enforcement costs	8.5
Present Value Costs		126.0
Benefits		
Covernment	NHS Savings	25.7
Government	Social Care Savings	20.8
Consumers	Health Benefits	1,064.4
Consumers	Economic Benefits	62.0
Present Value Benefits	1,172.8	
	Total Net Present Value	1,046.8

Table 40: Summary of costs and benefits – Option C

Option D. Retain the current set of food advertising restrictions for broadcast TV and introduce online restrictions for paid advertising of HFSS products listed in Annex B.

Group affected	Impact	Present value,
		£m
		Displacement
		adjusted
Costs		
Broadcasters	Transition Costs	0.0
Online platforms	Transition Costs	0.3
HFSS advertisers	Transition Costs	1.2
	HFSS profit lost	114.8
Advertising agencies	Transition costs	2.8
	Transition costs	0.8
Eniorcement costs	Enforcement costs	8.5
Present Value Costs		128.4
Benefits		
Covernment	NHS Savings	29.5
Government	Social Care Savings	23.8
Conquimore	Health Benefits	1,221.2
Consumers	Economic Benefits	71.1
Present Value Benefits	1,345.6	
	Total Net Present Value	1,217.2

Option E. Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on broadcast TV and online

Group affected	Impact	Present value,
		£m
		Displacement
		adjusted
Costs		
Broadcasters	Transition Costs	0.3
Online platforms	Transition Costs	0.3
HFSS advertisers	Transition Costs	1.2
	HFSS profit lost	649.1
Advertising agencies	Transition costs	2.8
	Transition costs	0.8
	Enforcement costs	8.5
Present Value Costs		663.0
Benefits		· · · · · · · · · · · · · · · · · · ·
Covernment	NHS Savings	49.0
Government	Social Care Savings	39.6
Consumers	Health Benefits	2029.9
	Economic Benefits	118.3
Present Value Benefits		2,236.7
	Total Net Present Value	1,573.7

Table 42: Summary of costs and benefits – Option E

Option F. Advertising restriction on HFSS products listed in Annex B. Applied via a 2100-0530 watershed on broadcast TV and online restrictions for paid advertising.

Table 43: Summary of costs and benefits – Option F

Group affected	Impact	Present value,				
		£m				
		Displacement				
		adjusted				
Costs						
Broadcasters	Transition Costs	0.3				
Online platforms	Transition Costs	0.3				
HFSS advertisers	Transition Costs	1.2				
	HFSS profit lost	659.0				
Advertising agencies	Transition costs	2.8				
Enforcement costs	Transition costs	0.8				
	Enforcement costs	8.5				
Present Value Costs	672.6					
Benefits						
Government	NHS Savings	49.5				
	Social Care Savings	40.0				
Consumers	Health Benefits	2,049				
	Economic Benefits	119.5				
Present Value Benefits	2,258.1					
	1,585.2					

E(vii). Options summary table and cost-benefit ratios.

- 492. Table below outlines the expected impacts and cost-benefit-ratios of the different policy options over the assessment period. Option A represents the do-nothing option against which the other options are compared. As such, the costs and benefits of this option are 0.
- 493. It has not been possible to quantify every aspect of the proposed policy. The table below outlines the expected influence of the policy, with quantifications where possible. It is important to note when reading the quantified benefits that there are several substantial unmonetised costs and benefits which need to be considered these will not provide the full picture in themselves.
- 494. We have, furthermore, made some conservative assumptions so as not to overplay the likely benefits of these options relative to their cost. Most notably, the lost profits to advertisers (the largest net cost) is likely to be larger than would be expected when we do not assume there to be any reduction in consumption of HFSS products by adults.
- 495. 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 the government.

	Summary Cost Benefit Analysis (Total £m)			
	Present Value Benefits	Present Value Costs	Net Present Values	Benefit-Cost- Ratio
Option B - TV pre- watershed	828.0	531.5	296.5	1.56
Option C - online pre- watershed	1172.8	126.0	1,047	9.31
Option D - online restriction	1345.6	128.4	1217.2	10.48
Option E - TV & Online pre-watershed	2236.7	663.0	1,573.7	3.37
Option F - TV pre- watershed & Online restriction	2258.1	672.9	1585.2	3.36

Table 44: Options summary of net costs and benefits (£m)

F. Special IA Sections

F(i). Effects of interactions with other policies

Interactions of policy effects

- 496. The estimates presented above consider the impact of introducing further advertising restrictions in isolation to the other policies announced as part of the <u>Childhood obesity plan</u>, <u>Chapter 2 of the Childhood Obesity Plan</u>, the <u>Prevention Green Paper: Advancing our health in the 2020s</u>, the <u>Tackling Obesity Strategy</u>, or any possible future actions by the Government. Due to the substantial number of policies that are part of the plan, the potential interactions between options have not been quantified. The interactive effects with other policies is considered in turn below. All policies aim to meet Government ambition of halving childhood obesity by 2030.
- 497. Details of the likely effect of interactions with other policies are discussed below. There are two potential and opposing effects, and we cannot know their *net* effect: that a policy 'crowds out' another by reducing underlying obesity prevalence and so the potential benefits, thus the independent analysis of each may overstate impacts (potentially both costs and benefits); **or** that when tackling the complex

behaviours and an obesogenic environment, a variety of measures may come together in a way that is mutually reinforcing, and in doing so generate benefits to health and wellbeing that are greater than the sum of parts.

Interaction with the Sugar Drinks Levy (SDIL)

- 498. The Soft Drinks Industry Levy (SDIL)²²³ was introduced in 2018 and is a levy on manufacturers of soft drinks with added sugar. Many soft drinks have already been reformulated and sales shifted to lower-sugar soft drinks as a result of the levy and the sales weighted total average sugar content of drinks subject to the SDIL decreased by 43.7% between 2015 and 2019.²²⁴
- 499. Given that SDIL drinks are not an essential part of the diet and the category continues to be a major contributor to children's sugar intakes we have included them as a category in the advertising restrictions policy. To be able to advertise soft drinks within this category will have to have an NPM score of less than 1.
- 500. Any reformulation that has taken place since 2017 may not be captured in the data used to analyse the level of HFSS advertising (as this data refers to adverts in 2017).
- 501. Given the inclusion of drinks with an NPM score greater than 1 in restrictions, it is likely to further reduce sugar consumption. While stakeholders have indicated that advertising restrictions as a whole may have limited impact on reformulation, they also acknowledged that sugary drinks are the category with the most potential for reformulation.

Interaction with the Sugar Reduction Programme and Calorie Reduction Programme

- 502. As part of the Childhood obesity a plan for action, Public Health England are responsible for delivering voluntary sugar and calorie reduction and reformulation programmes with industry. These programmes aim to encourage food manufacturers to remove 20% of the sugar and calories in certain products.
- 503. In September 2020 PHE published their final list of product categories in scope of the Calorie Reduction Programme. These categories have shaped the decision as to what categories should be included in the advertising restrictions to provide a level playing field, but also to focus in on the products of most concern to childhood obesity. The <u>third year interim report</u> on the progress being made by the food and drink industry on sugar reduction between 2015 and 2019 was published in October 2020. This report showed that despite some significant progress in some categories, for example breakfast cereals and yoghurts and fromage frais, overall industry were far off meeting the 2020 target of a 20% reduction for other product categories. Overall there was a 3% reduction in the sales weighted average total sugar per 100g in retailers and manufacturer branded products, and hardly any change in the simple average sugar content per 100g for products in the out of home sector, whilst there was an increase for chocolate confectionery of 10.7%.²²⁵
- 504. If successful, these schemes will make some HFSS products that are in scope of this policy healthier. If this happens it will mean the estimates of the benefits from this policy will be overestimated. However, as these are voluntary policies and that we are awaiting outcomes of these programmes, we have not adjusted the calculations here to account for this.

²²³ The Sugar Drink Industry Levy is a levy on soft drinks that are high in sugar. More information on the levy can be found here <u>https://www.gov.uk/government/news/soft-drinks-industry-levy-12-things-you-should-know</u>

²²⁴ Public Health England, *Sugar reduction: Report on progress between 2015 and 2019.*(Accessed 04/02/2021). Available here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/92502 7/SugarReportY3.pdf

²²⁵ Public Health England (2020) Sugar Reduction: Report on progress between 2015 and 2019. Available at: <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/925027/SugarR</u> <u>eportY3.pdf</u> (Accessed 26/02/2021)
Interaction with ban on sales of Energy Drinks to Under 16s

505. Chapter 3 of the Government's Childhood Obesity Strategy announced it will end the sale of energy drinks to under 16s. Ending the sale of energy drinks will have a very modest interaction with this policy. The British Soft Drinks Association and Energy Drinks Europe already have voluntary codes with their members whereby they do not advertise to audiences where children constitute a significant portion of the audience. Energy drinks are higher in calories than comparable soft drinks and it is assumed that most children will replace their purchases of energy drinks with soft drinks or spend it on other items in the economy. Therefore, indirect benefits are expected to come from a reduction in the consumption of calories, assumed from children switching from energy drinks to soft drinks; however, the overlap between this policy and the advertising restrictions is not considered to be significant; and any attempt to adjust for it would be disproportionate given the large number of assumptions that would be needed. The benefits and costs to advertisers may be overstated if adverts for energy drinks were included in the sample analysed.

Interaction with restrictions location and volume price restrictions

- 506. Promotions and advertising are two marketing strategies heavily used by the food and drink industry, and there will inevitably be some interaction. For example, one potential outcome of restricting location and volume based promotions²²⁶ is an increase in advertising on media that is exempted from this policy (print, poster, radio, cinema).
- 507. Presently there is insufficient evidence to understand the influence of advertising in other media on calorie consumption in children. This topic remains an important issue that will be reviewed as part of the research undertaken for the post implementation review of the advertising restrictions policy.
- 508. The interactions between the proposed advertising restrictions and the price of HFSS products is discussed more extensively in the <u>Sensitivity and risk analysis section</u>.

Interaction with Out of Home calorie labelling

509. The proposals to introduce calorie labelling will only apply at the point of sale and there is no requirement to include calorie information in adverts. Therefore, there are no direct interactions with the advertising restrictions.

Interaction with other policies under active consideration

510. Government are exploring mandating alcohol labelling as well as strengthening our Front of Pack Nutritional Labelling (FOPNL) scheme. At this time a policy proposal consultation has not taken place, therefore we will continue to consider any potential overlap. Although it is our expectation at this time that there is no interaction between the policies as alcohol falls out of the scope of further advertising restrictions and FOPNL does not impact on what can and cannot be advertised.

F(ii). Sensitivity and risk analysis

- 511. It should be recognised that the estimates included in this Impact Assessment are subject to a large degree of uncertainty and can only provide illustrative estimates of the costs and benefits based on plausible assumptions.
- 512. The specific judgements made to decide each parameter can have a substantial impact on the final estimates. Therefore, we have selected a number of 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. A number of these variables have not been adjusted in the sensitivity analysis due to the limited impact it will have to the final net present value. These are separated into the assumptions driving costs and health benefits separately.
- 513. The calculations performed below are for the costs and benefits of the preferred Option F. Similar uncertainties exist around the figures calculated for all other options. As the same methodology has

²²⁶ DHSC (2020) <u>Restricting promotions of food and drink that is high in fat, sugar and salt - GOV.UK (www.gov.uk)</u>

been used across each option, we would expect the impact of variables differing from our central assumptions to be similar for all options.

514. These variables are:

Costs:

The total value of online platform revenue at risk as a result of a watershed:

- Low scenario: assuming advertisers take all possible steps to keep advertising spend in the system and there is 20% backfill from advertisers in non-affected industries.
- Mid scenario: assuming half of advertising spend is kept in the system with advertisers partly taking steps to mitigate impacts, and there is 10% backfill from advertisers in non-affected industries
- High scenario: assuming no advertisers take steps to keep advertising spend in the system, and there is 0% backfill from advertisers in non-affected industries.

Benefits:

The incremental impact of HFSS TV advertising exposure on children's calorie consumption is a key assumption that has significant uncertainty. In the <u>Calorie impact of HFSS food and drink</u> <u>television advertising on all children</u> section above, the results of this meta-analysis gave the following results:

- i. Mid estimate: each minute of advertising causes an incremental additional intake of 13.64 kcal.
- ii. 95% confidence intervals range from 0.70kcal to 26.58kcal per minute of advertising exposure.
- 515. The figures below show the differential impact for the 95% confidence interval bounds. The likelihood of the true value of this parameter being at the extremes of the 95% confidence interval is, by definition, small, but the study was carried under laboratory conditions and so there is a higher likelihood that results don't translate into the real world. In addition, the study results were not scalable but we have assumed a linear relationship between the time exposed to adverts and the effect this has on immediate consumption. It should be noted that this is different from the scenario modelling for the incremental impact of online HFSS advertising exposure, which uses a moderate approach to varying the parameters in the absence of a statistical range.
 - The incremental impact of online HFSS advertising exposure on children's calorie consumption:
 - Low scenario: exposure to an online display and online video advert causes an incremental additional intake of 0.57 kcal and 1.6 kcal respectively.
 - Mid scenario: exposure to an online display and online video advert causes an incremental additional intake of 1.14 kcal and 3.2 kcal respectively.
 - High scenario: exposure to an online display and online video advert causes an incremental additional intake of 1.70 kcal and 4.8 kcal respectively.
 - The reduction in children's HFSS advertising exposure on TV and online:
 - Low scenario: total child impacts removed from the system under a watershed, with post-watershed viewing not taken into account.
 - Mid scenario: total child impacts removed from the system under a watershed, with post-watershed viewing partially (50% of all viewing) taken into account.
 - High scenario: total child impacts removed from the system under a watershed, with post-watershed viewing fully taken into account.
- 516. The figures outlined in the tables below are for Option F. Similar uncertainties exist around the figures calculated for other options. 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 the remaining options.

Table 45: Scenario modelling - Costs

Assumption Tested		Lower	Central	Upper		
Size of online HFSS	Input values					
advertising market affected by a watershed restriction.	Online food, drink, grocery and restaurant advertising spend 2019	£622.4m	£743.1m	£872.1m		

Table 46: The incremental impact of HFSS TV advertising exposure on children's calorie consumption (95% confidence intervals from the Russell et al²²⁷. paper)

Assumption Tested		Central	95% CI Upper Bound				
The incremental impact of HFSS TV advertising exposure on children's calorie consumption	Input value						
	kcal/min of HFSS advertising	0.70	14.2	26.6			
	Output value						
	Total health benefits from reduced exposure on broadcast TV and online (£) ²²⁸	0.1bn	2.3bn	4.2bn			

Table 47: Scenario modelling - Benefits

Assumption Tested		Lower	Central	Upper			
	Input value						
The reduction in children's HFSS advertising exposure on TV and online	Number of fewer impacts in 2017: TV Online	1.21bn 7.17bn	1.37bn 8.34bn	1.53bn 8.92bn			
	Output value						
	Total health benefits (£)	0.1bn	2.3bn	4.2bn			
The incremental impact of	Input value						
exposure on children's calorie consumption	Average time spent viewing: Online Display Online Video	1.1s 1.9s	2.1s 3.8s	3.2s 5.7s			
	Output value ²²⁹						
	Total health benefits from reduced exposure online $(\pounds)^{230}$	0.1bn	2.3bn	4.2bn			

²²⁷ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." Obesity Reviews(2018).

²²⁸ Equal to NHS savings, social care savings, economic output and health benefits

 ²²⁹ Note that the total benefit figures here are based on the calorie reduction from the online restrictions only.
 ²³⁰ Equal to NHS savings, social care savings, economic output and health benefits

The level of mitigations advertisers take, including displacement to other media and the level of replacement advertising (backfill)	Input value							
	Level of mitigations advertisers take, broadcast	62%	81%	85%				
	Level of mitigations advertisers take, online	72%	95%	100%				
	Level of backfill broadcast	80%	90%	100%				
	Level of backfill online	80%	90%	100%				
	Output value							
	Total health benefits (£) ²³¹	2.0bn	2.3bn	2.6bn				

Sensitivity analysis on the policy and appraisal period

- 517. The central analysis presented in the <u>Section D</u> and <u>Section E</u> uses a 25-year policy period alongside a 100-year appraisal period. As explained in these sections this is to ensure as much consistency as possible with other impact assessments for healthy weight policies, while allowing a sufficiently long appraisal period to meaningfully capture the benefits.
- 518. In this section we explore the implications of a shorter policy and appraisal period. The interaction between the length of the policy period and the assumption regarding the length of reduced HFSS exposure needed to have an effect on consumption is shown in <u>Table 14</u>.
- 519. Figure 14 below presents the cumulative sum of present value costs and benefits (in financial terms) with a 25 year appraisal period. As can be seen there, costs rise over the 25 years of that policy period, with benefits, by coincidence, largely zero until that point. It is not until year 61 that the sum of the discounted stream of benefits is equal to the sum of the stream of discounted costs. As a result, an appraisal period of 60 years or less would find that the costs of the policy outweigh the benefits. However, it is important to note that as set out previously this will not account for any of the shorter term non-monetised benefits such as mental health, nor any potential impact on adults which would be much more immediate.

²³¹ Equal to NHS savings, social care savings, economic output and health benefits



Figure 14: NPV stream of costs and benefits with a 25 year policy period

520. The effect of shortening the policy period to 10 years on the size of the cohort is presented in Table 48. The assumption that children have to spend half their childhood with reduced HFSS advertising exposure to see a reduction in consumption is maintained. This means that the size of the cohort of children is reduced by around 62%.

Table 4	8: Children who will b	e included in the coho	rt by age and yea	r of the policy,	with a 10	0 year
policy	period					

							A	ge						Percentage of the
		4	5	6	7	8	9	10	11	12	13	14	15	total population
	1	1	1	1	1	1	1	0	0	0	0	0	0	53%
	2	1	1	1	1	1	1	1	0	0	0	0	0	61%
	3	1	1	1	1	1	1	1	1	0	0	0	0	77%
ar	4	1	1	1	1	1	1	1	1	1	0	0	0	85%
γ	5	0	1	1	1	1	1	1	1	1	1	0	0	76%
licy	6	0	0	1	1	1	1	1	1	1	1	1	0	75%
Ро	7	0	0	0	1	1	1	1	1	1	1	1	1	73%
	8	0	0	0	0	1	1	1	1	1	1	1	1	65%
	9	0	0	0	0	0	1	1	1	1	1	1	1	56%
	10	0	0	0	0	0	0	1	1	1	1	1	1	47%

521. The effects of shortening the policy period to 10 years are presented below. As before costs rise over the 10 years of the policy period, with benefits not starting to appear until around year 25. In the first 25 years of the policy, the level of benefits is largely the same between the 10 year and 25 year policy period. After this point, they begin to tail off, with the final present value of benefits for a 10 year policy period is around 47% of the value for a 25 year policy period. This is proportionally smaller than the reduction in the size of the cohort indicated above as a result of proportionally less discounting having taken place in the 10 year case.

