# UNDER PRESSURE

## NEW EVIDENCE ON YOUNG PEOPLE'S BROADCAST MARKETING EXPOSURE IN THE UK

**MARCH 2018**

CANCER RESEARCH UK

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# REFERENCE

This report should be referred to as follows:

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# AUTHOR INFORMATION

Christopher Thomas

Lucie Hooper

Gillian Rosenberg

Fiona Thomas

Jyotsna Vohra

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The authors are solely responsible for the content of the report.

# CANCER RESEARCH UK

**Cancer Research UK** is the world's leading cancer charity dedicated to saving lives through research. We support research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses. Today 2 in 4 people survive their cancer for at least 10 years. Cancer Research UK's ambition is to accelerate progress so that by 2034, 3 in 4 people will survive their cancer for at least 10 years.

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# LIST OF ACRONYMS

| | |
|---|---|
| Products that are high in fat, salt or sugar | HFSS |
| Cancer Research UK | CRUK |
| Policy Research Centre for Cancer Prevention | PRCP |
| Committee of Advertising Practice | CAP |

# FOREWORD

I am delighted to present this report – an analysis of data from the Youth Obesity Policy Survey designed by Cancer Research UK. The survey benchmarks young people's exposure to marketing of foods high in salt, sugar and fat (HFSS or 'junk' foods), helping us to understand any association marketing has with their dietary choices and weight.

This is the second report to be released using data from the survey. The first correlated television advertising with a substantial and consistent risk of eating increased amounts of HFSS products. This report provides a more holistic assessment of marketing, exploring more mediums and quantifying their relationship with how young people eat. It also provides an indication of HFSS consumption levels in the UK, helping inform whether population-level action is justified.

Childhood obesity remains a substantial problem in 2018. In recent years, rates have held steady at an alarmingly high level. PHE's recent waist measurement programme showed around 20% of 11-year olds in England are obese. Obesity causes immediate harm to the child. It also increases the chance of obesity in adulthood by 5 times, which in turn increases the risk of 13 types of cancer.

Research on why there has been no progress in reducing obesity is a clear priority. Over the last 20 years, marketing has been linked to worse diet and weight outcomes amongst children. Television advertising has been most often implicated. However, research has found that a range of other broadcast and non-broadcast marketing mediums also have an effect.

This evidence did catalyse at least some regulatory moves in the UK. Broadcast regulations were introduced in 2008. These prevent all HFSS marketing on children's programming. However, ten years later, these regulations may be out of date. Ofcom's data shows children watch large amounts of 'family' entertainment on evenings and weekends, which are not generally covered by this regulation. Equally, on-demand TV is growing in popularity amongst young people, and may also need to be addressed.

Non-broadcast marketing regulations were later introduced in 2017. These focus on restricting the capacity for adverts to target children, aligning non-broadcast and broadcast marketing regulations. However, no evaluation mechanism is in place, which will be important to establishing whether they are sufficient and fit for purpose.

By helping to quantify the impact junk food marketing has on young people, this report will provide an evaluation of existing regulations. It will outline the forms of marketing which are associated with harmful consumption behaviours amongst young people. This will contribute to policy recommendations that are translatable into practice. I encourage policy makers to use the evidence in this report as an opportunity for action.

**Professor Linda Bauld**
Cancer Prevention
Champion, Cancer Research UK

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# EXECUTIVE SUMMARY

Overweight and obesity is the UK's biggest cause of cancer after smoking and is associated with thousands of cancer cases a year[1]. The largest number of weight-linked cancer cases are breast, bowel and womb[1]. Modelling studies estimate that if current obesity trends continue, there will be 670,000 obesity-associated cancers between 2015 and 2035, costing the NHS £2.5 billion/year extra[2].

Youth obesity poses a specific problem. Prevalence is holding steady at an alarmingly high level, and an obese child is around five times more likely to become an obese adult[3]. Explanations in the research literature are as diverse as genetics, increased calorie intake and lower levels of exercise[4-8]. Of those, increasing calorie consumption is thought to be the more substantial factor in explaining how obesity has risen to current levels in just a few decades[4,6,9].

This brings the environmental variables linked to increased calorie consumption into sharp focus. For one, the link between high fat, salt and sugar (HFSS) food marketing and consumption is clear from both experimental studies[10,11] and systematic reviews[12]. There is still doubt about whether regulations of both broadcast and non-broadcast advertising are sufficient to reduce its impact on children and young people (CYPs).

This research – a UK-wide quantitative survey of 3,348 people aged 11-19 – evaluates whether there is a need for policy makers in 2018 to further regulate marketing.