- 522. With a 10 year policy period the breakeven point takes place around year 57, which is remarkably similar to the 25 year case. An appraisal period of 56 years or less would lead to costs appearing to be higher than benefits.
- 523. As can be seen from the analysis above, a substantial amount of expected benefits are expected to fall outside the policy period, whether that is 10 or 25 years. The stream of benefits grows steadily between 25 and 100. This means that any appraisal period shorter than 100 years could significantly underestimate the full scale of benefits.



Figure 15: NPV stream of costs and benefits with a 10 year policy period

Sensitivity analysis on the duration of calorie reduction

- 524. The central analysis assumes that the effects of reduced advertising on calorie intake in childhood will be sustained into and throughout adult life, such that any weight prevention or reduction will be maintained with long-term gains for health.
- 525. Instead it is possible that the effects on calorie intake may wane over time. This would mean that as children grow into adulthood and continue on with their lives, some of the calorie intake averted would be undone. Adults may be less susceptible than children to the advertisements in question, and food preferences may change naturally as children grow up, potentially reducing the influence of adverts that focus on child-friendly foods.
- 526. Most health and economic gains are achieved in the long-term, because obesity-related health risks increase with age. It is perfectly possible to see a health improvement at a young age, but statistically most benefits will come later in life. Possible exceptions (not currently monetised in the benefits) are mental health and oral health which may be affected earlier.
- 527. Based on the calculations of DHSC's calorie model, we expect physical health and economic benefits to be minimal when people are young, accruing as follows.

Table 49: Timing of benefits from healthy weight

Age	% of benefits realised
By age 40	No significant impact
By age 60	c. 25%
By age 70	c. 50%
By age 80	c. 75%
Lifetime	100%

- 528. If behavioural change is not sustained beyond childhood, then we would expect calorie intake and therefore weight to revert to what it would have been. That might take time (and delaying the onset of weight gain may have some benefit) but weight gain would nonetheless occur as behaviour reverted. Given the time profile of benefits above, we would expect individual benefits to be low if behaviour change reverted before the age of 40.
- 529. In practice, some people will maintain long-term behaviour change, some will maintain a reduced level, and some will revert. If we assume that the size of an individual's calorie change is independent of their likelihood of sustaining it, then benefits will be proportionate. For example, if 80% of people maintain calorie reductions well into adulthood, or if everyone maintains an average of 80% of their initial reduction, then 80% of the predicted benefits will be achieved. In practice, it is unclear whether and how the size and duration of behavioural change are correlated.
- 530. The modelling assumes that people will sustain their behaviour in full. Clearly, actual outturn could be lower, although it is not possible to put forward a precise figure, and our estimates therefore reflect an upper bound. In practice, evaluation and monitoring will help determine the extent to which behaviour change may wane early, and whether that waning could be mitigated by further intervention.

Effect of potential waning on business

531. If behaviour change does wane for some people, then that implies behaviour returning closer to what it might have been. Any impacts on business in terms of changes in consumer buying patterns among adults would therefore reduce, while other effects related to the supply of advertising would remain such as reduced broadcaster revenue.

Sensitivity analysis on compensating behaviour

- 532. The central analysis draws on evidence that lower exposure to HFSS advertising in children would result in a reduced calorie intake. However, it should also be considered whether calories saved through reduced consumption of HFSS foods would be offset elsewhere, i.e. compensating behaviour takes place. For example:
 - reduced HFSS snacking leads to increased calories consumption at main meals
 - or there is a substitution of HFSS products for non-HFSS products
- 533. In both cases, this would lead to a reduction in the estimated calories avoided, and so a subsequent reduction in the projected health benefits and societal savings.
- 534. Unfortunately, the evidence identified on compensating behaviour in the literature is mixed, and largely focused on adults. Of the eight studies identified, seven looked at adult behaviour. Several of these experiments investigated the impact of adjusting the energy density of specific meals and found no evidence of calorie compensation at subsequent meals or during the short time period covered by

the study.^{232, 233, 234} In contrast, other investigations have found that subjects completely compensated for a change in calorie intake when given unrestricted access to food.^{235, 236} Two studies found variable levels of calorie compensation, with subjects adjusting their food intake to compensate for 40%²³⁷ (this included meals and snacks) and 35% of the calories removed from their diets.²³⁸

- 535. The nature of these studies' present generalisability issues in so far as:
 - they relate to laboratory experiments, rather than real world observations;
 - the test subjects were adults, not children; and
 - they assess the effects of temporary restrictions in diet followed by periods of free consumption, rather than through the effects of HFSS advertising exposure advertising.
- 536. The single study considering children did focus on the effects of advertising. It found that exposure to HFSS advertising increased calorie consumption in children, but later calories at a meal were not reduced.²³⁹ This indicates no compensating behaviour, although working in the opposite direction of the intended effects of regulation.
- 537. Overall, there is insufficient evidence to include compensating behaviour in the main analysis (which implicitly assumes that there is no compensation). Should the reality be that compensating behaviour would take place, then the estimates generated in the main body of the report would overestimate the benefits of the policy relative to the costs to manufacturers of HFSS products. To at least some degree the profit loss experienced by HFSS manufacturers and retailers selling HFSS products would be offset by increased sales of non-HFSS products. There is some evidence indicating that there is a cost per calorie differential between HFSS and non-HFSS foods, with the latter costing more per calorie.²⁴⁰ Assuming the same profit margins across HFSS and non-HFSS products, this would mean that non-HFSS sales would more than proportionally offset HFSS losses, but to an unknown degree.
- 538. Collectively, the evidence base does not provide sufficient anchor points to frame the uncertainty on the value of compensating behaviour. The evidence that does exist indicating a value different from zero has significant generalisability issues. So, it remains a source of uncertainty that cannot be explored through quantitative sensitivity analysis. However, the degree of compensating behaviour that may be needed to offset the calorie reductions and generate a neutral NPV is discussed in the Critical Value analysis section below.

²³² Anton SD, Martin CK, Han H, Coulon S, Cefalu WT, Geiselman P, Williamson DA. (2010) Effects of stevia, aspartame, and sucrose on food intake, satiety, and postprandial glucose and insulin levels. Appetite. 2010 Aug 31;55(1):37-43.

 ²³³ Rolls BJ, Roe LS, Meengs JS. (2006) Reductions in portion size and energy density of foods are additive and lead to sustained decreases in energy intake. The American journal of clinical nutrition. 2006 Jan 1;83(1):11-7.
 ²³⁴ Kelly MT, Wallace JM, Robson PJ, Rennie KL, Welch RW, Hannon-Fletcher MP, Brennan S, Fletcher A, Livingstone MB. (2009) Increased portion size leads to a sustained increase in energy intake over 4 d in normal-weight and overweight men and women. British journal of nutrition. 2009 Feb;102(3):470-7

²³⁵ Foltin RW, Fischman MW, Emurian CS, Rachlinski JJ. (1988) Compensation for caloric dilution in humans given unrestricted access to food in a residential laboratory. Appetite. 1988 Feb 29;10(1):13-24.

²³⁶ Foltin RW, Fischman MW, Moran TH, Rolls BJ, Kelly TH. (1990) Caloric compensation for lunches varying in fat and carbohydrate content by humans in a residential laboratory. The American journal of clinical nutrition. 1990 Dec 1;52(6):969-80.

²³⁷ Porikos KP, Hesser MF, Van Itallie TB. (1982) Caloric regulation in normal-weight men maintained on a palatable diet of concentional foods. Physiology & behavior. 1982 Aug 31;29(2):293-300.

²³⁸ Kendall A, Levitsky DA, Strupp BJ, Lissner L. (1991) Weight loss on a low-fat diet: consequence of the imprecision of the control of food intake in humans. The American journal of clinical nutrition. 1991 May 1;53(5):1124-9.

 ²³⁹ Norman J, Kelly B, McMahon A, Boyland E, Baur L, Chapman K, King L, Hughes C, Bauman A (2018)
 Sustained impact of energy-dense TV and online food advertising on children's dietary intake: a within-subject, randomised, crossover, counter-balanced trial, International Journal of Behavioural Nutrition and Physical Activity
 ²⁴⁰ Jones NRV, Conklin AI, Suhrcke M Monsivais (2014) The growing price gap between more and less healthy foods: Analysis of a novel longitudinal UK dataset. PLOS ONE 9(10)

Discussion of unintended price reductions for HFSS products as a result of regulation

- 539. In response to the consultation, some stakeholders have raised the possibility that applying restrictions to the advertising of HFSS products would have the unintended consequence of reducing prices. HFSS products are ordinary goods, meaning a fall in price would increase in consumption, all else being equal. As a result, there is a risk that the effects and benefits of the proposed regulations may be reduced, negated or reversed by this unintended consequence.
- 540. Consultation responses highlighted that in the short run, below the line marketing has a higher return on investment compared to TV and online advertising,²⁴¹ where below the line marketing is the promotion of products outside of mainstream media e.g. price promotions and instore marketing. Although the responses did not show the return on investment for different types of below the line marketing, given price cuts provide a discount to consumers it is reasonable to expect that price cuts on their own are still significantly more effective at driving sales than TV and online advertising.
- 541. However, price cuts can have negative longer-term consequences from the manufacturer. The extent to which price cuts are used as a response to advertising restrictions is also dependent on the impact price cuts have on brand equity. TV and online advertising is also used for long-term brand building, that allows manufacturers to charge a premium for their product. Some consultation responses explained that price cuts devalue the product in the eyes of the consumers, therefore, reducing a product's brand equity.
- 542. So, while still working to balance equity and short-term sales, manufacturers may still increase the use of price promotions in response to advertising restrictions. Within the consultation, a submitted report, conducted on behalf of several large TV advertisers, reported that the vast majority of HFSS manufacturers would increase their use of price promotions in response to advertising restrictions. It should be noted that this survey was conducted within the context of restrictions being applied to TV advertising only. Given that many organisations reported an intention to reprioritise advertising towards other forms of media, including online that is now also subject to proposed restrictions, there may be even more incentive for manufacturers to invest in price promotions. However, to add further uncertainty, the sample group was relatively small, and due to the focus of the report on TV advertising unrepresentative of those that advertise across TV and online.
- 543. Any further use of temporary price promotions by manufacturers would likely drive further sales, at least in the short run. Price is a hugely important factor in influencing which food products consumers choose.²⁴² A report by PHE found that around one fifth (22%) of the volume food bought under all types of volume and price promotion would not have otherwise been purchased.²⁴³ The remaining 78% is assumed to have been generated by sales of the product that would have otherwise taken place (albeit subsidised), offset against reduced future sales, or having been captured by alternative brands or products.
- 544. While at least some undermining of the policy aims may take place, the complexity of the situation makes estimation of the extent to which temporary price promotions would be used extremely complex. However, there are several factors that may at least partially mitigate the ability of manufacturers to implement temporary price promotions, and their impact on consumption.
- 545. The ability of manufacturers to implement significant temporary price promotions over the long run may be limited. As highlighted elsewhere in the report the UK food sector is a low margin, high volume

 $^{^{241}}$ The ROI is used to determine how effective a marketing activity has been, an ROI of 1 means £1 of operating profit has been gained from £1 of marketing spend.

²⁴² Department of Environment, Food and Rural Affairs (2016), Food statistics pocketbook 2016. Available at: <u>foodpocketbook-2016report-rev-12apr17.pdf (publishing.service.gov.uk)</u> (accessed 22/02/2021)

²⁴³ Public Health England (2015) Sugar reduction: the evidence for action. Annex 4: an analysis of the role of price and promotions on the household purchases of food and drink high in sugar. Available at

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470175/Annexe _4._Analysis_of_price_promotions.pdf (accessed 22/02/2021)

business,²⁴⁴ meaning that the scope to sustain price promotions over the long run may be limited. Evidence submitted as part of the consultation process indicates that the vast majority of investment made towards increasing sales is already allocated towards price promotions, with less than a quarter used in the form of advertising. Given that some money saved from no longer advertising online or before 9pm on broadcast TV is expected to be reallocated to post watershed or alternative media forms, there may not be significant additional funds to redeploy towards price promotions.

- 546. It is also the case that consumer response to additional price promotions may be small. The use of temporary price promotions is already hugely prevalent in the UK food sector. Price promotions (volume promotions and temporary price cuts) in the UK are the highest in Europe.²⁴⁵ Furthermore, higher sugar food and drink items are more likely to be subject to price promotions than non-HFSS foods.^{246,247} Analysis conducted by PHE indicates that there may be a steeply declining marginal benefit from temporary price promotions. The analysis indicates that on average a 5 15% discount would generate 20% incremental sales. However, assessing a 45 55% discount would only generate 25% incremental sales.²⁴⁸ Given current discount rates average at 33%, it may be that even if manufacturers invest heavily in additional temporary price promotions that they are of limited impact on purchasing.
- 547. The second factor that may influence consumption is permanent reduction in the price of HFSS products brought about by a restriction on advertising. This can be attributed to the loss of brand premium. A reduction in brand premium may see a switching of consumers to cheaper alternatives, for example supermarket own brands. If this was also associated with an increase in the consumption of the product at the lower price, then again, the aim of the policy would be undermined.
- 548. Another factor may be a change in the negotiating power of supermarkets. If manufacturers are less able to trade on brand appeal, prices may be permanently driven down in negotiations, again possibly leading to higher consumption levels.
- 549. As in the case of price promotions, while it may be reasonable to assume that consumers would consume more HFSS products as a result of lower prices, the extent of this action remains unknown. However, the price elasticity of HFSS food products has been estimated by several sources to be inelastic.^{249,250} This would mean that price decreases would result in a proportionally smaller increase in purchase than price falls. This could be indicative that changes in demand could be small, particularly if it proves to be the case, as mentioned previously that the capacity for price cuts in the sector are

²⁴⁴ 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, <u>https://www.foodstandards.gov.scot/downloads/FSS- Final Report June 1st 2017.pdf</u> (accessed 14/09/2018) ²⁴⁵ Public Health England (2015) Sugar reduction: the evidence for action. Annex 4: an analysis of the role of price

and promotions on the household purchases of food and drink high in sugar. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470175/Annexe

^{4.} Analysis_of_price_promotions.pdf (accessed 22/02/2021)

²⁴⁶ Public Health England (2015) Sugar reduction: the evidence for action. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470179/Sugar_r

eduction_The_evidence_for_action.pdf (accessed 23/02/2021)

²⁴⁷ Cancer Research UK (2019) New evidence on the link between price promotions, purchasing of less healthy food and drink, and overweight and obesity in Great Britain. Available at

https://www.cancerresearchuk.org/sites/default/files/paying_the_price_-_exec_summary.pdf (accessed 23/02/2021)

²⁴⁸ Public Health England (2015) Sugar reduction: the evidence for action. Annex 4: an analysis of the role of price and promotions on the household purchases of food and drink high in sugar. Available at <u>https://www.cancerresearchuk.org/sites/default/files/paying_the_price_-_full_report.pdf</u> (accessed 22/02/2021)

²⁴⁹ Department of Health and Social Care (2018) Restricting volume promotions for high fat, sugar and salt (HFSS) products. Available at

<u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770705/impact-assessment-for-restricting-volume-promotions-for-HFSS-products.pdf</u> (accessed 23/02/2021)

²⁵⁰ Andreyeva T, Long MW, Brownell KD. The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food. *Am J Public Health*. 2010;100(2):216-222. doi:10.2105/AJPH.2008.151415

limited. However, it could also be the case that price elasticity of demand is unequal across society with certain groups more sensitive to price than others leading to widening inequalities.

- 550. Overall, it is uncertain to what extent price promotions would work to undermine the effects of the policy. The details above provide some evidence for thinking this may be limited, but it remains a risk for implementation.
- 551. The passages above relate exclusively to manufacturers, as this is the group most likely subject to the influences described above. Consultation responses have indicated that restaurants that serve HFSS food are much less likely to redeploy resources towards price promotions in response to advertising restrictions.
- 552. The actions or retailers are less well known, although given the variety of their interests, the flexibility available to them likely means that they would find brand advertising and including non-HFSS products in their advertising much easier than manufacturers.

F(iii). Critical value analysis

- 553. As mentioned previously, there are a large number of factors related to the effectiveness of the policy that remain uncertain. Some of these could actualise to make the policy less effective than modelled in the core scenario. However, others may actualise in such a way to mean that the central results are an underestimate.
- 554. To place results in context critical value analysis has been undertaken. This poses the question: by how much would policy effectiveness need to be reduced to generate a zero Net Present Value?
- 555. Our central estimate for Option F suggests the total benefits of the policy to be £2.3bn. Total costs are valued at £673m in the central scenario. This suggests that around 70% of the direct benefits of the policy would need to be offset for the policy to not be deemed socially beneficial. Or, looking for the opposite direction a 236% rise in costs would be needed.
- 556. Placing a probability on such a scenarios is impossible given the number of factors at work. Largely, however, many of the factors affecting the realisation of health benefits are linear. So, to see a 70% reduction in health benefits would require a roughly 70% reduction in the number of children that sustain a calorie reduction throughout their lives. Or, similarly a 70% reduction in the scale of the effect of HFSS advertising on calorie consumption in children. These are significant divergences from the central analysis that is felt to represent the best estimate of the likely benefits that would occur based on current evidence.
- 557. While the true scale of uncertainty remains unbounded, the scale of the necessary changes needed to mean the policy is not cost effective does provide supportive evidence that the policy would realise benefits that outweigh the costs.

F(iv). Equivalent Annual Net Direct Cost to Business

- 558. Only direct impacts on business should be counted in the Equivalent Annual Net Direct Cost to Business calculations. Lost profits to advertisers, broadcasters and retailers and manufacturers due to reduced consumption of HFSS products are considered a direct impact on business. For broadcasters, the direct impact is considered to be the net change in sales revenue once broadcasters have adjusted advertising schedules. Although there is a change in the source of sales, from HFSS items to healthy items, because these sales are retained within the same firm we consider the change to be appropriate.
- 559. For manufacturers of HFSS food and drink, 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 by an activity that is undertaken by businesses based in the UK. For manufacturers, we assume that

49% value added is UK based, with this being the proportion of food that was supplied domestically in 2016.²⁵¹

560. We present estimates of the total Equivalent Annual Net Direct Cost to Business (EANDCB) for all options (see Table 50 below). Work will continue during the consultation to refine and extend the scope of this estimate.

	Option A	Option B	Option C	Option D	Option E	Option F
Direct Cost to business per year	0	72	99	128	170	199
Direct Benefits to business per year	0	0	0	0	0	0
Net Direct Cost to Business per year	0	72	99	128	170	199
Business net present value	0	-2,136	-2,944	-3,801	-5,068	-5,925

Table 50: Direct impact on business (Equivalent Annual) £m

F(v). Specific Impact Tests

Small and Micro Business Assessment

- 561. This section considers the estimated impact specifically on small and micro businesses (SMBs) from the preferred option, Option F. The default principle in policy design is that unless there are strong arguments to the contrary, SMBs should be exempt from new regulation. That principle has been considered throughout the design of this policy.
- 562. A variety of sectors and organisation types may be affected by the policy, and these are considered separately below. In each case, the logic and evidence used to inform a decision on whether or not to exempt a particular group is presented. Where the decision has been taken not to exempt a group, there are further details of mitigations that have been considered.
- 563. Wherever possible, the costs that are likely to face SMBs as a result of the policy have been estimated. These represent supplementary values that have not been included in the central estimate presented earlier in this impact assessment. In line with the central analysis, it has not been possible to disaggregate the costs between retailers, manufacturers and out of home businesses. In the paragraphs below, each of these sectors is discussed separately, before a combined cost estimate is given.

Food and beverage manufacturers, retailers and OOH businesses

564. Micro, small and medium sized food producers, retailers and OOH services (249 or fewer employees) will be exempt from the advertising restriction. They are therefore free to continue to advertise and promote their own HFSS products. A full justification for this exemption was provided in the scope section. As can be seen from the Sensitivity and Risk analysis section, exclusion of SME manufacturers, retailers and OOH businesses does not lead to a significant change in the NPV of the policy options. The relative impact on NPV of excluding SMBs from the policy is likely to be even smaller, adding further justification to not including them in scope.

²⁵¹ Department for Environment, Food & Rural Affairs (2016) Food Statistics Pocketbook 2016: <u>https://www.gov.uk/government/statistics/food-statistics-pocketbook-2016</u> (accessed 23/10/2018)

565. This exemption is expected to largely eliminate the direct impact on SMB manufacturers, retailers and out of home services. However, there may also be indirect effects that fall on this group.

Food and beverage manufacturers

- *566.* SME manufacturers will be exempt from the policy. The exemption has been considered based on the impacts on the workings of the market. An advertising restriction could pose a barrier to entry. While brand advertising is permitted, this would not be sufficient to allow an SME producer to promote themselves as they cannot develop a brand without raising awareness of their product. With this increased barrier to entry, larger incumbent firms would potentially benefit with an existing customer base. The effects on competition would depend on the specific product, for example there are multiple large chocolate brands that compete, and this may be sufficient to ensure the market works well. Even with this example new entrants add to the competition and support lower prices and increased innovation.
- 567. However, there may be wider indirect impacts that fall to food manufacturers. One element is their role as suppliers into larger manufacturers and OOH businesses. Here, a reduction in sales of HFSS products by large businesses could have an impact on the revenue stream of smaller manufacturers. No evidence on the level of domestic business to business trade has been identified to inform the scale of this effect either through a review of the literature, known databases or via consultations submissions.
- 568. Another identified indirect effect would be from a general contraction in the marketplace. Should advertising drive demand for HFSS products in general, as well as specific products, then advertising restrictions may impact on wider sales. Again, this remains speculative and difficult to inform directly as no evidence or data was found through independent searching or via consultations. This effect is thought to likely be small. Advertising by large organisations is designed to maximise their profits by driving specific brand and product awareness, meaning that wider leakage would be intentionally minimised.
- 569. As a result of these indirect effects, mitigation was considered. However, no mechanism was identified that would help guard against the loss of business to smaller manufacturers without undermining the central policy objectives and creating perverse incentives or loopholes that could be exploited by larger manufacturers.
- 570. Based on data from UK business counts there are 10,760 small and micro food manufacturers that could be affected by the policy (see <u>Table 4</u>). Not all of these may be HFSS manufacturers, or feed into the HFSS production of others. Business population estimates data has details on the revenue of food and beverage manufacturers by size. While some SIC categories have data suppression, for all those where complete data is available by business size, the revenue of SMB manufacturers accounts for less than 10% of the overall market.²⁵²

Food retailers

- 571. As with manufacturers, SMB food retailers will be exempt from the policy. However, while they are able to advertise the products they stock, they are likely to suffer from reduced demand for HFSS food and beverage items sold and advertised by large manufacturers. This can be disaggregated between the direct effect of lower levels of consumption of the HFSS products that are subject to advertising restrictions, and wider indirect effects.
- 572. These indirect effects include a general contraction in the HFSS market. Also related are the wider sales that are forgone through a reduction in the consumption of complementary products that would have been purchased alongside an HFSS product. Finally, it may be expected that there would be some fall in impulse purchasing that may have been seen through fewer shopping trips where the intention of that trip was to buy HFSS goods though we have not seen any evidence to suggest this will be the case.

²⁵² Business population estimates, ONS (2020). Available at Business population estimates 2020 - GOV.UK (www.gov.uk)

- 573. Some consultation respondents indicated that larger retailers may see some advantages from restrictions, in their ability to drive down HFSS supplier prices due to lower price premium and increase the sales of their own-brand alternatives. These factors are discussed more widely in the Sensitivity and Risk analysis section. While the extent of these factors is difficult to assess for large retailers, they are thought unlikely to apply to smaller retailers, potentially leading to a slight increase in competitive advantage to larger retailers over their smaller counterparts.
- 574. Counteracting the likely fall in HFSS sales and complements is a possible increase in planned non-HFSS foods and beverage purchases from SMB retailers.
- 575. The scale of all of these factors are currently unevidenced, with no relevant information having been sourced from the literature, known databases or via consultation responses.
- 576. Again, mitigation was considered that would help SMB retailers overcome the costs. However, no practical solution was identified that addressed these wider losses.
- 577. Based on UK business count data there are 89,000 small and micro food and drinks retailers in the UK that could be impacted (see <u>Table 19</u>). These SMB retailers are thought to generate around 11% of the revenue in the sector.²⁵³

OOH businesses

- 578. SMB OOH businesses form a third group that would fall under the SME exemption, meaning they can continue to advertise their products, removing the direct impact on their sales. Again, there could be wider indirect effects from a general contraction in the consumption of HFSS foods as a result of lower advertising levels.
- 579. Similar to the cases above, no evidence was identified from literature searches, known databases or consultations responses that would indicate the general level of contraction for substitutes that could be expected.
- 580. While mitigating actions were considered, none were identified that would address a general contraction without undermining the aims of the policy and which were felt practically feasible.
- 581. Based on UK business count data there are 105,100 small and micro OOH businesses in the UK that could be impacted (see <u>Table 20</u>). This count would include franchises of much larger fast food chains, that do not advertise independently, but which currently benefit from the advertising activities of their larger parent business. These small OOH businesses account for a much higher proportion of revenue in the sector, with almost two thirds of revenue going towards SMBs.

Estimation of the scale of impacts on SMB manufacturers, retailers and OOH businesses

- 582. An assessment of profit impacts on SMB manufacturers, retails and OOH businesses is difficult. As a broad benchmark of impact, the profit loss to large manufacturers, retailers and OOH businesses has been proportionally scaled based on revenue. The central estimate of the profit loss for large manufacturers, retailers and OOH businesses is £659m over the 25-year policy period or around £39m per year. SMBs across these categories make up around 10% of the revenue of the combined sectors.²⁵⁴ This would generate a value of £3.9 per year. This is likely to form a very high estimate of the overall level of profit loss. As described above, SMBs are largely impacted by very indirect effects of the policy, suggesting that the relative profit losses would be smaller.
- 583. Assessing the distribution of these costs is complex. On a purely per business average, the profit loss would be small. There are close to 205,000 SMB manufacturers, retails and OOH businesses. As described via the logic above, it may be reasonable to assume that the business group most affected may be retailers. This group would see a fall in demand for HFSS products directly driven by a reduction in manufacturer advertising.

²⁵³ Business population estimates, ONS (2020). Available at Business population estimates 2020 - GOV.UK (www.gov.uk)

²⁵⁴ Business population estimates, ONS (2020). Available at Business population estimates 2020 - GOV.UK (www.gov.uk)

Broadcasters

- 584. Micro businesses account for 2% of the TV broadcast sector's turnover, however the proportion attributable to small businesses is subject to data non-disclosure rules, so we cannot assess the total turnover SMBs contribute to the sector. Few of the 1,065 SMBs in the sector are channel operators that are directly impacted by advertising restrictions. Ofcom awards broadcast licences to 1,203 channels in the sector, but only 178 of these are independent channels (15%), operating with a single broadcast licence, the remainder are part of larger broadcaster portfolios.²⁵⁵ We use this figure as a proxy for the number of SMB broadcasters, but recognise that there will be broadcasters holding licences for more than one channel which also qualify.
- 585. An exemption for SMB broadcasters was considered. However, a 15% share of the market was felt too large to justify an exemption for all SMB broadcasters. Wider considerations that played a role was the nature of the channels in question. Small broadcasters were disproportionately made up of channels focusing on cultural and ethnic minority audiences. Given the higher prevalence of overweight and obesity in some of these communities it was seen as inappropriate to allow HFSS advertising to continue there, particularly with the risk of greater HFSS advertising shifting to these channels if restricted elsewhere.

Effect of de minimis threshold on small and micro businesses in broadcast television

- 586. One mitigation that was considered was the application of a de minimis threshold that would exempt any broadcaster with less than 1% UK child audience. This was included in the 2019 consultation. According to BARB data on audience reach, a de minimis would exempt an estimated 220 channels, 73% of those they measured. This does not include non-BARB registered channels, which have low viewership and cannot justify the investment in BARB monitoring. Aligning this with Kantar's analysis of channels that carry HFSS advertising, this would mean retaining 9% of children's HFSS advertising exposure and spend.
- 587. It is highly likely that the de minimis exemption would cover the 15% of broadcast channels that are representative of SMBs, as well as channels where few children are watching, due to content of low child appeal.
- 588. Considering the Kantar's analysis showed that the large commercial broadcasters accounted for 90% of HFSS advertising impacts, therefore this de minimis threshold is likely to exempt broadcasters and channels that are operated not only by SMBs but medium-sized businesses in the sector too.
- 589. Therefore, such a mitigation was felt disproportionate if it allowed larger broadcasters to continue under the status quo and potentially offer a loophole that could be exploited by HFSS advertisers to continue to advertise. An additional issue raised by stakeholders during the consultation was it would create an undesirable situation where some children's access is restricted, but others who watch channels with low child audiences would not be. This similarly influenced the decision that a de minimis threshold would be inappropriate.
- 590. The simultaneous application of an SMB broadcaster exemption and a de minimis threshold was considered too complicated to apply and enforce in practice.
- 591. It has not been possible to analyse the effect of the policy on the income of small broadcasters, as there is limited available evidence on which advertisers use these channels. No relevant information was identified through the literature, known databases or submitted as part of the consultation process.

Online platforms

592. We assess that 97% of the businesses associated with the hosting, placement and dissemination of digital advertising are SMBs.²⁵⁶ While the revenue is concentrated in the hands of a few larger businesses, these SMB platforms still generate around 20% of the total revenue for the sector.²⁵⁷The

²⁵⁵ Mavise data, European Audiovisual Observatory (2017)

²⁵⁶ Nomis business counts (2020): <u>UK Business Counts - Data Sources - home - Nomis - Official Labour Market</u> <u>Statistics (nomisweb.co.uk)</u>

²⁵⁷ Business population estimates, ONS (2020). Available at Business population estimates 2020 - GOV.UK (www.gov.uk)

proposed intervention does not place any requirements on online platforms and therefore we do not expect SMBs to face different burdens. Due to the complexities of the digital advertising supply chain, we have not been able to determine the number of SMBs impacted by online advertising restrictions on large advertisers.

- 593. There are different types of online platforms from those that host adverts, to those that organise the buying and selling of advertising space, and the targeting of adverts to individuals. But all can be seen as representing part of the advertising supply chain. Exemption of these organisations would represent a significant loophole that larger HFSS manufacturers and sellers could use to undermine the objectives of the policies. As a result, it was decided not to exempt SMB online platforms.
- 594. Mitigations were considered, but it is challenging to propose exemption measures that would safeguard small platforms, while minimising children's HFSS exposure. In principle, a de minimis exemption online could be based on child audience reach, and by association content/themes with limited appeal to children, but it is unclear how low that could be set, how it could be monitored or enforced given the lack of audience measurement in the online space. An online de minimis would also be difficult to articulate when a lot of advertising is personalised and delivered by algorithms on different sites and channels, at different times. As a result, no suitable mitigation was identified for online platforms, and the decision was taken to make them subject to the full policy.
- 595. Much like broadcast, we have limited evidence of how revenue reductions may impact smaller platforms hosting content.

Advertising Agencies

- 596. As with other business categories, business count data gives an indication of the size of advertising agencies. However, there is limited evidence on how many of the agencies, with billings for HFSS products and brands, could be characterised as micro or small businesses, and there is reason to believe that HFSS advertising work is concentrated amongst the larger agencies. A Nielsen review of the advertising agencies by billings, indicates that the majority of HFSS brands are represented by the largest agencies.²⁵⁸ However, we do not have details of the size of intermediaries and buying agents involved. Advertising agencies will still be able to supply the SMEs exempt from the restrictions.
- 597. As a result of the data limitations, it has not been possible to estimate the scale of the costs to SMB advertising agencies.
- 598. Given they are part of the supply chain it would not be appropriate to exempt small agencies as this would undermine the intended benefits of the policy. No mitigation that would not seriously undermine the policy objectives has been identified.

Effect of the exemption for SME advertisers

- 599. As described in the above, the scope section, the policy only applies to large advertisers. To demonstrate the effect of the SME exemption, the below table gives the results of the costs and benefits modelling **without** the SME exemption in place. This adds additional context to the description of SMB businesses above.
- 600. These results are obtained via the same methodology as described in <u>Section E</u>, with the exception of the steps taken to exclude SME advertisers from the modelling.
- 601. As a summary, the NPV and cost-benefit ratio of each option are given below, **both with and without** the SME advertiser exemption applied in the modelling.

²⁵⁸ Campaign School Report 2017 - https://www.campaignlive.co.uk/article/top-100-agencies/1427521 (accessed November 2018)

Table 51: Option	ns summary of	costs and	benefits (£m)
			· · · · ·

	With the SM exem	E advertiser ption	Without the SME advertiser exemption		
	Net Present Values (£m)	Cost- Benefit Ratio	Net Present Values (£m)	Cost- Benefit Ratio	
Option B - TV pre-watershed	297	1.56	314	1.56	
Option C - online pre-watershed	1,047	9.31	1,500	8.50	
Option D - online restriction	1,217	10.48	1,755	9.62	
Option E - TV & Online pre-watershed	1,574	3.37	2,017	3.39	
Option F - TV pre-watershed & Online restriction	1,585	3.36	2,241	3.38	

602. As can be seen, inclusion of SME advertisers in the policy has the effect increasing the NPV but the effects on the cost-benefit ratio is modest. Given this effect, it was determined that including SME advertisers in the policy would be disproportionate to the benefits and so the scope was limited to only large businesses.

Other factors to be considered

Proportionality

603. The inclusion of an exemption for SMEs advertising their own product reduces the expected benefits by around a third for online advertising, but by less than 5% for TV broadcast. This is as expected given the low usage achieved by SMBs in television and higher engagement with online channels. As stated below it also enables a more competitive market and does not significantly reduce the cost benefit ratio as can be seen in <u>Table 47</u> in the <u>Sensitivity and risk analysis section</u>.

Competition

- 604. The effect of the policy on the competitiveness of small business is expected to be mixed. The main anticipated effects are:
 - The ability of SMBs to advertise their own products while larger firms cannot, will deliver a competitive advantage to smaller firms. This should also facilitate market entry for smaller firms wishing to bring new products to the market.
 - SMBs who benefit from larger firms advertising (either by retailing or some other indirect involvement) will incur some downward pressure on sales and or profits, assuming the banned advertising had a positive effect on those metrics originally. Substitution effects may mitigate this impact.
 - The policy may encourage wider behavioural changes around business advertising as larger firms seek new opportunities to promote their products. The effect of this on SMBs could be positive or negative and is unknown at this time.
 - There may be new marketing opportunities for all businesses, including SMBs, to exploit healthier eating, reformulation of unhealthy foods and/or consumer preferences.

- 605. In general, the uncertainties around costs and benefits identified in the main IA apply similarly but proportionately to SMBs. For example, the effect on adult behaviour is less clear than for children. For SMBs specifically, there are uncertainties around:
 - The degree to which SMBs are involved in the production of larger businesses' advertising;
 - The degree to which SMBs currently benefit from larger businesses' advertising; and
 - The precise determination of exemption status for firms at the margin (for example with dynamic levels of staffing, turnover or advertising exposure).
- 606. Nevertheless, the proposed exemptions do significantly reduce the impact on SMBs while ensuring that the restrictions continue to apply to the advertising with the greatest exposure and by extension impact on children, consumers and health. While the residual impacts are more difficult to quantify they will be substantially less than they would be if the full ban were applied to all SMBs.