# KEY FINDINGS

### 1. SEEING EXTRA HFSS ADS PREDICTS EXTRA HFSS EATING

Seeing just one extra broadcast advert per week predicted a large amount of HFSS eating and drinking (around 60 HFSS items more/year). We estimate this at almost 350 calories/week (18,000/year). 'Added value' advertising - such as celebrity endorsements, sponsorship and competitions - were also correlated to HFSS eating. Broadcast regulations have not been updated since 2008, but this evidence suggests marketing restrictions are as necessary now as they were then.

### 2. YOUNG PEOPLE ARE UNDER HUGE PRESSURE TO HAVE UNHEALTHY DIETS

When asked, young people said they felt pressured to eat unhealthily. Agreement was over 40% across all demographics, and as high as 52% amongst people with obesity. Disagreement was between 25% and 30%.

There was also substantial engagement with brands that produce HFSS products. 80% of the ten food and drink brands young people recalled most frequently have at least one HFSS product in their top sellers. This indicates the imbalance between healthy and unhealthily messaging and young peoples' need for further support.

### 3. HFSS CONSUMPTION WAS AT HARMFUL LEVELS AMONGST THE YOUTH POPULATION

On average, young people reported eating almost 30 HFSS items per week, but only 16 portions of fruit or vegetables. The estimated calorie intake from this many HFSS products is approximately 6,300 calories/week – 30-40% of a young person's weekly guideline amount[13]. More deprived young people had significantly worse diets than young people from more affluent backgrounds. Such high levels of HFSS consumption help to justify population-level policy interventions such as marketing restrictions. These would support healthy choices, especially by those most reliant on unhealthy foods, such as young people from more deprived communities.

Seeing one extra broadcast HFSS advert/week predicts 350 extra HFSS calories/week

## POLICY RECOMMENDATIONS

Diet is poor across the UK. HFSS products make up a large amount of young people's consumption and are a regular part of their daily diets. Over the 12 HFSS product categories used in this study (which are not exhaustive) this intake would be likely to lead to substantially worse weight outcomes. Therefore, population level interventions are clearly justified. These should target the most prevalent environmental factors linked to calorie consumption - to ensure sustainable harm reduction. In this case, the variable found to have the most influence was broadcast marketing.

A 9pm watershed on TV advert content would be the most effective mechanism to reduce HFSS eating. It would mean stricter protections on the shows that children and young people watch the most[14,15]. 'On-demand' television and, to a lesser extent, radio should be included in the scope of any such update. Given that young people also felt pressure to have HFSS-heavy diets, this would have the added benefit of providing a vulnerable group much needed support to make healthy choices.

Whilst a comprehensive approach to obesity will be necessary, this evidence supports the case for including marketing restrictions in that approach as a point of urgency.

# INTRODUCTION

Overweight and obesity is the biggest cause of cancer after smoking in the UK and is associated with thousands of cancer cases a year[1]. Overweight and obesity is linked to thirteen types of cancers [16], with the largest number of weight-linked cases in the UK being breast, bowel and womb[1]. Furthermore, modelling studies estimate that if current trends of overweight and obesity continue, it will lead to a further 670,000 cancer cases by 2035. The cost of this rise in obesity to the NHS would be £2.5 billion/year[2]