Equality Test

- 607. A separate Equality Analysis has been conducted to assess the potential impact of the policy on groups with protected characteristics as part of the Government's duties under the Equality Act 2010.²⁵⁹ .An Equalities Assessment for this policy will be published alongside this final IA. Concerns were raised in the consultation, of potential issues of this policy relating to the Public Sector Equality Duty.
 - The first was to race, specifically to small minority ethnic channels and a concern that they may be negatively affected by loss of advertising revenue.
 - The second was to religion and belief, and the restriction on advertising of culturally important foods.
 - The third was to disability, specifically in relation to people living with Phenylketonuria (PKU). Exposure to aspartame (sweetener used as a substitute for sugar, utilised in some reformulation efforts) may negatively impact on people living with this genetic condition. A
- 608. In the Equalities impact assessment, it was concluded the policy would have:
 - neutral or positive impact with regards to race, as the policy is targeted at children from all ethnicities and is therefore expected to have a positive effect on all ethnic groups by reducing the prevalence of obesity and improving health outcomes.
 - neutral impact with regards to religion and belief. There is no evidence to suggest that the proposed policy will have a negative impact on people who share this protected characteristic compared with people who do not share this protected characteristic. Purchase of culturally important foods will not be restricted.
 - Neutral or positive impact with regards to disability. Reducing obesity is likely to result in health benefits for people with this protected characteristic. Specially regarding people living with PKU, restrictions are limited to a specific list of HFSS products and do not explicitly require businesses to reformulate their products, although this may be an action that businesses choose to take in order to be able to advertise their products

²⁵⁹ Childhood obesity plan for action chapter 2: equality assessment. Available from: <u>https://www.gov.uk/government/publications/childhood-obesity-plan-for-action-chapter-2-equality-assessment</u> (accessed 30/01/2019)

Inequalities Test

609. 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's weight and height 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.



Figure 16: Childhood obesity prevalence by deprivation²⁶⁰

- 610. The impact of restricting HFSS advertising on inequalities will depend on how exposure and the impact of advertising varies by deprivation. If those in lower socioeconomic groups have higher levels of HFSS advertising exposure or their consumption is more influenced by advertising, we may expect the benefits of this policy to accrue disproportionately to those who are most deprived. This would reduce the inequalities gap. On the hand, with HFSS prices lower on average than non-HFSS foods, lower income households may be limited in their ability to substitute to healthier foods and advertising changes may be less effective. Advertising may also only change the basket of good purchased rather than the total amount.
- 611. Evidence from Ofcom's 'Children and Parents: Media Use and Attitudes Report' suggests that children from low socio-economic groups are less likely than average to be aware of sponsored links on digital advertising.²⁶¹ Furthermore, there is some evidence to suggest that less affluent viewers are exposed to more HFSS food advertising on TV compared to the most affluent viewers.²⁶² This is supported by evidence from Ofcom which suggests that children in less affluent households (NRS social grade DE) spend more time watching TV on a TV set and more time online than those in more affluent households (social grade AB).²⁶³
- 612. Research conducted by Cancer Research UK found that individuals from deprived communities have a higher recall of unhealthy food advertising, with those recalling watching television adverts every day found to be 40% more likely to be from the most deprived group compared to the least

²⁶⁰ National Child Measurement Programme - England, 2015-16, NHS Digital.

²⁶¹ Ofcom (2017): Children and Parents: Media Use and Attitudes Report (p161)

²⁶² Adams J, Tyrrell R, Adamson AJ, White M. Socio-economic differences in exposure to television food advertisements in the UK: a cross-sectional study of advertisements broadcast in one television region. Public health nutrition. 2012 Mar;15(3):487-94.

²⁶³ Ofcom (2017): Children and Parents: Media Use and Attitudes Report (p31)

deprived.²⁶⁴ This suggests that individuals in more deprived communities may be more affected by unhealthy food advertising on TV. This is in addition to children from low income households being twice as likely to be obese than those from high income households.

613. 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.

International Trade

614. The policy effects on international trade are unclear. Businesses will still be able to import and export HFSS products under the policy. The policy reduces advertising revenues from some broadcasters and in the long run this is may reduce the ability to procure television productions. This indirect effect may in turn affect exports of UK content, as well as reduce the ability to import of foreign TV content. In 2019, the UK exported £9.8bn in goods and services of film, TV, radio and photography.²⁶⁵ It is not clear how the restrictions will affect net trade of TV productions.

Competition Test

615. Does the proposal:

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.

Indirectly limit the number or range of suppliers?

• The costs to individual businesses may vary, for example depending on their current levels of HFSS advertising which would be affected by the options. These costs are unlikely to be prohibitively high for individual businesses. The SME advertiser exemption significantly reduces to potential barriers to entry.

Limit the ability of suppliers to compete?

- The proposed options would likely incur high costs to broadcasters and online platforms, while allowing other less-restricted forms of advertising (e.g. print, radio) to continue marketing HFSS products, giving them a competitive advantage.
- There is a modest impact to food/drink manufacturer and retailer profits, but there would be a disproportionate impact on suppliers whose revenue is derived from HFSS products, providing a competitive advantage to those selling non-HFSS products.

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.

²⁶⁴ Thomas, F. Hooper, L. Petty, R. Thomas, C. Rosenberg, G. Vohra, J. (2018) "A Prime Time for Action: New evidence on the link between television and on-demand marketing and obesity" *Policy Centre for Cancer Prevention, Cancer Research UK*

²⁶⁵ DCMS (2020): DCMS Economic Estimates 2019: Trade Report and DCMS Sectors Economic Estimates 2019: Trade in services

Innovation Test

616. This test considers both the impacts on innovation from restricting advertising, as well as the potential impacts of innovation on the regulation. Three groups are assessed, broadcast, online advertising, and producers of HFSS products.

Broadcasters

- 617. The proposed regulation is not thought to directly restrict the innovation activity that can take place, nor does it change the incentives. Broadcasters' ability to produce content depends on their advertising revenues. With reduced revenues this may mean less funding for innovation in developing or adopting new technologies to produce content and to disseminate that content. Although it is expected lost HFSS advertising pre-watershed will be replaced by other brands/products. As stated in the main methodology section, it has not been possible to estimate the impacts on content production and it is equally challenging to estimate the impacts on innovation.
- 618. As broadcast television moves online, linear viewing where programmes follow a schedule is likely to disappear, replaced by expanded video on demand offerings. The watershed proposal will apply to all UK On Demand Programme Services which are regulated under the Non-Broadcast Code of Advertising Practice.

Online advertising

- 619. The consultation responses highlighted the use of targeting to prevent children seeing certain adverts as currently restricted through industry regulation. It is claimed that this targeting has improved over time to become more accurate, however, no independent evidence is available to verify this. The proposed online restriction is limited to certain categories and therefore will not diminish the incentive to innovate in the online advertising marketplace, in particular improved targeting. Advertising platforms can charge more the better an advert is targeted to an audience that is likely to make a purchase of the product or service. Therefore, the market will continue to see innovation in targeting.
- 620. Improvements in targeting could mean a ban becomes a blunt tool in reducing children's exposure. Targeting could reduce children's exposure while permitting advertising to adults where the evidence shows there is no increased health risk. However, this innovation in targeting would have to coincide with improved transparency and data on who is seeing which adverts.

Producers of HFSS products

621. As previously indicated, advertising restrictions could reduce the incentive for food producers to develop their HFSS products, except where their product is near the NPM threshold. Those which have multiple product lines could still innovate in non-HFSS products. The SME exemption reduces the barriers to innovation significantly, not just for the product itself, but also how it is packaged and sold. The overall effect on innovation is unclear, as reformulation could be reduced for those products significantly above the NPM threshold, but on the other hand, more innovation may take place in products that are healthy.

Sustainability Test

622. There is no evidence to suggest that a restriction on HFSS advertising will have an impact on the sustainability of the market.

Environmental Test

623. There is no evidence to suggest that a restriction on HFSS advertising will have a significant impact on the environment.

Human Rights Assessment

624. Government's preferred option, Option F, raises potential issues in relation to freedom of expression (Article 10 European Convention on Human Rights) and peaceful enjoyment of

possessions (Article 1 Protocol 1 to the Convention). Public authorities may restrict these rights if they can show that their action is lawful, necessary and proportionate in order to protect health. In this case, the overall aim of the policy is to reduce children's exposure to advertisements promoting less healthy food and drink, thereby improving the long-term health of the population. Impacts on businesses and their human rights have been identified and assessed in order to ensure that the policy is appropriate and no more than necessary to address the public health issue concerned. The inclusion of measures such as exemptions for SMEs and for advertising on a marketer's owned media has ensured that the policy's interference with these rights is proportionate and the policy is compliant with the Human Rights Act.

Rural Proofing

625. There is no evidence to suggest that a restriction on HFSS advertising will have a significant impact on those living in rural areas. The SME will enable small rural businesses to advertise both locally and to use online advertising to reach a national market.

Justice Impact Test

- 626. A full Justice Impact Test (JIT) for this proposal is being carried out. We are planning to create a new civil offense for breaking HFSS ad restrictions.
- 627. To enforce the 9pm watershed and the online restrictions, we propose the same route is used as currently exists for enforcement of broadcasting restrictions (fines from Ofcom should take a direct enforcement route), which is an established system of regulation that we envisage will continue to work well and resolve any breaches. By this route, the penalty is applied by the regulator and is treated as a civil debt made by the court. In this case, courts would only become involved if the penalty remained unpaid and the regulator applied to the court for enforcement.
- Going by the current rarity of referrals from the ASA to its regulatory backstops (Of 34,717 628. complaints to the ASA for misleading and irresponsible advertisers in 2019, only 9 needed to be further action referred to Trading Standards for (see ASA annual report here: https://www.asa.org.uk/resource/asa-and-cap-2019-annual-report.html) and the more narrow scope of our restrictions - applying only to large businesses and covering only HFSS product adverts -we expect the number of referrals to Ofcom for HFSS adverts will be even lower. Therefore, we believe the likelihood of HFSS advertiser cases reaching the Courts to be marginal.

G. Post Implementation Review Plan

- 629. Understanding the impact of any regulatory policy is a key responsibility for Government and the Department of Health and Social Care will publish a comprehensive review of the policy within the first 5 years of the policy being enforced.
- 630. 5 years is the normal amount of time for a Government review to be completed in, it is considered appropriate to allow sufficient time to understand changes in industry practices and consumer behaviours and effectiveness and consequences of the regulations. The timescale for this review will also allow officials to take account of the impacts of the COVID-19 pandemic. A shorter timescale is not deemed appropriate because these impacts may be short-term and not reflective of the market overall or in the longer term.
- 631. The review period will start from when the restrictions apply, therefore the date of the review will depend on the primary legislative vehicle and when it reaches Royal Assent. Statutory Guidance²⁶⁶ states that generally the deadline will be five years after the date when the measure came into force. The PIR is not a sunset clause. The PIR is to inform Government's thinking on the next stage of the policy.
- 632. The aim of the PIR is to establish whether the regulation:
 - I. is achieving its original objectives;
 - II. objectives remain appropriate;
 - III. is still required and remains the best option for achieving those objectives;
 - IV. could be achieved in another way which involved less onerous regulatory provision to reduce the burden on business and/or increase overall societal welfare, and
 - V. has led to any unintended consequences of the policy that are undermining public health benefit or causing increased costs.
- 633. The PIR will monitor variables to assess the effect of intervention. These variables may include
 - The number of HFSS adverts viewed by children on TV
 - The number of HFSS adverts viewed by children online
 - TV broadcaster advertising revenue from food and drink advertisers
 - Online platform advertising revenue from food and drink advertisers
 - Statistics on the proportion children who are overweight or obese
 - Progress on reformulation in major HFSS food and drinks
- 634. The objective of this policy is to reduce children's exposure to advertising of products high in fat, sugar and salt. The intended effect of these restrictions is to reduce the amount of advertising of these products that children see and therefore reduce the consumption of HFSS products which are likely to contribute to children's excess weight gain over time. A post implementation review would aim to establish if these objectives are being achieved.
- 635. We aim to determine the level of HFSS advertising children are exposed to before and after the restrictions come into force. This will take into account not just TV and online advertising but also look at displacement to forms of advertising not covered by our restrictions.
- 636. We would also like to monitor how businesses respond to these changes, whether that is by switching to advertising healthier products on TV and online, reformulating HFSS products, or if there is any impact on the price of products.
- 637. We intend to re-engage with key stakeholders following the introduction of the restrictions to better understand the costs that businesses had at that point incurred in relation to the regulations.
- 638. As this intervention is part of a package of measures to tackle obesity, it will be challenging to identify the effects this intervention has in isolations, particularly on consumption changes, the level of obesity and reformulation. Further research may therefore be needed to better understand the links

²⁶⁶ Statutory Guidance under s.31 of the Small Business, Enterprise and Employment Act 2015 published by the Department of Business, Energy and Industrial Strategy.

between advertising and consumption habits that is closer to the real world. In addition, further research is needed into the adverts both adults and children see online.

Annexes

Annex A – Further Evidence and International Evidence

- A.1 In addition to the main body of evidence discussed in the impact assessment, there is also further evidence, including international evidence. This is intended to be read alongside the main impact assessment, where it specifically refers to this Annex.
- A.2 Whilst the international evidence is of less direct relevance than UK specific evidence, we have assumed many of the advertising techniques and social norms are shared across the Western and developed world. Whilst it should be considered how relevant international evidence is on a caseby-case basis, it provides context to the evidence discussed in the impact assessment.
- A.3 The evidence discussed here is generally in concurrence with the main body of evidence and has been annexed to provide clarity when reading the impact assessment.

Online Advertising Exposure

Additional contextual online exposure evidence

- A.4 More children watch video-on-demand (VoD) than watch live broadcast TV. Viewing of VoD has doubled over the last five years. One in four children do not watch live broadcast TV at all.²⁶⁷
- A.5 It is difficult to measure the extent of online advertising exposure. The internet is almost totally advertising-funded and is supported by an extraordinarily complex advertising technology ecosystem with every internet user, including children, seeing a different set of ads, depending on their preferences and previous engagement as recorded by the device, sites and apps they use. Digital advertising activity takes place within a "black box", inaccessible to researchers and even regulators. Digital marketing spend cannot be used to estimate the size of the UK's digital advertising market and the number of advertising impressions.²⁶⁸
- A.6 **Most Internet locations visited by children are not child-specific.**²⁶⁹ Younger children (9-11) in Europe go on the Internet mainly to view videos, on platforms such as YouTube. Older children (13-16 year olds) primarily use the Internet for social media.²⁷⁰
- A.7 Children engage with and enjoy digital marketing, although evidence is limited. In the UK, 73% of 1000 13-17 year olds reported following brands they like on social media, 62% click on ads and 57% make in-app or in-game purchases.²⁷¹ Nielsen data suggests over half of adolescents in the US "always" or "sometimes" look at mobile ads.²⁷² A study looking at adolescents' engagement with unhealthy food and drink brands on social media found that 54% of adolescents reported

²⁶⁷ Ofcom (2019) Children and Parents: Media Use and Attitudes Report 2019

²⁶⁸ Tatlow-Golden, M, Parker, D (2020) The Devil is in the Detail: Challenging the UK Department of Health's 2019 Impact Assessment of the Extent of Online Marketing of Unhealthy Foods to Children, International Journal of Environmental Research and Public Health

²⁶⁹ Tatlow-Golden, M, Boyland, EJ, Jewell, J, Zalnieriute, M, Handsley, E, Breda, J and Galea, G (2016) Tackling food marketing to children in a digital world: trans-disciplinary perspectives.

²⁷⁰ Sozio ME, Ponte C, Sampaio IV, Senne F, Ólafsson K, Alves SJ, et al. (2015). Children and Internet use: a comparative analysis of Brazil and seven European countries. London: London School of Economics, EU Kids Online; 2015 (http://www.lse.ac.uk/media@lse/research/EUKidsOnline/ParticipatingCountries/PDFs/BR-FullReportBrazilNCGM.pdf).

²⁷¹ The age of digital enlightenment. Realtime generation report 2016. Slough, Berkshire: Logicalis; 2016 (http://www.uk.logicalis.com/globalassets/united-kingdom/microsites/real-time-generation/realtime-generation-2016-report.pdf).

²⁷² Gibs J, Bruich S. Advertising effectiveness: understanding the value of a social media impression. A Nielsen/Facebook report. New York, NY; 2010 (http://www.nielsen.com/us/en/insights/news/2010/nielsenfacebook-ad-report.html).

engaging with brands of fast food, 50% for sugary drinks, 46% for candy, and 45% for snacks, while just 7% reported engaging with all other categories of food/beverage brands.²⁷³

- A.8 **Young people are attracted to online influencers**: Approximately 80% of 5-15 years olds in the UK watch YouTube. Young people discussing online influencers (vloggers) felt affected by influencer marketing of HFSS products but believed they were able to resist it. The young people reported that YouTubers fill a gap in children's lives and that YouTuber influencer marketing is effective because they are not 'strangers'.²⁷⁴
- A.9 There is some international evidence of high exposure among children to HFSS advertising online. The rules in place concerning online advertising vary by country, with restrictions in the UK put in place by the Committee of Advertising Practice in 2017. Nonetheless:
 - An exploratory US study of apps used by children aged 12months to 5 years found that of the 135 apps reviewed 95% contained at least one form of advertising. These included manipulative and disruptive methods such as use of commercial characters (42%); full-app teasers (46%); advertising videos interrupting play (e.g., pop-ups [35%] or to unlock play items [16%]); in-app purchases (30%); prompts to rate the app (28%) or share on social media (14%); distracting ads such as banners across the screen (17%) or hidden ads with misleading symbols such as "\$" or camouflaged as gameplay items (7%).²⁷⁵
 - A US study found young people to be inundated with shared posts and sponsored messages. Two hypothetical child profiles who had "liked" HFSS brands on Facebook received approximately 130 HFSS brand messages over 2 weeks.²⁷⁶
 - A Canadian study investigating children's exposure to food marketing on social media apps found that children were exposed to unhealthy food and drink marketing on these platforms even when logged into their personal accounts.²⁷⁷
 - In New Zealand, for 20 "liked" food brands on Facebook, researchers documented 78 promotions per week, averaged over 6 weeks.²⁷⁸
 - A Malaysian study reviewing food and beverage advertising associated with 250 YouTube videos targeting children found 187 ads with food and beverage ads being the most common (38%). Where ads marketed non-core foods the most commonly employed persuasive marketing techniques found were taste appeal (42.3%), uniqueness/novelty (32.4%), the use of animation (22.5%), fun appeal (22.5%), use of promotional characters (15.5%), price (12.7%), and health and nutrition benefits (8.5%).²⁷⁹
- A.10 The foods being advertised online to children in these examples are typically unhealthy.
 - A study in the USA looked at websites popular with children found that 60-84% of advertised products were HFSS foods or met the Institute of Medicine criteria for "foods to avoid".^{280,281}

²⁷³ Frances Fleming-Milici, Jennifer L. Harris, *Adolescents' engagement with unhealthy food and beverage brands on social media*, Appetite, Volume 146, 2020,104501, ISSN 0195-6663, https://doi.org/10.1016/j.appet.2010.104501

https://doi.org/10.1016/j.appet.2019.104501.

²⁷⁴ Coates A, Hardman C, Halford J, Christian G, Christiansen P, Boyland E, (2020) It's Just Addictive People That Make Addictive Videos": Children's Understanding of and Attitudes towards Influencer Marketing of Food and Beverages by YouTube Video Bloggers, <u>Int J Environ Res Public Health</u>. 2020 Jan; 17(2): 449.

²⁷⁵ Meyer M, Adkins V, Yuan N, Weeks H, Chang Y, Radesky J, (2019), Advertising in Young Children's Apps: A Content Analysis. Journal of Dev Behav Pediatriatric 2019 Jan;40(1):32-39

²⁷⁶ Harris JL, Heard A, Kunkel D. Marketing unhealthy foods to children on Facebook. Social policy and public health concerns. In: Dimofte CV, Haugtvedt CP, Yalch RF, editors. Consumer psychology in a social media world. New York, NY: Routledge; 2016:239–53.

²⁷⁷ Potvin Kent M, Pauzé E, Roy EA, de Billy N, Czoli C. Children and adolescents' exposure to food and beverage marketing in social media apps. Pediatric obesity. 2019 Jan 28:e12508.

²⁷⁸ Tatlow-Golden, M, Boyland, EJ, Jewell, J, Zalnieriute, M, Handsley, E, Breda, J and Galea, G (2016) Tackling food marketing to children in a digital world: trans-disciplinary perspectives.

²⁷⁹ Tan L, Ng S, Hoe, Omar A, Karupaiah, T (2018) What's on YouTube? A Case Study on Food and Beverage Advertising in Videos Targeted at Children on Social Media, Childhood Obesity 14(5):280-290

²⁸⁰ Lingas EO, Dorfman L, Bukofzer E. Nutrition content of food and beverage products on websites popular with children. Am J Public Health 2009;9:5.

²⁸¹ Ustjanauskas, AE, Harris, JL, Schwartz, MB. Food and beverage advertising on children's web sites. PedObes 2014;9:362–72.

 90% of 281 foods marketed to children online were identified to be unhealthy by the WHO Regional Office for Europe's nutrient profile model.²⁸² The study noted this is only indicative, because children are unlikely to frequent brand's websites.

Impact of Advertising on Children's Preferences

Advertising and long-term food preferences

- A.11 The WHO 2009 systematic review on the extent, nature and effects of food promotion to children concluded on that on balance, the evidence indicates that food promotion has a modest impact on food preferences.²⁸³ A summary of the evidence cited in the WHO review is included below:
- A.12 **Descriptive studies demonstrate children have extensive recall of food advertising.**²⁸⁴ Hitchings & Moynihan found 9-10 year old English children could recall adverts in the past two weeks in seven different food product categories.²⁸⁵ Batada et al. found half of children could accurately match from memory, without prompting, at least half of logos/characters from TV breakfast cereal advertisements.²⁸⁶ Chamberlain, Wang & Robinson found that there was an association between children's screen media time and requests for advertised foods 7-20 months later after adjusting for socio-demographic factors.²⁸⁷
- A.13 **Television advertising increases children's liking for advertised products.**²⁸⁸ Dixon et al²⁸⁹ and Marshall, O'Donohoe & Kline²⁹⁰ found TV advertisements increases the liking and acceptability of advertised products. Angela Chang²⁹¹ found that TV advertisements aroused all children's interest in the promoted food. The study also found that increases in advertising on TV were moderately and positively correlated with increases in reported food consumption among overweight children.
- A.14 **Self-reporting suggests advertising affects children's decisions**.²⁹² Carruth, Goldberg & Skinner found 8% of North American students reported seeing a food advert made them want to get something to eat 'every day', 66% less frequently and 27% 'never'. Marshall, O'Donohoe & Kline²⁹³ found children reported watching food adverts made them 'feel hungry' and increases purchase desire. Maryam et al.²⁹⁴ found over 90% of Iranian students reported they selected foods

²⁸⁵ Hitchings E, Moynihan PJ (1998). The relationship between television food advertisements recalled and actual foods consumed by children. Journal of Human Nutrition and Dietetics, 11(6):511–517.

²⁸² Nutrient profile model. Copenhagen: WHO Regional Office for Europe; 2015

⁽http://www.euro.who.int/__data/assets/pdf_file/0005/270716/Nutrient-Profile-Model_Version-forWeb.pdf?ua=1, accessed 19 October 2015)

²⁸³ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

²⁸⁴ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

²⁸⁶ Batada A, Borzekowski D (2008). Snap! Crackle! What? Recognition of cereal advertisements and understanding of commercials' persuasive intent among urban, minority children in the US. Journal of Children and Media, 2(1):19-36.

²⁸⁷ Chamberlain LJ, Wang Y, Robinson TN (2006). Does children's screen time predict requests for advertised products? Cross-sectional and prospective analyses. Archives of Pediatrics & Adolescent Medicine, 160(4):363-368.

²⁸⁸ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

²⁸⁹ Dixon HG et al. (2007). The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences. Social Science & Medicine, 65(7):1311-1323.

²⁹⁰ Marshall D, O'Donohoe S, Kline S (2007). Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour, 6(4):164-181

²⁹¹ Chang, Angela. "The Impact of Television Advertising on Food Preferences and Consumption among Chinese Children." *China Media Research*, vol. 15, no. 1, 2019, p. 77+. Accessed 4 Dec. 2020.

²⁹² Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

²⁹³ Marshall D, O'Donohoe S, Kline S (2007). Families, food, and pester power: beyond the blame game? Journal of Consumer Behaviour, 6(4):164-181

²⁹⁴ Maryam A et al. (2005). Food advertising on Iranian children's television: A content analysis and an experimental study with junior high school students. Ecology of Food and Nutrition, 44(2):123–133.

"under the influence of advertised products". Olivares et al.²⁹⁵ found that half of 6-8 year olds and two thirds of 9-11 year olds had consumed food and drink that had been advertised in the previous day. Olivares, Yanez and Diaz²⁹⁶ later found that 40% of children interviewed had consumed advertised products.

- A.15 **Conclusions from interviews and self-reporting must be used cautiously**, especially with young children, as the results can vary significantly depending on the collection design.
- A.16 In an eye tracking study of audio-visual media with 109 children aged 6-10 food presentations were found to immediately grab children's attention and they were also able to maintain this attention. Compared to healthy products or non-edible objects, unhealthy food presentations were found not to require the same amount of visual attention in order to be remembered.²⁹⁷
- A.17 Neuro-imaging studies show that food commercials caused larger brain responses than non-food counterparts in the cuneus on both hemispheres, which played a role in dietary self-control and modulation of food craving. Other brain regions involved in food commercials processing included the left culmen, left middle occipital gyrus and the right superior parietal lobule, which could be related to reward, emotional responses and habit formation.²⁹⁸

Advertising through mobile phones increases children's liking for advertising products and children have sufficient influence over household purchasing decisions for the 'advertising affect to affect their consumption.

- A.18 A study²⁹⁹ looking at children's exposure to adverts from a number of mobile apps (including YouTube and Instagram) found that children's exposure to adverts of unhealthy products was associated with advertising strategies such as associating the product with positive emotions and promotions. Findings from the focus groups found that parents admitted buying many of the food products (either the original brand or a substitute brand) motivated by the advertising, or due to the express request of their children.
- A.19 A study looking at the effect of exposure to advergames based on a sample of 104 children aged 6-9 years old divided into three groups (no exposure/single exposure/repeated exposure) in an experimental between-subjects design setting, found that this exposure has both immediate and longer term effects on children's preferences and choices for the brand depicted, but not product category.³⁰⁰
- A.20 A review and synthesis of qualitative studies finds that young people are subject to pressures to behave according to narrow, pre-defined categories which are reinforced by wider structural mechanisms, including but not restricted to, social media use and commercial drivers, such as product marketing. Marketers ('big alcohol' and 'big food') are seen as reinforcing aspects of the social ecology by encouraging links between alcohol, food and aspects of identity, culture and personal reward as part of an iterative rather than a linear relationship. Industry feeds off young

²⁹⁵ Olivares SC et al. (1999). Publicidad televisiva y preferencias alimentarias en escolares de la Región Metropolitana (Television publicity and food preferences of school age children of the Metropolitan Region). Revista médica de Chile, 127:791-799.

²⁹⁶ Olivares S, Yáñez R, Díaz N (2003). Publicidad de alimentos y conductas alimentarias en escolares de 5° a 8° básico (Food advertising and food behavior in school age children from 5th to 8th grade). Revista chilena de nutrición, 30(1):36–42.

²⁹⁷ Naderer B, Binder A, Matthes J, Spielvogel I, Forrai M (2020) Food as an eye-catcher. An eye-tracking study on Children's attention to healthy and unhealthy food presentations as well as non-edible objects in audiovisual media. Pediatric Obesity 15(3) March 2020.

²⁹⁸ Wai Kan Yeung A, (2020) Brain responses to watching food commercials compared with nonfood commercials: a meta-analysis on neuroimaging studies, Public Health Nutrition **04 September 2020**

²⁹⁹ Jiménez-Marín, G., Elías Zambrano, R., Galiano-Coronil, A., & Ravina-Ripoll, R. (2020). Food and Beverage Advertising Aimed at Spanish Children Issued through Mobile Devices: A Study from a Social Marketing and Happiness Management Perspective. International journal of environmental research and public health, 17(14), 5056. https://doi.org/10.3390/ijerph17145056

³⁰⁰ Agante L, Pascoal A, (2019) How much is "too much" for a brand to use an advergame with children?, Journal of Product and Brand Management, Volume 28 Issue 2.

people's concerns, as well as leading them, meaning that it may be difficult to disentangle the 'real' concerns of young people ('knowing your limits') from those seeded by industry through.³⁰¹

A.21 Children participating in focus groups articulated that they themselves felt that advertisers had a share of responsibility for children's health.³⁰² Adults from deprived inner city areas in the UK participating in focus groups felt that children became more susceptible to fast food advertising as they got older.³⁰³

Establishing a causal link between food promotion and children's food preferences

- A.22 The WHO systematic review found modest strength evidence that food promotion influences food preferences and consumption behaviour.³⁰⁴ They reviewed the more complex studies in their systematic review to infer causality and demonstrate association between food promotion and children's attitudes, behaviours and health status.
- A.23 After reviewing 29 experimental studies, 1 quasi-experimental study, 13 cross-sectional studies and 3 observational studies deemed to be sufficiently complex to infer causality using Bradford-Hill's principles.³⁰⁵ The results are mixed with some finding statistically insignificant or unclear associations. However, on balance they concluded that there is modest strength evidence that food promotion influences preferences and consumption behaviour.
- A.24 Research has shown that non-branded low nutritional value foods placed in cartoons are an effective strategy for modifying children's food choices when children are aged under 9.³⁰⁶
- A.25 A cross-sectional study involving 2,422 children from six low and middle-income countries was able to show using path analysis models that media exposure and logo recognition directly predicted the selection of international foods and beverages, controlling for children's sex, age, home location and parental income.³⁰⁷

The impact of food advertising compared to other factors

- A.26 This is not covered in the main body of the impact assessment and serves as additional context.
- A.27 The WHO systematic review also looked at 8 cross-sectional studies investigating the magnitude of food promotion or television viewing compared with other potential influencing factors on **children's dietary status.** Evidence derived from the WHO systematic review already discussed suggests the following:
 - Advertising and food promotion were significant influencers of children's food behaviours.³⁰⁸ They were found to be of similar or greater magnitude to the other effects investigated, although many of the studies reviewed did not provide sufficient data to quantitatively assess the relative influences.

³⁰¹ Scott S, Elamin W, Giles E, Hillier-Brown F, Byrnes K, Connor N, Newbury-Birch D, Ells L (2019) Socio-Ecological Influences on Adolescent (Aged 10–17) Alcohol Use and Unhealthy Eating Behaviours: A Systematic Review and Synthesis of Qualitative Studies, <u>Nutrients</u>. 2019 Aug; 11(8): 1914.

³⁰² Goldthorpe J, Epton T, Keyworth C, Calam R, Armitage C, (2019) Who is responsible for keeping children healthy? A qualitative exploration of the views of children aged 8-10 years old. BMJ Open 2019;9:e025245. doi:10.1136/bmjopen-2018-025245

³⁰³ Goldthorpe J, Ali N, Calam R (2018) Providing healthy diets for young children: the experience of parents in a UK inner city. International Journal of Qualitative Studies on Health and Wellbeing Vol 13(1)

³⁰⁴ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁰⁵ Bradford-Hill A (1965). The environment and disease: association or causation? Proceedings of the Royal Society of Medicine, 58:295–300.

³⁰⁶ Villegas-Navas V, Montero-Simo M, Araque-Padilla R, (2019) Investigating the Effects of Non-Branded Foods Placed in Cartoons on Children's Food Choices through Type of Food, Modality and Age, International Journal of Environmental Research and Public Health 16(24) 5032

³⁰⁷ Borzekowski D, Pires P (2018) A six country study of young children's media exposure, logo recognition, and dietary preferences, Journal of Children and Media, 12:2, 143-158

³⁰⁸ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

- Parental supervision and control of children's exposure to food advertising was not found to have a statistically significant impact on diet. Friendship and weight status were also found to have no correlation.
- Parental dietary behaviours, parental food provision, taste and peer behaviour were all found to have statistically significant effects on children's food behaviours.
- A.28 **A range of factors have been found to be associated with or predictive of children's diets or food intake.** These include parental feeding practices (with both mothers and fathers are identified as influencing children's diets), grandparents' feeding practices, parental feeding behaviours, parental dietary intake, parental BMI, food availability in the home and food parenting styles.^{309,310,311,312,313}
- A.29 A range of positive parental feeding practices have been identified which may be associated with more healthy eating for all children. However, research has shown that child temperament plays a modifying role. Involvement in food choice and preparation was no longer associated with higher enjoyment of food and lower fussiness for children who were either highly emotional or low in sociability.³¹⁴
- A.30 Additional studies suggest that peers', and to a lesser extent siblings' influence on children's and adolescents' healthy eating behaviour more often is negative than positive.³¹⁵
- A.31 Children's poor food choices appear to be influenced by where they eat. Home and school eating are associated with better food choices, whereas other locations are associated with poor food choices. One-third of children from the least-affluent families consumed ≤25% of meals at home.³¹⁶
- A.32 A systematic review study of adolescents examined socio-ecological influences on alcohol and unhealthy eating behaviours. These behaviours cluster in adolescence and track into adulthood. The review identified range of consumption patterns including: (1) use of alcohol and unhealthy food to overcome personal problems; (2) unhealthy eating and alcohol use as fun experiences; (3) food, but not alcohol, choices are based on taste; (4) control and restraint; and (5) demonstrating identity through alcohol and food choices. The review found that young people faced pressure, reinforced by industry, to eat and drink in very specific ways, with clear social consequences if their attitudes or behaviour were deemed unacceptable.³¹⁷
- A.33 Food packaging has also been shown to influence how children and young people view and consume food products. For example, a US study showed that children were influenced by aspects of food packaging; they rated healthy and fun packaging more favourably in most cases

³⁰⁹ Rahill S, Kennedy A; Kearney J (2020) A review of the influence of fathers on children's eating behaviours and dietary intake, Appetite 2020 Apr 1;147:104540.

³¹⁰ Litchford A, Savoie R, Mateja R, Wengreen H (2020) Influence of fathers on the feeding practices and behaviors of children: A systematic review, Appetite <u>Volume 147</u>, 1 April 2020, 104558

³¹¹ Jongenelis M, Morley B, Pratt I, Talati Z (2020) Diet quality in children: A function of grandparents' feeding practices?, Food Quality and Preference <u>Volume 83</u>, July 2020, 103899

³¹² Boots S, Tiggemann M, Corsini N (2016) Maternal responses to difficult food request scenarios: Relationships with feeding style and child unhealthy snack intake, Journal of Health Psychology <u>Volume: 23 issue: 13, page(s)</u>: 1732-1742

³¹³ Scaglioni S, De Cosmi , Agostoni C, Ciappolino V, Parazzini F, Brambilla P, (2018) Factors Influencing Children's Eating Behaviours, <u>Nutrients</u>. 2018 Jun; 10(6): 706

 ³¹⁴ Holley C, Haycraft E, Farrow C (2020) Unpacking the relationships between positive feeding practices and children's eating behaviours: The moderating role of child temperament, Appetite Vol 147 1 April 2020, 104548
 ³¹⁵ Rageliene T; Grønhøj A

³¹⁶ Ziauddeen N, Page P, Penney T, Nicholson S, Kirk S, Almiron-Roig E (2018)Eating at food outlets and leisure places and "on the go" is associated with less-healthy food choices than eating at home and in school in children: cross-sectional data from the UK National Diet and Nutrition Survey Rolling Program (2008-2014), American Journal of Clinical Nutrition 2018 Jun 1;107(6):992-1003

³¹⁷ Scott S, Elamin W, Giles E, Hillier-Brown F, Byrnes K, Connor N, Newbury-Birch D, Ells L (2019) Socio-Ecological Influences on Adolescent (Aged 10–17) Alcohol Use and Unhealthy Eating Behaviours: A Systematic Review and Synthesis of Qualitative Studies, <u>Nutrients</u>. 2019 Aug; 11(8): 1914

suggesting that children respond more positively to visually appealing packaging than to plain packaging.³¹⁸

Impact of online HFSS food advertising to children

- A.34 **Online advertising has a greater return than television campaigns:** The direct return for online advertising for Coca-Cola and Cadbury was reported to be four times greater than for television campaigns in France and the USA. For example, for a Coca-Cola campaign in France, Facebook accounted for 2% of marketing cost, but 27% of incremental sales.³¹⁹
- A.35 **Rewarded video advertising significantly influences choice of the test confectionary brand:** A randomized experimental study³²⁰ looking at how online adverts of unhealthy confectionery influence children's attitudes and choices found that children's choice of the test confectionary brand was significantly influenced by the rewarded video advertising condition (compared with control, banner advertising, and advergame conditions). This technique is prevalent across online and application games that children play.
- A.36 Advergaming has similar time and repetition effects on children as on adults raising questions about the ethicality of using advergames with children.³²¹
- A.37 Exposure to online ('advergame') advertising combined with TV advertising has been shown to exert a stronger influence on children's food consumption than TV advertising alone. A within-subject, randomised, crossover, counterbalanced study shows that increased consumption when offered a snack after being exposed to advertising was not compensated for at lunch suggesting that unhealthy food advertising exposure contributes to a positive energy-gap, which could cumulatively lead to the development of overweight.³²²
- A.38 An explorative experimental study conducted in the Netherlands to explore attentional bias in advergames suggests that overweight and hungrier children are more strongly affected by this form of food advertising than less hungry and normal weight children.³²³

The longitudinal impact of children's unhealthy food advertising on dietary markers as adults

- A.39 DHSC commissioned the NIHR Obesity Policy Research Unit (OPRU) to conduct a rapid literature search to identify research that looked at how food advertising impacts child preferences over time, including as they progressed into adulthood.
- A.40 Papers were sourced from Medline, Psycinfo, Epistamonikas and DopHER databases between 2008 and 2018. The search returned 696 results, then filtered down to 16 articles, 5 of

³²² Norman J, Kelly B, McMahon A, Boyland E, Baur, Chapman K, King L, Hughes C, Bauman A. (2018) Sustained impact of energy-dense TV and online food advertising on children's dietary intake: a within-subject, randomised, crossover, counter-balanced trial. Int J Behav Nutr Phys Act. 2018 Apr 12;15(1):37.