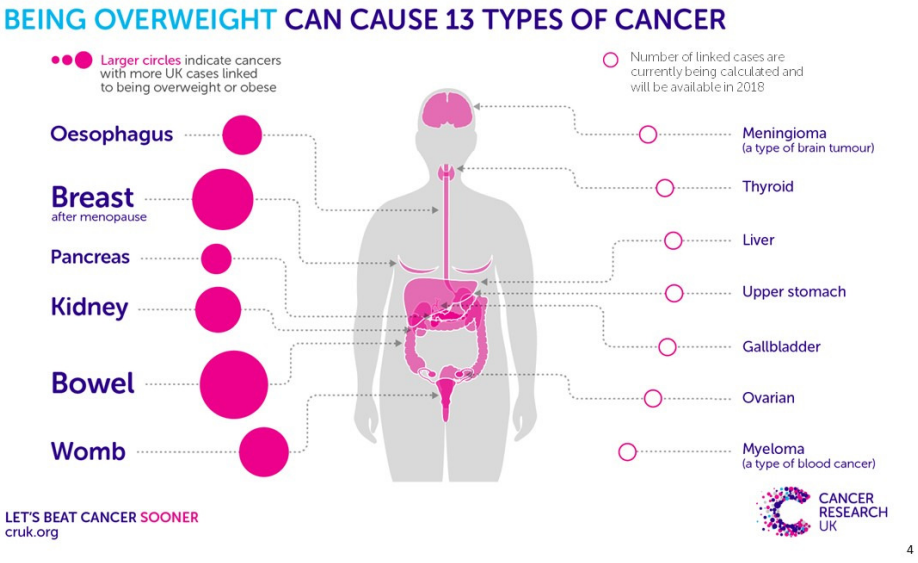



*Figure 1: The 13 types of cancer caused by being overweight or obese.*

Childhood obesity is a specific and substantial part of the problem. In the UK, prevalence is holding steady at an alarmingly high level. This risks substantial short-term and long-term harm. In the short-term, being obese can cause psychological and physiological harm[17]. In the long term, an obese child is around five times more likely to become an obese adult [3] - at increased risk of cancer and other associated health conditions[1,18,19]. There is no one reason that explains current obesity levels, but research has pointed to explanations as diverse as genetics, increased calorie consumption and lower levels of exercise[5-8,20]. However, evidence suggests that increased calorie intake is the most powerful explanation[9]. This brings environmental factors which increase calorie consumption into sharp focus as potential causes of obesity.

One of the best-known drivers of higher calorie intake is marketing and, in particular, broadcast marketing[21-26]. Efforts have been made by the UK government to limit the impact of this on young people. In 2008, restrictions were brought in preventing advertisers from promoting HFSS products on children's programming. However, a decade on, these regulations could be out of date. One particular concern is that they do not account for current viewing habits: Ofcom figures show young people watch the most TV between 7:00-8:00pm, when family entertainment shows are common, regulation generally lightest[14], and the number HFSS adverts aired/hour peaks[15]. It is therefore important to ensure these regulations are fit for purpose in 2018.

In January 2018, new evaluative research provided evidence that TV content – both on traditional TV and new 'on-demand' channels - remains a substantial risk for high HFSS consumption amongst young people[27]. Commercial television and non-commercial television were split and their relationship to risk of HFSS food consumption modelled. The analysis shows that commercial television was a clear, consistent and cumulative risk factor for a wide range of HFSS eating. Non-commercial television, however, was not a consistent risk factor - a contrast suggesting that television marketing (rather than the sedentary behaviour of sitting on the sofa and watching TV) remains the central risk for high HFSS consumption at present.

This report builds on this evidence and explores the justifications for policies designed to reduce young people's HFSS consumption levels. It does so by a) benchmarking HFSS consumption to establish if its reduction is a priority, b) examining the balance between healthy and unhealthy influences on young people to establish if this age group needs better support and c) estimating broadcast marketing's relationship with diet, in comparison with non-broadcast forms of marketing, to provide a more holistic account of whether broadcast regulations are functioning as intended. The areas of marketing investigated in this study are as follows:

### Broadcast Advertising

Broadcast is defined in this study as radio and television content, including content accessed online through 'on-demand' channels. Ofcom regulations banned advertising during children's programming on broadcast mediums in 2008. Recently, there has been a lot of discussion on whether these now need to be updated. The Obesity Health Alliance supports further marketing restrictions, and their 2017 report on the subject found that 'family entertainment' (generally, afterschool and weekend viewing) is the substantial source of marketing exposure for young people[15]. In 2015, Public Health England reviewed the evidence and recommended that further broadcasting marketing restrictions should be part of the UK government's approach to children's obesity[28]. These policy calls have run parallel to a continuing consensus in academia that marketing exposure remains a reason youth obesity has not substantively decreased[29,30]. At a global level, the World Health Assembly have stated that implementing marketing restrictions is crucial for countries looking to address youth obesity[31]. The aim of this study is to evaluate UK regulations to test whether more really does need to be done.

### Offline, non-broadcast Advertising

This kind of marketing is regulated by the CAP code of conduct and defined as "any adverts which appear outside of television or radio content"[32]. Regulations were put in place to prevent HFSS advertising to young people through such mediums in mid-2017 – in this case, after our data was collected. However, examining the pre-regulation relationship between this form of marketing and diet in comparison to the current relationship between broadcast marketing and diet will help contextualise whether a similar case for broadcast marketing regulations exist.

Due to the novel and complex nature of online ('interactive') marketing (such as that on digital, online and social media channels), this type of non-broadcast content has not been considered within the remit of this study.

### Added Value Advertising

Added value advertising does not have a fixed medium of delivery, but is used to make another kind of advert more appealing or effective. Examples include sponsorship, celebrity endorsement and/or branded competitions. These kinds of adverts do not have a specific regulatory body, but are bound to existing restrictions for broadcast and non-broadcast mediums. If exposure to them is related to HFSS consumption it would show that the tactics used by advertisers to embellish or target their adverts are effective. In turn, this would indicate the high impact a small subsection of expensive or targeted adverts can have, further justifying updated restrictions.

The approach taken by this study helps fill a gap in the literature. Recent studies of marketing have tended to be smaller[33], or experimental[11,34], in design. By using a highly contextual survey design, designed to control for UK policies, this data helps test whether exposure to marketing exists and leads to worse diet in the UK in the same way it does in experimental settings. In turn, this will further help inform policy makers if broadcast marketing is a justified priority.

# RESEARCH AIMS

We aim to:

- Benchmark the levels of youth HFSS consumption and provide further evidence on whether it remains at harmful levels in 2018
- Establish the level of unhealthy messaging faced by young people, and the consequences this might have on their dietary choices
- Add contextualised evidence on broadcast marketing regulations and whether this is a pragmatic priority for policymakers

The general hypothesis is that higher levels of broadcast marketing exposure will predict increased consumption of HFSS products, that HFSS consumption will be harmfully high and that unhealthy messages will be more common than healthy messages.

# METHODOLOGY

This survey was designed to investigate young people's exposure to HFSS marketing, their dietary behaviours and other demographic factors. 3,348 young people participated in the survey and the sample was designed to be representative of the UK population. The full breakdown of the demographics can be found in **Appendix 1**. The full methodology used to design the survey, collect the data and ensure validity has been described in previous publications in full[27].

## DATA CODING

### Independent Variables

The independent variable for this mode of analysis was marketing engagement. The survey instrument tested marketing engagement across a range of mediums, including:

- Print marketing
- Billboards and posters
- Price promotions
- Television adverts
- Streamed television adverts
- Radio adverts
- Competitions
- Celebrity endorsements
- Sponsorship

The above mediums were split into 'policy groups' to avoid the potential problem of including multiple highly correlated variables in the analysis, and to help translation of the findings. The groupings were:

- Broadcast marketing (television, radio, streamed television)
- Non-broadcast, offline marketing, excluding 'online' marketing (price promotions, print media adverts, billboards and posters)
- 'Added value' marketing (celebrity endorsement, sponsorship, competitions).

To calculate the grouped variables, each individual variable was converted from its Likert value to a scale value. Sensitivity analysis was used to ensure that this was an acceptable method and the conversions used are outlined in *Table 1* below.

| Ordinal Scale | Conversion |
|---|---|
| Everyday | 7/week |
| 5-6 times/week | 5.5/week |
| 2-4 times/week | 3/week |
| 1 time/week | 1/week |
| Less than weekly, but more than monthly | 0.5/week |
| Not in the last month | 0/week |
| Not sure | Missing value |

*Table 1: Conversion of ordinal to scale variables for media consumption variables*

### *Dependent Variables*

The dependent variable for this study were 15 food and drink consumption survey items, covering a wide variety of the HFSS foods that young people eat the most and including healthy items as a point of comparison. Prompts were used to ensure young people interpreted the categories in the intended way and avoid unnecessary category overlap. The 15 food and drink categories are outlined in *Table 2*. The 15 items were chosen to provide a wide variety of HFSS products – to better test the hypothesis. This includes 'pocket money' HFSS products; 'family bought' HFSS products; HFSS products sometimes mistaken for healthy foods; alternatives to HFSS products and genuinely healthy foods. The rational for these choices has been highlighted in a previous report[27].

| **'Pocket money' products** | **Higher price or family bought products** | **HFSS product perceived as healthy** | **Non-HFSS products** | |
|---|---|---|---|---|
| | | | **Healthy options** | **Alternatives to HFSS products** |
| Confectionery | Desserts | Flavoured Yogurts | Fruit | Diet carbonated drinks |
| Cakes/Biscuits | Takeaways | Milk drinks | Vegetable | |
| Sugary drinks | Ready Meals | Sugar Sweetened Cereals | | |
| Energy drinks | Fried Potato Products | | | |
| Crisps | | | | |

*Table 2: Food and drink categories used in this study*

Consumption of each product was measured using an ordinal scale. This was converted to a scale variable for the purposes of the linear regression. Sensitivity testing confirmed that this did not have a substantial impact on the results. *Table 3* gives the conversions used:

| Likert Scale | Conversion |
|---|---|
| More than daily | 14/week |
| Once a day | 7/week |
| 5-6 times/week | 5.5/week |
| 2-4 times/week | 3/week |
| 1 time/week | 1/week |
| A few times a month | 0.5/week |
| Once a month | 0.25/week |
| Less often | 0.1/week |
| Never | 0/week |
| Not sure | Missing value |

*Table 3: Ordinal scale conversion for food consumption variables*

### *Control Variables*

Controls were selected based on theoretical importance to the model, to avoid any introduction of researcher bias and to ensure consistency across the 15 dependent variables. To establish theoretical importance, the literature was rapidly reviewed[11,25,35-42]. The controls chosen were age, gender, health awareness, nation of residence, ethnicity and deprivation. Ethnicity was a dummy variable coded 0 – white and 1 – not white. IMD (deprivation) was coded in quintiles with 1 representing the 20% most deprived and 5 the 20% most affluent. Health awareness was proxied based on knowledge of the most common health programme slogans used in the UK ('5 fruit and vegetables a day').