³¹⁸ Dial L, Musher-Eizenman D (2020) Power of packaging: Evaluations of packaged fruits and vegetables by school-age children in the U.S. Appetite Vol 148 May 2020

 ³¹⁹ Exploring digital ROI for FMCG brands. New York, NY: Microsoft ; 2013 (http://tinyurl.com/ozekqyv).
 ³²⁰ Smith R, Kelly B, Yeatman H, Moore C, Baur L, King L, Boyland E, Chapman K, Hughes C, Bauman A. Advertising Placement in Digital Game Design Influences Children's Choices of Advertised Snacks: A Randomized Trial. J Acad Nutr Diet. 2020 Mar;120(3):404-413. doi: 10.1016/j.jand.2019.07.017. Epub 2019 Dec 28. PMID: 31892500.

³²¹ Luisa Agante, Ana Pascoal (2019) How much is "too much" for a brand to use an advergame with children?, Journal of Product and Brand Management, Volume 28, Issue 2

³²³ Folkvord F, Anschütz D, Buijzen M (2020) Attentional bias for food cues in advertising among overweight and hungry children: An explorative experimental study. Food Quality and Preference, Vol 79 Jan 2020

which specifically looked at the longitudinal impacts of food adverts rather than general television exposure.^{324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339}

- A.41 The results we can draw from this literature search are limited. The primary reasons for this are: television viewing being used as a proxy for advertising exposure, low quality methodology, non-dietary markers as outcomes and not being conducted over a significant time period.
- A.42 Four papers demonstrated a longitudinal relationship between television viewing in period 1 and BMI or another dietary marker in period 2. However, these studies ranged over 2-5 years and focused on television viewing rather than advertising. This means they can't inform us on the specific impacts of advertising over time as television viewing will likely be associated with a complex set of social and behavioural factors affecting BMI unrelated to advertising.^{340,341,342,343}

³²⁴ Aires, L., Andersen, L., Mendonca, D. et al (2010). A 3-year longitudinal analysis of changes in fitness, physical activity, fatness and screen time. Acta Paediatrica. 99. 140-144.

³²⁵ Andreyeva ,T., Kelly, I.R. and Harris, J.L. (2011). Exposure to food advertising on television: Associations with children's fast food and soft drink consumption and obesity. Economics and Human Biology. 9. 221–233. ³²⁶ Barlett, N.D., Gentile, D.A., Barlett, C.P. et al (2012). Sleep as a mediator of screen time effects on US

children's health outcomes: A prospective study. Journal of Children and Media. 6. 37-50.

³²⁷ Barr-Anderson, D.J., Larson, N.I., Nelson, M.C. et al. (2009). Does television viewing predict dietary intake five years later in high school students and young adults? International Journal of Behavioral Nutrition & Physical Activity. 6. 7.

³²⁸ Beales, J. and Kulick, R. (2013). Does advertising on television cause childhood obesity? A longitudinal analysis. Journal of Public Policy & Marketing. 32. 185-194.

³²⁹ Busse, P. and Piotrowski, J.T. (2017). Assessing the longitudinal relationship between Peruvian children's TV exposure and unhealthy food consumption. Journal of Children and Media. 11. 180-197.

³³⁰ Chou, S.Y., Rashad, I. and Grossman, M. (2008). Fast-Food Restaurant Advertising on Television and Its Influence on Childhood Obesity. The Journal of Law and Economics. 51. 4. 599-618.

³³¹ Falbe, J., Rosner, B., Willett, W.C. et al. (2013). Adiposity and different types of screen time. Pediatrics. 132. 1497-1505.

 ³³² Falbe, J., Willett, W.C., Rosner, B. et al. (2014). Longitudinal relations of television, electronic games, and digital versatile discs with changes in diet in adolescents. American Journal of Clinical Nutrition. 100. 1173-1181.
 ³³³ Folkvord, F., Anschutz, D.J. and Buijzen, M. (2016). The association between BMI development among young children and (un)healthy food choices in response to food advertisements: a longitudinal study. International Journal of Behavioral Nutrition & Physical Activity.13. 16.

³³⁴ Gebremariam, M.K., Bergh, I.H., Andersen, L.F. et al. (2013). Are screen-based sedentary behaviors longitudinally associated with dietary behaviors and leisure-time physical activity in the transition into adolescence? The International Journal of Behavioral Nutrition and Physical Activity. 10. ID9.

³³⁵ Jayawardene, W.P. (2015). Accumulation of obesogenic and health-promoting behaviors in young adulthood: A theory-driven analysis of associations and sequences. Dissertation Abstracts International: Section B: The Sciences and Engineering. 75.

 ³³⁶ Notten, N., Kraaykamp, G. and Tolsma, J. (2013). Parents, television and children's weight status: On lasting effects of parental television socialization in the Netherlands. Journal of Children and Media. 7. 235-252.
 ³³⁷ Olafsdottir, S., Eiben, G., Prell, H. et al. (2014). Young children's screen habits are associated with consumption of sweetened beverages independently of parental norms. International Journal of Public Health. 59. 67-75.
 ³³⁸ Rutherford, L., Brown, J.E., Skouteris, H. et al. (2015). Screen media, parenting practices, and the family environment in Australia: A longitudinal study of young children's media use, lifestyles, and outcomes for healthy

weight. Journal of Children and Media. 9. 22-39. ³³⁹ Veerman, J.L., Van Beeck, E.F., Barendregt, J.J. et al. (2009). By how much would limiting TV food advertising reduce childhood obesity? European Journal of Public Health. 19. 4. 365-369.

³⁴⁰ Barr-Anderson, D.J., Larson, N.I., Nelson, M.C. et al. (2009). Does television viewing predict dietary intake five years later in high school students and young adults? International Journal of Behavioral Nutrition & Physical Activity. 6. 7.

³⁴¹ Falbe, J., Rosner, B., Willett, W.C. et al. (2013). Adiposity and different types of screen time. Pediatrics. 132. 1497-1505.

 ³⁴² Falbe, J., Willett, W.C., Rosner, B. et al. (2014). Longitudinal relations of television, electronic games, and digital versatile discs with changes in diet in adolescents. American Journal of Clinical Nutrition. 100. 1173-1181.
 ³⁴³ Rutherford, L., Brown, J.E., Skouteris, H. et al. (2015). Screen media, parenting practices, and the family environment in Australia: A longitudinal study of young children's media use, lifestyles, and outcomes for healthy weight. Journal of Children and Media. 9. 22-39.

A.43 One study looked specifically at the impact of advertising between 1996 and 2000 for 3-11 year olds and 1997 to 1999 for 12-18 year olds found that an additional half hour of fast food advertising per week resulted in a significant increase in the probability of being overweight.³⁴⁴

Table A1: Impact of an additional half hour of fast food advertising per week on overweight status

		% point change in the probability of being overweight	% change in the number of overweight children in a fixed population		
3-11		2.2%	15%		
Boys 12-18	12-18	2.5%	17%		
3-11 Cirlo		1.6%	12%		
Giris	12-18	0.6%	4%		

- A.44 One study showed no relationship between television viewing in period 1 and BMI in period 2 (5 years later). However, there was a relationship between current television viewing and BMI. For the reasons described above this tells us little about advertising specifically, but it may suggest that current exposure is more important than past exposure.³⁴⁵
- A.45 The remaining studies from the NIHR OPRU literature search were discounted for varying reasons; including low quality methodology, non-dietary markers as outcomes and not being conducted over a significant time period.

How children's food preferences impact their adult food preferences

- A.46 DHSC also commissioned the NIHR OPRU to undertake a further rapid evidence search for evidence on food preferences tracking over time. The NIHR OPRU search generated 560 results, with 8 papers presented to DHSC after screening.^{346,347,348,349,350,351,352,353}
- A.47 Six of these were discounted due to: low reliability methods, such as self-reporting diet from fifty years ago; or due to not measuring individual dietary patterns, but generic population indicators such as average intake of sugar between childhood and adulthood.

³⁴⁸ Bolt-Evensen, Kathrine, et al. "Consumption of sugar-sweetened beverages and artificially sweetened beverages from childhood to adulthood in relation to socioeconomic status–15 years follow-up in Norway." International Journal of Behavioral Nutrition and Physical Activity 15.1 (2018): 8.

³⁴⁴ Chou, S.Y., Rashad, I. and Grossman, M. (2008). Fast-Food Restaurant Advertising on Television and Its Influence on Childhood Obesity. The Journal of Law and Economics. 51. 4. 599-618.

³⁴⁵ Beales, J. and Kulick, R. (2013). Does advertising on television cause childhood obesity? A longitudinal analysis. Journal of Public Policy & Marketing. 32. 185-194.

³⁴⁶ Craigie, Angela M., et al. "Tracking of obesity-related behaviours from childhood to adulthood: a systematic review." Maturitas 70.3 (2011): 266-284.

³⁴⁷ Haraldsdottir, Alfheidur, et al. "Dietary habits in adolescence and midlife and risk of breast cancer in older women." PloS one 13.5 (2018): e0198017.

 ³⁴⁹ Movassagh, Elham Z., et al. "Tracking dietary patterns over 20 years from childhood through adolescence into young adulthood: The Saskatchewan Pediatric Bone Mineral Accrual Study." Nutrients 9.9 (2017): 990.
 ³⁵⁰ McCourt, Hannah J., et al. "Dietary patterns and cardiovascular risk factors in adolescents and young adults: the Northern Ireland Young Hearts Project." British Journal of Nutrition 112.10 (2014): 1685-1698.

³⁵¹ Winpenny, Eleanor Margaret, et al. "Changes in consumption of added sugars from age 13 to 30 years: a systematic review and meta-analysis of longitudinal studies." Obesity Reviews 18.11 (2017): 1336-1349.
³⁵² Winpenny EM, Penney TL, Corder K, White M, Sluijs EM. Change in diet in the period from adolescence to early adulthood: a systematic scoping review of longitudinal studies. International Journal of Behavioral Nutrition and Physical Activity. 2017 Dec;14(1):60.

³⁵³ "Changes in diet through adolescence and early adulthood: longitudinal trajectories and association with key life transitions" by Winpenny et al., 2018.

- A.48 One systematic review identified 11 studies and found all studies found positive correlations between dietary behaviours in childhood and adulthood. The correlations ranged from very weak to reasonably strong (r = 0.009 to r = 0.66).³⁵⁴
- A.49 A study in Canada over 20 years found statistically significant poor-to-fair tracking of dietary patterns in males and females (0.19-0.28).³⁵⁵ The dietary markers used were based on a Western diet and are similar to what we would expect in the UK. The cultural context of dietary behaviours over time may be different in Canada meaning we should use these results with caution.
- A.50 Two further retrospective studies found links between self-reported childhood diets and diet at university age adults. Based on these findings both sets of authors concluded that early exposure to foods is a determinant in their consumption later in life. The robustness of these results is reduced by the reliance of recall of childhood diet by participants. Further, as noted elsewhere in this impact assessment, the most significant ill effects of obesity are typically experienced in middle age onward. It is therefore not possible to conclude from these studies that any influence maintained into early adulthood would then be maintained at later stages.

Impact of Advertising on health beliefs – health halo effects

- A.51 Studies have been addressing the prevalence of health-related messaging used in food advertising. One study noted an increasing trend between 2008-2010 in the depiction of physical activity in food and beverage adverts and an increase from 20.7% to 24.8% in adverts featuring health and nutrition claims, most of which were for non-core foods.
- A.52 A US experimental study reports that exposure of children aged 5-6 and 10-11 to an advertisement for a high sugar cereal depicting physical activity had an immediate strengthening effect on children's perceptions of the product's healthfulness. The ability to recognize juxtaposed beliefs regarding a product's healthfulness protected children from some of the influence of this marketing strategy.
- A.53 An experimental study involving 138 children aged 7-11 showed that children in the 'health halo' condition rated the advertised nutrient-poor products as significantly healthier compared with children in other conditions but found no evidence that healthy lifestyle messages and/or healthy food commercials improved children's attitudes about nutrition, exercise or healthy snack consumption.
- A.54 A small study of 35 adults to assess the effect of healthy or unhealthy food brands on consumer ratings of a food's perceived healthfulness, caloric content, and estimated price found that pairing an unhealthy food with a "healthy brand" led to increased ratings of healthfulness, decreased estimates of caloric content and increased price. Pairing a healthy food with an "unhealthy brand" led to decreased ratings of healthfulness, increased estimates of caloric content, and decreased price.

Impact of Advertising on Calorie Intakes

- A.55 There are multiple studies showing food advertising increases children's requests for advertised foods.
 - Yavas & Abdul-Gader found children asked their parents to buy food they had seen advertised.³⁵⁶ The WHO review on food promotion³⁵⁷ reported a further nine studies that found parents believed their children were influenced by food promotion to request specific foods.

³⁵⁵ Movassagh, Elham Z., et al. "Tracking dietary patterns over 20 years from childhood through adolescence into young adulthood: The Saskatchewan Pediatric Bone Mineral Accrual Study." Nutrients 9.9 (2017): 990.
 ³⁵⁶ Yavas U. Abdul-Gader A (1993). Impact of TV commercials on Saudi children's purchasing behaviour.

Marketing Intelligence and Planning, 11(2):37–43.

³⁵⁴ Craigie, Angela M., et al. "Tracking of obesity-related behaviours from childhood to adulthood: a systematic review." Maturitas 70.3 (2011): 266-284.

³⁵⁷ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

• A US study randomly assigned mothers and children to view a cartoon with or without food advertising. Overall, the study found that children exposed to the food advertising made more requests for the advertised products when shopping.³⁵⁸

A.56 A study shows that the impact of advertising on dietary intake can be sustained.

• A randomised, crossover, counter-balanced trial involving children participating in six day holiday camps in Australia found that children's exposure to healthy food marketing was not compensated for during the children's time at camp thus creating a positive energy that could lead to excess weight gain in children.³⁵⁹

A.57 Studies also show that food advertising increases children's immediate consumption of snacks.

- a) In a crossover, randomised controlled trial, 101 UK children (forty male) aged 8–10 years were exposed to high-sugar food/beverage and toy advertisements embedded within a cartoon. Their subsequent intake of snack foods and beverages varying in sugar content was measured. This experiment found that children consumed greater amounts of energy and sugar following exposure to food advertisements compared to when exposed to toy advertisements. Children of healthy weight and with dental caries had the greatest intake response to food advertising exposure, but there were no differences by SES.³⁶⁰
- b) An Iranian study involving 330 students aged 7-11 found that children tended to choose more unhealthy foods after exposure to unhealthy food advertising. This effect was greater for a higher level of entertainment.³⁶¹

A.58 Research has found that parents are influenced by these food requests and change their purchases as a result.

- A survey of 348 mothers found 33% reported their children requested food products advertised on TV during TV viewing, 40% requested products during shopping trips and 9% reported that refusal would provoke arguments or crying.^{362,363}
- Musaiger et al. found that children request food products they'd seen advertised, and that mothers in lower socioeconomic groups were more responsive to their children's requests.³⁶⁴
- A review of the literature by McDermott et al. found strong evidence that food promotion does encourage children to pester their parents and that it results in parents buying less healthy products.^{365,366}
- 70% of parents purchased at least one food item requested during a shopping trip and most of the items requested by children were for unhealthy foods.³⁶⁷

³⁵⁸ Brody GH, Stoneman Z, Lane TS, Sanders AK. Television food commercials aimed at children, family grocery shopping and mother-child interactions. Family Relations. 1981 Jul 1:435-9.

 ³⁵⁹ Norman J, Kelly B, McMahon A, Boyland E, Baur L, Chapman K, King L, Hughes C, Bauman A (2018)
 Sustained Impact of Energy Dense TV and Online Food Advertising on Children's Dietary Intake: a within subject, randomised, cross-over, counter balanced trial, International Journal of Behavioural Nutrition and Physical Activity
 ³⁶⁰ Kearney J, Fitzgerald R, Burnside G, Higham S, Flannigan N, Halford J, Boyland E (2020) Television advertisements for high-sugar foods and beverages: effect on children's snack food intake, British Journal of Nutrition

³⁶¹ Esmaeilpour F, Heidarzadeh Hanzaee K, Mansourian Y, Khounsiavash M (2017) Children's Food Choice: Advertised Food Type, Health Knowledge and Entertainment, Journal of Food Products Marketing 24(4)

³⁶² Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁶³ Aktas Arnas Y (2006). The effects of television food advertisement on children's food purchasing requests. Pediatrics International, 48(2):138-45.

 ³⁶⁴ Musaiger AO et al. (1986/4). Children's response to television food advertising in Bahrain. Hygie, V:30–35.
 ³⁶⁵ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁶⁶ McDermott L, O'Sullivan T, Stead M, Hastings G. International food advertising, pester power and its effects. International Journal of Advertising. 2006 Jan 1;25(4):513-39.

³⁶⁷ Campbell S, James EL, Stacey FG, Bowman J, Chapman K, Kelly B. A mixed-method examination of food marketing directed towards children in Australian supermarkets. Health Promotion International. 2012 Nov 15;29(2):267-77.

- The WHO review on food promotion also reported from the nine studies considered above that most parents accede to their children's requests at least sometimes.³⁶⁸
- A natural experiment between English-speaking and French-speaking in children in Quebec found that French-speaking children were more likely to watch French-language Quebec TV; which had a ban on advertisements targeting children. This meant despite still having access to American TV, they were less likely to be exposed to advertising for children's cereals. Regression analysis found that exposure to American television was significantly associated with increased household purchase of the advertising cereals, independent of income and language variables.^{369,370}
- A.59 **Children can make some of their own purchasing decisions.** Olivares, Yanez & Diaz found that 34% of children 'always' had the money to buy whatever food and drink products they wished and 64% said they 'sometimes' had the money although this study was not from the UK.^{371,372}

Calorie impact of food advertising online to all children

- A.60 There is very limited literature that could allow us to assess the full marginal impact of online advertising. However, the NIHR OPRU conducted a meta-analysis³⁷³ on five studies from the same author investigating the impact of children's exposure to food adverts in advergames.
- A.61 It was not possible to calculate the advert duration as unhealthy food images were present for the duration of the game. Children exposed to food adverts in advergames were found to consume on average an additional 53.2kcal (31.5 74.9 at a 95% confidence interval).
- A.62 This is a specific example and is not representative of all food advertising online. However, it does suggest that the constant exposure could have a strong effect on children's food preferences.
- A.63 An Australian study which randomised 160 children (age 7-12) randomised to either a multiple- or single- media condition and exposed to food and non-food advertising in an online game and/or a television cartoon found that all children in the multiple-media condition ate more at a snack after exposure to food advertising compared with non-food advertising; this was not compensated for at lunch, leading to additional daily food intake of 194 kJ. Exposure to multiple-media food advertising compared with a single-media source increased the effect on snack intake by a difference of 182 kJ. Food advertising had an increased effect among children with heavier weight status in both media groups.³⁷⁴

³⁶⁸ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁶⁹ Goldberg ME (1990). A quasi-experimental assessing the effectiveness of TV advertising directed to children. Journal of Marketing Research, 27(4):445–454.

³⁷⁰ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁷¹ Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization, WHO Press; 2009.

³⁷² Olivares S, Yáñez R, Díaz N (2003). Publicidad de alimentos y conductas alimentarias en escolares de 5° a 8° básico (Food advertising and food behavior in school age children from 5th to 8th grade). Revista chilena de nutrición, 30(1):36–42.

³⁷³ Russell, Simon J., Helen Croker, and Russell M. Viner. "The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis." *Obesity Reviews*(2018).

³⁷⁴ Norman J, Kelly B, McMahon A, Boyland E, Baur L, Chapman K, King L, Hughes C, Bauman A (2018) Sustained impact of energy-dense TV and online food advertising on children's dietary intake: a within-subject, randomised, crossover, counter-balanced trial, International Journal of Behavioural Nutrition and Physical Activity
Annex B – HFSS Food Definition

- B.1 Government has decided to use a two-stage approach to defining the products in scope of restrictions. A product will be classed as HFSS if it:
 - a. falls into one of the product categories listed below
 - b. fails the 2004/05 nutrient profiling model

Product categories in scope

B.2 The product categories outlined in table B1 are in scope of restrictions. These categories are taken from the Soft Drinks Industry Levy (SDIL) and the PHE sugar and calorie reformulation programmes. We have refined the list since we consulted in 2019. This is to reflect the newly published categories in the PHE calorie reformulation programme and to ensure the restrictions are targeted to those categories of most concern to childhood obesity.

Table B1 - products categories included and excluded from the scope of the restrictions

Product categories included in the HFSS definition	Product categories now removed from the PHE calorie reduction programme	Product categories included in the reformulation programme but excluded from the HFSS definition
Soft drinks with added sugar	Egg products	Garlic/Cheesy bread
Chocolate Confectionary	Meat products	Sweet spreads
Sugar confectionary	Starter/side dishes/small plates (retail)	Pastry products
Juice drinks with added sugar	Prepared pasta/rice/noodles products with additional ingredients	
Sweet biscuits	Cooking and serving sauces	
Ice cream		
Crisps and savoury snacks		
Pizza		
Cakes		
Breakfast Cereal		
Yogurts		
Morning goods		
Pudding and dairy desserts		
Milk drinks with added sugar		
Chips and potato products		
Complete main meals (ready meals)		
Family meal centres		
Breaded and battered products		
Main meals (out of home)		
Starters/side dishes/small plates (out of home)		
Children's meal bundles (out of home)		
Sandwiches (out of home)		

2004/05 Nutrient Profiling Model

- B.3 The 2004/5 Nutrient profiling model (NPM) was developed by the Food Standards Agency (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.
- B.4It 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 less healthy food.
- B.5 '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 less healthy, only if it additionally scores little on 'C' nutrients.
- B.6 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 and drink used in this consultation.
- B.7 All food and drink are scored, there are no exemptions.

Calculations

B.8There are three steps to working out the score: calculating 'A' points, calculating 'C' points and combining these into an overall score.

Calculating 'A' points

B.9Total '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 B2 below.

Table B2	2 Points so	ored by 'A	' category	v nutrients	per	100g

Points	Energy (kJ)	Saturated Fat (g)	Total Sugars (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

B.10 A maximum of ten points can be awarded for each nutrient.

Calculating 'C' points

B.11 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 B3 below.

Table B3 Points scored by 'C' category nutrients per 100g

				Drotoin (gromo)
	Fruit, vegetable	INSP FIDre	or AUAC Fibre	Protein (grams)
Points	and Nuts (%)	(grams) (a)	(grams) (a)	(b)
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.

B.12 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

B.13 Overall score for a food is dependent on how many 'A' points it scores and how many points for fruit, veg 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 + saturated fat + sugars + sodium) – (fruit, veg 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 + saturated fat + sugars + sodium) – (fruit, veg and nuts + fibre)

Note that in this case foods are not allowed to score for protein.

Annex C – Kantar Consulting - HFSS Advertising Analysis: Methodology summary

About Kantar Consulting

- C.1 Kantar Consulting is part of Kantar, one of the world's largest insight, information and consultancy groups, and the data investment management division of WPP. Kantar has over 1,000 analysts and own market-leading assets including PoweRanking, GrowthFinder, Global Monitor, Retail IQ, RichMix, XTEL and Marketing, Insights and Purpose 2020. They track 1,200 retailers globally, have purchase data on over 200 million shoppers and forecast social, cultural and consumer trends across the world.
- C.2Kantar Consulting has co-ordinated best-in-class analytics and modelling resource and assets within the group, tailored to the specific objectives of this engagement.
- C.3A technical advisory panel comprised of representatives from Department for Digital, Culture, Media and Sport, Department of Health and Social Care, Public Health England, Behavioural Insights Team and the Office for National Statistics provided technical advice and scrutiny of the research methodology.

Baselining methodology

The data sources used:

Nielsen (TV spends and categorisation)

- C.4Nielsen measures more than half of the world's total broadcast, print and online advertising. In Europe, advertising spend is a multi-billion pound industry spanning TV, print, online display, radio, out-of-home, direct mail and cinema advertising.
- C.5They provide advertisers, agencies and media owners with a picture of the competitive landscape in Europe by measuring who advertised, on which medium, how much was spent by campaign, how many ads and ad formats. They can then break this down further by key industry sector and individual advertiser.

BARB (TV impacts)

C.6BARB is responsible for delivering the UK's television audience measurement currency. They commission research companies Ipsos MORI, Kantar Media and RSMB to collect data that represent the viewing behaviour of the UK's 27 million TV households. Each year, £7.5 billion is invested in the production and distribution of programme and commercial content, which is guided and accounted for by BARB data.

ComScore (Online spends and impressions)

- C.7Comscore is a global media measurement and analytics company providing marketing data and analytics to enterprises; media and advertising agencies; and publishers. In the UK, their work is accredited by the Audit Bureau of Circulations (ABC) and UK Online Measurement (UKOM).
- C.8As their advertising dataset only tracks online display, other sources of data have been used to create estimate the total size of the market (explained in more detail later in this section).

Broadcast Baseline Methodology

Creating a 2017 dataset of commercial TV impacts

C.9 Initially, 2017 TV spends for all food, drink and restaurant advertisers were sourced from Nielsen using Addynamix (reporting software). The Nielsen data provided a detailed and comprehensive list of all products which were advertised on television in 2017 including product category, advertiser and specific product – accounting for £891m in reported TV spends. Data for alcohol and infant formula advertising, outside the scope of the policy, was captured in this set but removed

at the beginning of the analysis – reducing the total reported spends to £789m. This dataset revealed that 48% of listed product advertising only represented 7.5% of market impacts. This created an opportunity to expedite the analysis by separating out this "long tail" of values. The team focussed on pairing nutritional data to the remaining 52% of the reported 807 products, which represented 92.5% of the total market impacts. The observed nutritional composition of the 92.5% was later applied to the remaining 'long tail' of advertising to arrive at an assessment for the whole market.

C.10 Nielsen spend data was replaced with Broadcasters' Audience Research Board (BARB) actual (un-weighted) impacts for adults, children 4-15, children 4-6, children 7-10 and children 11-15. The data replacement was achieved by reporting all impacts for the same Nielsen-defined categories (food, drink, restaurants and bars) at a brand (product) level. Each line was manually checked – where BARB product attribution for impacts was unclear, investigation of creative (recorded by Nielsen), film titles and codes (recorded by BARB), product categorisation (recorded by both) and campaign timings were used to attribute the correct BARB impacts to the Nielsen-defined advertisers.

Calculating time of day distribution of impacts (for TV)

- C.11 The process of categorising which adverts were for HFSS and non-HFSS products is outlined in the methodology section <u>Attributing Nutrient Profile Model (NPM) scores data to impacts for TV and online</u>.
- C.12 Once this process was complete, HFSS child impact distributions were generated by analysing the distribution of all HFSS spend by time of day and adjusted (using the median value) based on the distribution of all 4-15 commercial impacts by time of day (see chart below). This generated an estimated delivery of HFSS impacts by day time for 4-15s which takes into account the existing restrictions to HFSS products. For non-HFSS and brand impacts for kids, this is based on natural delivery of child impacts.



Figure C1: Advertising spending patterns

Calculating minutage

C.13 We looked at the proportion of spend by time length for HFSS advertising within the Nielsen dataset. The split for spend was applied to impacts to estimate the distribution of HFSS impacts by time length. Assuming each impact is a fully watched ad, we multiplied impacts by time length to get total seconds and minutes of HFSS advertising seen by children in 2017. In summary:

Gross minutage = sum of (impacts X time length)

Creating a realistic dataset for TV spends

- C.14 To add another level of accuracy to Nielsen reported spends for the food and drink category, we were able to recalibrate the reported data based on actual market spend data.
- C.15 When an advertiser books airtime for a TV campaign it is preceded by a series of negotiations (usually conducted on their behalf by a specialist buying agent). These negotiations usually result in a discount versus "station" or "rate card" price. It is understood that Nielsen reporting does not factor in trading discounts that will apply to most advertisers in this category (trading at up to an estimated 65% from station price), and that their methodology makes assumptions about the application of premium trading audiences, that do not always apply in reality. Nielsen spends are therefore likely to be more representative of the station price rather than the actual traded price and could represent an incorrect level of revenue to broadcasters.
- C.16 We compared actual and reported total TV spends for a representative sample drawn from 50+ food and drink advertisers that represented an estimated 16-20% of the total category TV spend in 2017.
- C.17 They estimate Nielsen reported food and drink market spends to be, on average, 62% higher than actuals.

Online Baseline Methodology

Estimating total market spend online

- C.18 Despite digital advertising having the lion's share of the advertising market overall, Nielsen data shows that digital is not a popular format for food and drink advertising. The data shows that only 8% of food advertising spend and 5% of drink spend, ranking 22nd and 27th lowest respectively out of 31 advertising categories for digital representation. N.B. Nielsen advertising data, like all providers, cannot provide 100% coverage of the online market and this total would include a component of alcohol spend.
- C.19 The IAB UK & PwC Digital Adspend Study³⁷⁵ is an annual census of UK media owners and advertising intermediaries and covers desktop and mobile advertising expenditure. The total size of the online advertising market was £13.6bn in 2019. Search and classified advertising spend is excluded from the total as these adverts are substantially different from video and display adverts, for which the available quantitative evidence relates. Firstly, these adverts tend to be in text form, and secondly these adverts usually relate to information an individual has actively sought out. Therefore, the effect of this type of advertising on consumption is much more complicated to measure. Removing search and classifieds, the total spend is £5.4bn.³⁷⁶ This can be seen in Table C1 through the combination of the online display and other categories.

³⁷⁵<u>https://www.iabuk.com/adspend#:~:text=The%20latest%20IAB%20UK%20and,advertising%20to%20deliver%2</u> <u>0business%20results</u>

³⁷⁶ Search advertising contains a component of search-engine optimisation, which impacts the order of site search results and likelihood of directing children to HFSS advertisers, but does not constitute a HFSS advert. It has not been possible to estimate the child impressions associated with this form of spend. As per the 2019 consultation stage impact assessment

⁽https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786554/advertis ing-consultation-impact-assessment.pdf), search and classified ads have been excluded from the modelling. (Accessed: 02/10/2020)

Table C1: IAB/PwC Adspend report, 2019 headline figures UK

Туре	Adspend 2019 (£m)
Search	6,790
Online display	5,280
Online classified	1,450
Other	83
Total	13,603

- C.20 As presented in the <u>Section D</u>, we estimate that 14% of all online advert spend is in the food and drink category.
- C.21 Evidence of the volume of HFSS advertising online is limited. The most reliable and accessible measure of what has been advertised and audience impacts, comes from ComScore. Their data covers display advertising on laptops and personal computers, which estimates show represents only 9% of the digital advertising market that would contain food and drink advertising. For the purposes of this IA, the same sample that was used for the 2019 consultation stage IA is being used.
- C.22 Based on this data and the proportion of food and drink adverts that were HFSS in the ComScore sample, it is estimated that 46% of online food and drink adverts are for HFSS products. The estimate for the total size of the online HFSS food and drink advertising market is £339m (46% of £743m).
- C.23 Using a set of estimated industry cost per thousand advertising impressions from GroupM investment, we were able to convert estimated spends into all individual impressions for desktop and mobile display, video and native advertising. Other channels where there are estimated spends (digital sponsorship, search and classified) cannot be expressed in terms of impressions as they are not measured or traded on this metric.

	Proportion of Spend	Digital Market Spend £m	Digital Food/Drink Spend £m	Estimated Individual Impressions (m)
Display banners desktop	8.9%	894	8.0	994
Display banners mob	4.1%	418	3.7	465
Display video - pre roll	6.7%	671	6.0	271
Display video outstream	8.9%	900	8.0	1,601
Other display video	0.4%	38	0.3	34
Native	10.2%	1,032	9.2	18,361
Sponsored	1.2%	124	1.1	N/A
Other display	1.0%	101	0.9	225
Search	57.7%	5,821	51.8	N/A
Classified	N/A	1,470	N/A	N/A
Other	0.8%	84	0.8	150
Total		11,553	89.7	21,951

Table C2. Estimates for all food and drink online advertising impressions

C.24 This led us to a total estimated figure of 22bn total individual impressions for food, drink and restaurant advertising across desktop and mobile display, video and native advertising.

Estimating HFSS splits online

- C.25 Detailed listings of online impressions at a product level are required to classify online ads using the Nutrient Profile Model (NPM). The best available data with this granularity comes from ComScore (a UKOM accredited global online measurement organisation <u>https://www.comscore.com/About/Third-Party-Review</u>). Unfortunately, ComScore is only able to track desktop display advertising (approx. 9% of all online spend) and the level of coverage delivered is not available.
- C.26 ComScore reports 238m adult impressions for food, drink and restaurant advertisers on desktop display in 2017. A review of this data revealed that £2.3m of advertising spend was attributable to HFSS products, with an estimated 8.3m commercial impressions being delivered to children. We assume that this does not represent full coverage of all HFSS advertising online, but instead have used it as a representative sample to derive HFSS splits.
- C.27 63 out of 263 products identified on ComScore were international products that are not widely available in the UK. (i.e whilst they may be purchasable via global online retailers (like Amazon), they are not stocked by UK-based retailers). The advertising inventory reported is likely to be part of an international ad buy that delivers impressions across global media platforms to access markets where their products are stocked, these advertisers may be accepting wasted inventory in markets where they are not stocked.

Estimating child exposure online

- C.28 ComScore, unlike BARB, cannot report advertising impressions for a given audience. Kantar Consulting have therefore used a bespoke modelling tool – CrossMedia – to estimate levels of exposure for children based on the reported all adult impressions. Please see more detail on the functionality of the CrossMedia tool below.
- C.29 The team used the sample of all adult impressions derived from ComScore and split these according to nutrient value to model the equivalent exposure to children.
- C.30 It is important to note that this tool estimates relative potential exposure and cannot take into account the existing regulations for HFSS products online. It therefore represents an upperbound estimate of the potential reach for HFSS advertised products online (assuming that these estimates accurately capture the market).
- C.31 The team have assumed that the same split of HFSS advertising observed in the desktop display sample applies to all other impact-bearing digital channels (desktop and mobile display, video and native advertising).