# DATA ANALYSIS

Levels of HFSS consumption were calculated descriptively from the questions already described above. This was done for all-nation (UK) data and recalculated for each of the devolved nations individually – the latter is reported in **appendix 3**.

Descriptive analysis explored whether young people were subject to pressure from unhealthy messaging and marketing. Several metrics were considered:

1. Brand awareness questions were asked individually for both food and beverages. The question was unprompted, and asked respondents to name up to three food or drink brands they knew. This indicates whether healthy or unhealthy brands have been more successfully in creating awareness amongst this group.
2. Young people were asked how many HFSS adverts they had seen in the last month. This is a good proxy for advert awareness, not least because the survey was adapted from the validated Youth Tobacco Policy Survey[43].
3. Participants were asked if they felt pressured to eat and/or drink unhealthy products. This was analysed across different demographics to explore where pressure was most perceived, if at all.

It was also felt that explaining how broadcast marketing might fit into this unhealthy/healthy messaging balance was important. As such, young people were shown three HFSS adverts during the survey. These were for a range of brands - from the 'pocket money', 'takeaway' and 'appears to be healthy' categories. They were then asked to give their opinions via several follow-up questions. These covered the impact of the advert (did it lead to temptation to consume a product) and the impression of the product the advert left (did the product seem fun, healthy, or popular). The subsequent data is reported to help hypothesis generation on the mechanisms through which TV adverts might influence diet, and on whether HFSS broadcast adverts contribute to the pressurising unhealthy messaging young people say they are subject to. A chi-square test for linearity was used to explore whether vulnerable groups (people with obesity or from deprived communities) were statistically more likely to have positive opinions of this kind of marketing.

Finally, a linear regression model was used to test for associations between levels of marketing engagement and levels of HFSS consumption. A separate model was run for each dependent variable (15 models in total) and parametric testing confirmed this as a suitable method of analysis for the dataset.

# ETHICS

Ethics was granted in January 2017 for the study by the General University Ethics Panel (GUEP) at the University of Stirling. This ethics covered both cognitive testing of the questionnaires and the online surveys. YouGov's in-house team also included a lead for ethical and quality assurance, to ensure coherence to best practice throughout testing and data collection. This included ensuring informed consent was obtained, post-survey signposting to support organisations and confidentiality of personal information.

# RESULTS

## 1. LEVELS OF HFSS CONSUMPTION AMONGST THE UK'S YOUTH POPULATION

Participants self-reported their consumption habits. The average number of each product type consumed by young people in the UK are shown below (*Table 4*).

| | Product | Average consumption (portions)/person/week |
|---|---|---|
| **'Pocket Money' Items** | Cake/Biscuits | 4.3 |
| | Confectionary | 4.0 |
| | Sugary Drinks | 2.5 |
| | Crisps | 3.5 |
| | Desserts | 3.0 |
| | Energy Drinks | 0.5 |
| | **Sub-total** | **17.8** |
| **'Perceived' Healthy** | Flavoured Yogurts | 1.5 |
| | Milk Drinks | 1.3 |
| | Cereal | 2.0 |
| | **Sub-total** | **4.8** |
| **'Family bought' products** | Ready Meals | 1.7 |
| | Fried Potatoes | 1.9 |
| | Takeaway | 0.8 |
| | **Sub-total** | **4.4** |
| | **Total weekly HFSS products** | **27.0** |
| **Alternatives to HFSS choices** | Diet Drinks | 2.9 |
| | **Sub-total** | **2.9** |
| **Healthy Products** | Fruit | 7.6 |
| | Vegetables | 8.6 |
| | **Sub-total** | **16.2** |

*Table 4: Average number of each food type consumed by a young person per week.*

HFSS products were almost twice as prominent a part of young people's average weekly diets than fruit and vegetables. Only 16 portions of fruit/vegetables are consumed on average/week – more than 50% below the target of 5 portions per day (or 35/week). This is compared to almost 30 HFSS items consumed on average/week.

To further contextualise this HFSS consumption, an indicative calculation of calorie intake was undertaken. Average calories for product types were established from the literature (see **Appendix 2**). This was multiplied by the average number of products eaten by UK young people. The result is the average calorie intake per week from HFSS sources: 6265 or 30-40% of their guideline calorie intake[44]. This is only indicative and likely to be an underestimation given the self-reported nature of the study, but nonetheless illustrates the potentially dangerous reliance on HFSS calories these survey answers represent.

Further analysis explored the distribution of HFSS eating in the UK. *Table 5* illustrates young people's consumption across product types. Extremely frequent is defined as daily or more; frequent as two to six times per week; somewhat frequent as several times a month to once a week; and occasional as twice a month or less. It should be remembered that more moderate frequency for higher calorie items (takeaways) could be equal to extreme consumption of lower calorie items.

| | **Product** | **Level of population in consumption group (%)** | | | |
|---|---|---|---|---|---|
| | | *Extremely High* | *High* | *Moderate* | *Occasional* |
| **'Pocket Money' Items** | *Cake/Biscuits* | 27 | 35 | 28 | 10 |
| | *Confectionary* | 19 | 46 | 26 | 8 |
| | *Sugary Drinks* | 12 | 23 | 31 | 34 |
| | *Crisps* | 20 | 38 | 27 | 14 |
| | *Desserts* | 15 | 36 | 32 | 13 |
| | *Energy Drinks* | 3 | 5 | 10 | 81 |
| **'Perceived' Healthy** | *Flavoured Yogurts* | 6 | 20 | 22 | 51 |
| | *Milk Drinks* | 6 | 12 | 22 | 57 |
| | *Cereal* | 13 | 24 | 19 | 44 |
| **'Family bought' products** | *Ready Meals* | 4 | 30 | 52 | 23 |
| | *Fried Potatoes* | 5 | 32 | 50 | 11 |
| | *Takeaway* | 1 | 8 | 51 | 38 |
| **HFSS alternatives** | *Diet drinks* | 13 | 20 | 22 | 43 |

*Table 5: Percentage of young people who eat each product type a given number of days in a week or month. Total scores under 100% indicate the number who answered 'don't know'.*

The high and extremely high levels of HFSS consumption are highly prevalent. Many young people had extremely high consumption, particularly of the more accessible 'pocket money items'. The peak was for cake and biscuits, where extremely high consumption was at 27%. High consumption was also very prevalent in this population. Given the number of HFSS categories there are, this consistency of extremely high or high consumption is likely to add up and worsen BMI outcomes at a population level.

## HFSS CONSUMPTION IN THE DEVOLVED NATIONS

Analysis of dietary choices in the devolved nations showed some differences in each from the UK average. *Table 6* shows averages for each nation.

| | **Product** | **Average weekly consumption (portions)** | | | |
|---|---|---|---|---|---|
| | | England | Scotland | Wales | N. Ireland |
| **'Pocket Money' Items** | Cake/Biscuits | 4.3 | 4.4 | 3.7 | 5.7* |
| | Confectionary | 4.0 | 4.6 | 4.0 | 4.3 |
| | Sugary Drinks | 2.4 | 2.9 | 2.3 | 3.1* |
| | Crisps | 3.5 | 3.4 | 3.6 | 3.6 |
| | Desserts | 3.1* | 2.4 | 2.8* | 1.9 |
| | Energy Drinks | 0.5 | 0.5 | 0.3 | 1.1* |
| | **Sub-total** | **17.8** | **18.2** | **16.9** | **19.7** |
| **'Perceived' Healthy** | Flavoured Yogurts | 1.5 | 1.5 | 1.5 | 2.3* |
| | Milk Drinks | 1.3 | 1.4 | 1.3 | 1.6 |
| | Cereal | 3.0 | 2.2 | 1.9 | 2.4 |
| | **Sub-total** | **5.8** | **5.1** | **4.7** | **6.3** |
| **'Family bought'** | Ready Meals | 1.7 | 1.9 | 1.6 | 1.9 |
| | Fried Potatoes | 1.9* | 2.1* | 1.8 | 2.6 |
| | Takeaway | 0.8* | 0.8 | 0.7 | 1.0* |
| | **Sub-total** | **4.4** | **4.8** | **4.1** | **5.5** |
| | **Total HFSS** | **28** | **28** | **26** | **32** |
| **Alternatives** | Diet Drinks | 2.8 | 3.5 | 2.6 | 3.1 |
| | **Sub-total** | **2.8** | **3.5** | **2.6** | **3.1** |
| **Healthy** | Fruit | 7.6 | 6.9 | 7.8 | 7.8 |
| | Vegetables | 8.8* | 7.9* | 8.3 | 7.7 |
| | **Sub-total** | **16.4** | **14.8** | **16.1** | **15.5** |

*Table 6: Average products consumed per week across the devolved nations and by product type. Significant differences from the UK average are denoted by (*) at a threshold of $p < 0.05$.*

Particularly notable are consumption levels in Northern Ireland, where 32 HFSS products are consumed every week on average. Scotland showed particularly low levels of healthy food consumption – with an average young person consuming just 14.8 fruit and vegetables per week on average compared to the recommended 35[45]. Otherwise, there was general homogeneity between diets in the devolved nations (see **Appendix 3** for further detail).