About CrossMedia (A Kantar Consulting bespoke tool)

CrossMedia is a GroupM planning tool which allows planners to look at the levels of exposure received by a given audience, based on a given weight of advertising.

The tool uses a modelling approach called agent-based modelling. Agents in the model are entities which represent actual people using media in their everyday lives. Agents are created based on respondent-level answers to surveys asking about socio-demographic features and media behaviour patterns.

On a day-to-day basis, the tool is fuelled by LIVE Panel survey data, which reports media and touchpoint consumption for over 30 countries and 35 paid, owned and earned touchpoints. Applying agent based modelling to this data, and calibrating it with local media measurement sources, allows for the sophisticated prediction of campaign exposure on multiple touchpoints in a single market.

The LIVE Panel hub data is based on all adults but the tool has been adapted to report against children too. Individual media consumption data from the YouthTGI survey (<u>https://www.kantarmedia.com/uk/our-solutions/consumer-and-audience-targeting/tgi-survey-data</u>) and BARB data was ported into the system to allow reporting of child audiences 4+. The idea for the simulation algorithm remains the same, regardless of the data source used. The tool randomly assigns each planned impression to agents; the probability of receiving a single impression is proportional to the average daily time an agent spends using a particular touchpoint. Once a single set of impressions is evaluated multiple times, the results are aggregated across all iterations and all respondents into a coherent results, representing cross-media reach of multiple touchpoints.

The team input all the reported impressions, which the tool was then able to convert to an equivalent level of child impressions based on the modelling method applied above.

Attributing Nutrient Profile Model (NPM) scores data to impacts for TV and online

- C.32 NPM score data was initially derived from existing Kantar Worldpanel datasets for 2017, and manually matched with impacts at a product level. The Kantar Wordpanel data sets contain full nutritional data and NPM score for selected products.
- C.33 Kantar Worldpanel collects nutrition data from food labels on individual products via fieldworkers who visit retail stores on a rolling 4-6 monthly basis. This information is supplemented by product images from third party suppliers. Where nutrition data has not been collected for a product, Kantar Worldpanel imputes nutrition values based on similar products or with category averages. The NPM scores are calculated using the 2004/05 NPM calculations as reported in the Government Nutrient Profile Model Technical Guidance 2011. Fruit Vegetable and Nut (FVN) scores are estimated at a category level because these are not captured in the Kantar Worldpanel data. The categorisation approach follows a methodology used in similar analysis conducted by the Institute of Fiscal Studies. However, 89% of the products advertised saw no alteration in NPM score on the basis of FVN. The remaining 11% of products had NPM scores, which were comfortably above or below the NPM pass threshold, to the point where errors in FVN calculation would not have a bearing on their HFSS (or non-HFSS status).
- C.34 For this project, the nutrient values for September 2017 were used, with product level information provided where an advertisement was for a particular product. Where the advertisement covered a brand or range, and a precise product is unidentifiable either a) an average of the real largest selling products has been used or b) a sales weighted average (for large ranges or manufacturers). This has been specified where a sales weighted average figure has been used rather than just an average of the range and will reflect an average for the 52 w/e Sep 2017.
- C.35 Kantar Worldpanel assigned NPM scores to 316 products advertised on TV, out of a total of 428. For online advertisements 129 products were assigned an NPM score out of a total of 269 products / brands / ranges / manufacturers. In some cases NPM scores could not be assigned,

these were often adverts focusing on supermarket brand building or other general brand building without a direct focus on specific food or drink products.

- C.36 For products that had tracked advertising activity but did not sit on existing datasets, NPM score classification was applied manually by the wider team using publicly available nutrition data. Where relevant, the advertising creative was viewed to help guide categorisation.
- C.37 All products that could not be directly matched to an existing NPM dataset were categorised using the following decision tree:

Figure C3: Categorisation of products using the NPM dataset



- C.38 All listed advertising was therefore treated in one of 4 ways:
 - I. Put into OWN CATEGORY. This applied to advertising that was not for any specific product, e.g. brand campaigns
 - II. SWA a sales-weighted average NPM score was derived from the range
 - III. PROXY published nutrition data for the product advertised or a similar product was used to derive NPM score
 - IV. PROXY CORE COMPONENT published nutrition data for the core product component advertised was used to derive NPM score. E.g. OOH meal offers

C.39 This categorisation approach was applied to both TV and online adverts. However, as explained in the baselining methodology, the dataset for online adverts was limited to a small segment of the digital market. Because of this limitation, only the breakdown of TV impacts is outlined to illustrate the most pragmatic overview and spread of advert categories.

Treatment	No Advertisers	% All Child Impacts	Example
NPM Score Applied	151	32%	Cadbury's dairy milk, where all nutritional data and product size is known.
Own Category (Brand)	49	20%	Just Eat, food delivery service advert. Tesco advert, featuring no discernible product range.
Proxy	133	25%	No product data for Iceland seasonal advert - 'Luxury Gilded Turkey'. 'Whole Turkey' data used as proxy.
Proxy Core Component (OOH)	36	9%	Limited data available on a Burger King Whopper, supermarket equivalent used, where NPM score is known (N.B. both considered HFSS by score)
SWA	51	14%	Lindt - Excellence Chocolate Range. SWA of top seven bestselling products in range used.

Table C3: Summary of TV impacts by treatment type

Examples of adverts that could not be matched to specific products

Example 1:

Aldi – Food & Drink Range 20 second spot Treatment: Brand Ad (own category)



Whilst food products are featured, it is a range that is shown throughout the ad. Neither a single product nutrient score, or an average would be representative. The voice-over is brand-led and contains no reference to product or call to action. Therefore, it was appropriate to classify this as a brand ad.

Example 2:

Papa John's – Deep Crust Pizza 20 second spot *Treatment: Proxy NPM used*



Pizza is clearly prominent in the creative, but no specific product is identified. Given the prominence of the pizza it would not have been appropriate to classify this a brand ad. Therefore, the best available representative proxy was used.

Example 3:

Coca Cola – Coke Range 20s spot *Treatment: SWA for range applied*



This advert features the Coca Cola range – Original, Diet and Zero. It was therefore appropriate to apply the SWA nutrient profile score for the range.

Annex D – DHSC Calorie Model V3

The DHSC calorie model

D.1 This annex explains what the Calorie Model is, how it works and how it supports policy development. It also provides a brief history of how the model has developed over time.

What is the Calorie Model?

- D.2 The Calorie Model is a simulation model, written in R, developed by analysts within the Dept. of Health & Social Care (DHSC). It draws on earlier modelling work developed by Public Health England (PHE).
- D.3 Its purpose is to model the long-term impacts of policies that affect calorie intake at a population level. It uses estimates of change in calorie intake, along with other assumptions, to estimate the effect on health outcomes, NHS treatment costs, social care costs and changes in economic output.
- D.4 Typically, the model is used to quantify the benefits associated with reductions in calories, but it can also model increases. The model is calibrated for the population in England³⁷⁷ using 2016 data as the baseline.³⁷⁸

How does the model work (in overview)?

- D.5 The Calorie Model is a <u>cohort-based Markov model</u>. That means that the population is divided into annual cohorts based on their year of birth, and the health of each cohort is modelled over time based on their expected body mass index (BMI) and the associated chances of acquiring an obesity-related condition. A change in calorie intake will affect BMI, which in turn affects the likelihood of ill health.
- D.6 To track health over time, the members of each cohort are divided into one of several states: healthy, diagnosed with an obesity-related disease, or deceased. Each year, transitional probabilities are used to estimate how many people will change state, and new births are added in. The expected prevalence of obesity-related conditions, and associated impacts, can be estimated accordingly.
- D.7 The effects of a policy intervention are modelled using a control and treatment approach, with a control scenario assuming no policy implementation, and a treatment scenario(s) assuming a change in calorie intake. The effects of the policy are measured by comparing the two scenarios over time.

What outputs does the model produce?

- D.8 The main outputs for any given scenario are:
 - total net benefit (or cost) in net present value terms, likely to result from a calorie change, comprising:

³⁷⁷ Model results can be applied to the rest of the UK by applying a pro-rata adjustment based on population size. This may not take full account of demographic and health-related differences but should suffice on an indicative basis.

³⁷⁸ We use Health Survey for England (HSE) and Office for National Statistics (ONS) population data and projections.

- monetised value of any net change in health (measured in QALYs)³⁷⁹;
- net change in NHS treatment costs;
- net change in social care costs; and
- net change in (some) economic productivity impacts.
- a timeline, showing when these effects are expected to occur.
- the number of premature (under age 75) deaths expected in the scenario and compared with the control.
- D.9 The model also allows more detailed interrogation of (for example) different age groups or BMI changes, and it can also provide sensitivity analysis around input parameters.

How does the model work (in detail) and what assumptions are used?

- D.10 The main input parameter is the expected **change in calorie intake** per person per day.³⁸⁰
- D.11 This value (or range of values) must be created outside the model, using whatever research, analysis or estimation techniques are available. The calorie model can explore the effect of a calorie change and perform sensitivity analysis around any assumed figure. But it cannot identify the correct calorie value to use.
- D.12 The calorie change can be varied according to the **age and gender of the population affected**. This allows (for example) policies that focus on children only to be assessed.
- D.13 Changes in weight and BMI caused by the reduction in daily calories are calculated (see para 17 and footnote 6 for the methodology) and are used as a starting point for the remainder of the analysis within the model.
- D.14 The model then considers the implications of the calorie imbalance reduction on six diseases associated with obesity: **type 2 diabetes, coronary heart disease, stroke, colorectal cancer, breast cancer and liver disease.** This is done by considering changes in prevalence and mortality rates for each disease caused by changes in BMI to calculate the number of deaths avoided in the treatment scenario.
- D.15 The model makes some allowance for comorbidities. In previous versions, the only transition an individual in a disease state could make was to move to the dead state or else stay in the relevant disease state, the possibility of disease to disease transition has since been added to model comorbidities. However, the model has no state memory and so when an individual undergoes a disease to disease transition, they no longer incur the costs associated with their first disease. To reduce the impact of this lack of state memory disease to disease transitions are only allowed from less severe to more severe diseases. The order of severity is shown here, with severity increasing from left to right:

³⁷⁹ Quality-adjusted life years (QALYs) are the standard currency used in health evaluations to measure the duration and quality of life combined. A value of 1.00 represents a year of life in perfect health. Someone living with an obesity-related condition is assumed on average to have a lower quality of life and/or a lower life expectancy than someone of similar age without that condition. The social value of QALYs (i.e. the value placed on them by the public) is £60,000 each. Further detail on how and why QALYs are used is provided in the Treasury Green Book (page 72) at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Gr een_Book.pdf (Accessed: 02/10/2020)

³⁸⁰ Equivalent inputs (such as an expected change in weight or BMI status) can also be used with appropriate conversion upfront.

Figure D1: DHSC calorie model



BMI analysis

- D.16 Individual weights are modelled using the differential equations from Hall et al³⁸¹. This approach assumes an individual's weight to consist of body fat, and fat-free mass (summed together to give the total body weight). The BMI projection through life is done by considering the imbalance between energy in and energy out, and by assuming that an individual will remain on the same BMI percentile through life. The model also draws on research from Ara et al³⁸². to model how the BMI of the control group would change over time. This evidence was based on an overweight and obese population but is assumed in the absence of anything superior to provide a reasonable approximation for those with a healthy BMI.
- D.17 Differential equations were implemented in the model using the <u>deSolve</u> package in R. The original model predicted the same weight loss per kcal reduction regardless of original body weight, which was noted at the time as being a necessary simplification. This limitation has been removed and the use of the differential equations in the new model forecasts a greater reduction in body weight per kcal reduction in diet in individuals with more excess weight.
- D.18 These updates allow us to model changes in weight that occur in childhood. The equations include a growth term which tends to zero at age 18, meaning the model naturally transitions from childhood into adulthood.
- D.19 There is no evidence available to link excess weight to the modelled conditions during childhood and hence no health benefits have been modelled during childhood. If any undiscovered associations exist, this would imply the calculations underestimate the benefits.

 ³⁸¹ Hall KD, Butte NF, Swinburn BA, Chow CC. Dynamics of childhood growth and obesity: development and validation of a quantitative mathematical model. The lancet Diabetes & endocrinology. 2013 Oct 1;1(2):97-105.
 ³⁸² Ara, R., L. Blake, L. Gray, M. Hernández, M. Crowther, A. Dunkley, F. Warren et al. "What is the clinical effectiveness and cost-effectiveness of using drugs in treating obese patients in primary care? A systematic review." Health technology assessment (Winchester, England) 16, no. 5 (2012)

Groups of people considered within the model

- D.20 The model splits the population by age, sex, and 5 BMI categories: underweight, healthy weight, overweight, obese, and very obese. Age can be modelled in individual years or in grouped categories as desired. Age-specific parameters (such as mortality rate, or incidence of a condition) are applied at the correct time as required.
- D.21 Some weight loss health benefits occur in adults that are not overweight but have a BMI greater than 22 kg/m2. The risk of the six health conditions modelled increases linearly with a BMI level of 22 upwards, and so including a healthy weight group in the model allows the extra benefits to be modelled. Underweight is modelled as a separate group to avoid any bias.
- D.22 The starting population is defined by the user, meaning a policy can be considered that only applies a calorie reduction to children, to children and adults, or only applies to adults.
- D.23 The new model utilises Markov modelling to calculate the transitions of the population between states, where states are defined as healthy, having a condition (where each condition is a separate state), or deceased. The Markov modelling was handled by the <u>heemod</u> package in R. The probabilities of being in a state are used as inputs into the heemod package, which can then simulate how the states will develop over time, starting the model with 100% of the population in the healthy state.
- D.24 For every cycle of the Markov model (equivalent to one year), the model calculates what proportion of the population will be in each state using the predicted probabilities (which as in the original model, are BMI-dependent). This gives a trajectory of the proportion of the total population in each state every year.
- D.25 The previous model considered the possibility of people living with one condition but dying of another. This version of the model has made the simplification that people have no more than one condition given there is currently a lack of evidence on the health effects of having several of these conditions.

Calculating results

- D.26 **Savings to the NHS** are calculated from the reduced treatment requirements for each disease.
- D.27 **Economic productivity** effects are assessed in two categories. First, reductions in mortality are used to calculate the impact of mortality on economic output from an increased workforce. This is done by considering everyone within a cohort to earn the median wage of a person of that age and gender, with a larger workforce present in the treatment scenario.
- D.28 Secondly, V3 of the model calculates the impact of morbidity on economic output using an employment rate that varies with disease state. This change has been made to reflect the lower productivity and rates of employment seen for individuals with one of the six modelled diseases.
- D.29 **Costs of social care** savings are calculated due to a reduced proportion of overweight, obese, and morbidly obese individuals and hence fewer people needing social care in the treatment scenario. This assumes that the probability of requiring social care increases with BMI.
- D.30 **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.
- D.31 People who fall ill with an obesity-related illness in later life may already be in less than perfect health. Accordingly, the model does not assume a QALY value of one for individuals in the "healthy" state (which in model terms means they are free of obesity-related illness). Instead, an age detriment is applied to all QALY values. This is done to allow for the increased prevalence of diseases not explicitly included in the model at older ages.
- D.32 The model uses a QALY disease detriment to calculate the QALY value for an individual in the disease state.

- D.33 **Discount rates** are applied to monetary values to account for changes in the treatment of costs and benefits that arise over different periods of time. This allows future values to be considered at present value in line with Treasury Green Book principles.
- D.34 Results can be modelled over a **user-defined timeframe**. For most analysis, a longer timescale is considered appropriate, as many of the health benefits do not arise until middle age or older. Equally, uncertainty increases as the forecast period widens.
- D.35 The model can be run for a longer time-period and (based on ONS population projections) will add new children each year who will be born into the model. This means a policy that runs for multiple years can be modelled on children who will be born during the duration of the policy.
- D.36 Once a policy has finished running, the model will stop adding new children to the population. However, it will continue to model benefits on the existing population for as long as the user defines. This allows the benefits that do not occur until much later in life to be modelled over the lifetime of the population.

How robust and reliable is the model?

- D.37 The model has been developed and enhanced over several years, reflecting both changes in evidence and improvements in modelling capabilities. The model has been independently assured and the results have been used to support economic analysis in published Impact Assessments on a regular basis. The analysis is best available.
- D.38 However, the model does have several significant limitations.
 - It predicts the effect of a given change in calorie intake. It cannot predict the effect of policy on calorie intake, and so is reliant on the external analysis used to produce such estimates.
 - The model, of necessity, is a simplified representation of real-world events. It does not consider all potential health conditions, all types of individual circumstances and all types of economic impact.
 - The model assumes that past performance (in terms of treatment costs, transition probabilities, population profiles and many other parameters) are a reasonable basis from which to predict the future.
 - Results will vary according to the evaluation period chosen.
- D.39 Work continues over time to refine and improve the model and mitigate any limitations. Sensitivity analysis and optimism bias are both regularly used to ensure any model results are interpreted and used appropriately.

Developmental history of the model

- D.40 PHE first developed a weight management economic assessment tool in 2014.
- D.41 This was used to support analysis on sugar reduction and later calorie reduction, and through a series of changes eventually became Version 1 of the Calorie Model, developed by DHSC and PHE working together.
- D.42 The model and its assumptions were the subject of a <u>Technical Consultation Document</u> which DHSC published in 2018.
- D.43 The original model was developed in Microsoft Excel, but an upgraded version was developed in the "R" programming language, by DHSC analysts following the consultation. This "Version 2" of the model was more flexible and it allowed more accurate modelling of weight loss or gain, a longer evaluation period (if desired) and greater ability to model different groups of people. It became possible to model adults and children separately.

D.44 These "Version 2" changes were published in <u>'Further advertising restrictions for products high</u> in fat, salt and sugar: impact assessment': Annex E.

Differences in Version 3

- D.45 Version 3 (the current model) was developed by DHSC analysts in late 2019 and is now in use. This version:
 - added liver disease to the model,
 - added a limited capability for measuring comorbidities,
 - extended the scope of the economic productivity analysis, and
 - improved the accuracy of the QALY calculations, by reflecting the deterioration in health that naturally occurs as the population ages.
- D.46 Quality assurance (QA) was carried out in line with the principles set out in the Government Aqua book.
- D.47 PHE provided independent assurance to complement the work within DHSC.