# 2. ENGAGEMENT WITH HFSS MARKETING

The first metric used to test for the presence to explore the obesogenic environment was brands recalled without prompting (*Figure 1*). The five pink and blue bars in the figure represent the most recalled products.

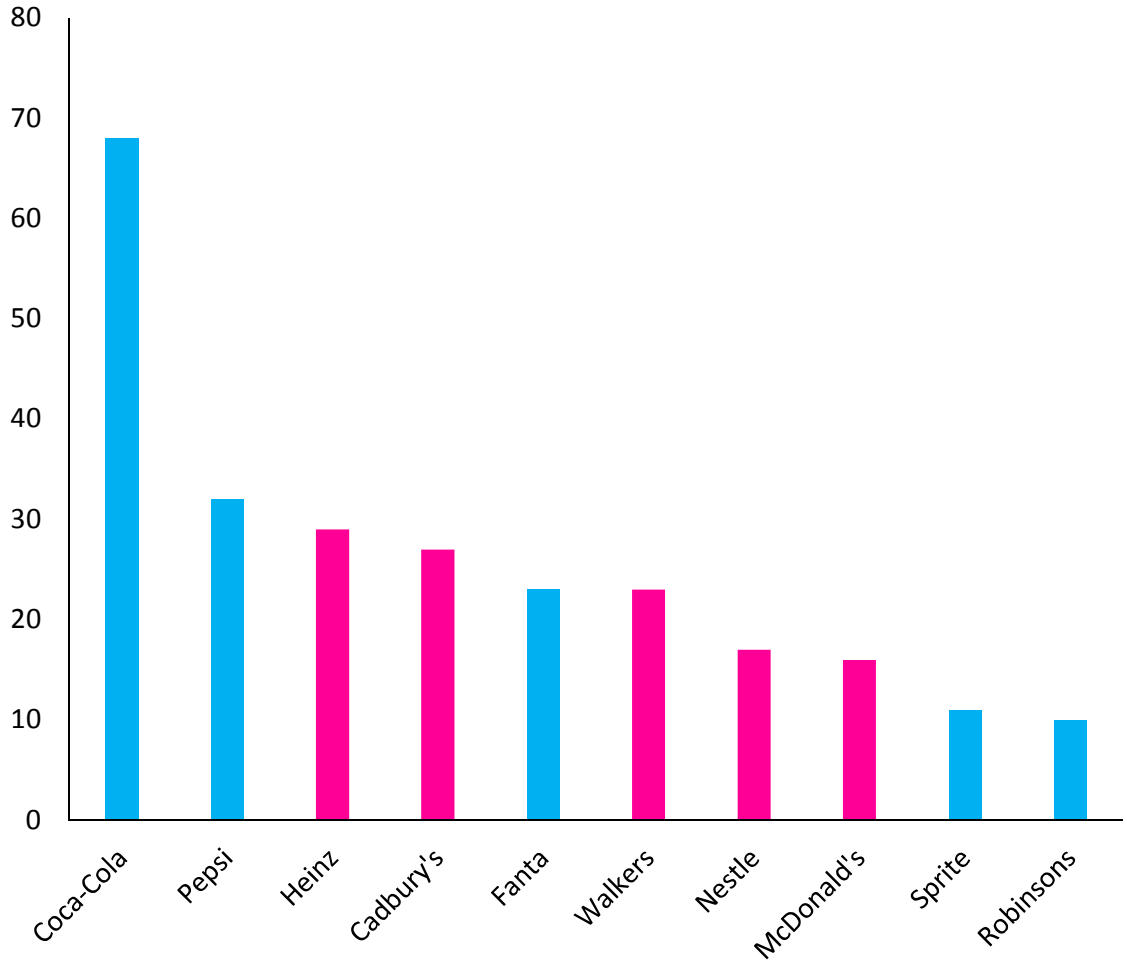



*Figure 1: Awareness of food and beverage brands by 11-19-year olds (%). Blue indicates beverage brands and pink represents food brands.*

Eight of these have a HFSS product amongst their three top selling items (80%). The second metric tested was number of specifically HFSS adverts young people reported seeing on different mediums in a week. This is broken down by medium and by weight group in *Figure 3*.

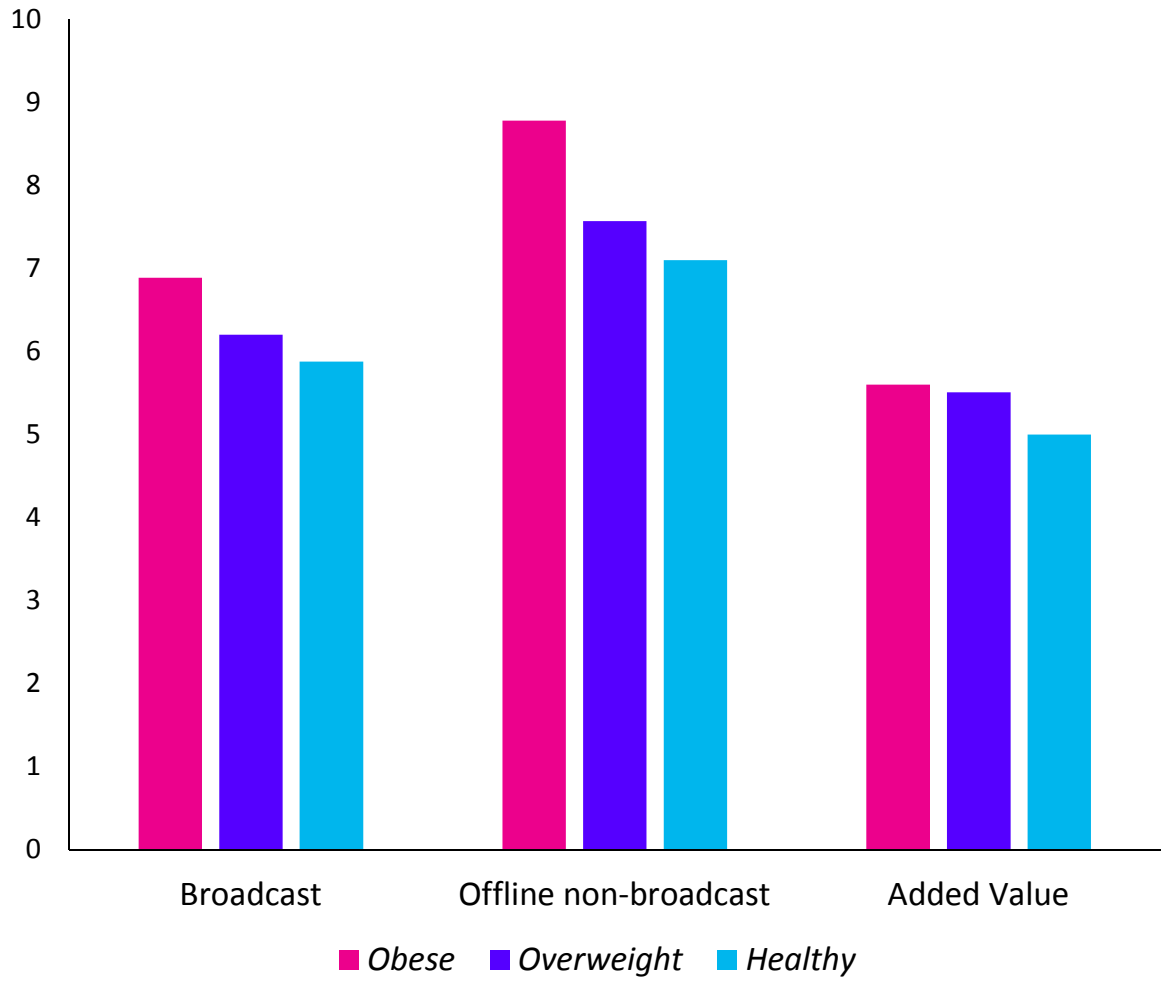



*Figure 2: Number of adverts participants said they were exposure to (per week and by weight group)*

People with obesity said they saw more adverts across all three mediums. On average, respondents with obesity saw one extra broadcast advert, two extra offline non-broadcast adverts and half an extra 'added-value' advert than their healthy weight counterparts. These differences were statistically significant for broadcast and non-broadcast, offline marketing ($p < 0.05$).

The final metric was pressure felt to eat or drink unhealthy products and was based on the survey question: To what extent do you agree or disagree with the following statements about unhealthy foods and drinks? Overall, people are pressured to eat more unhealthily these days". The results are outlined in *Figure 4*:

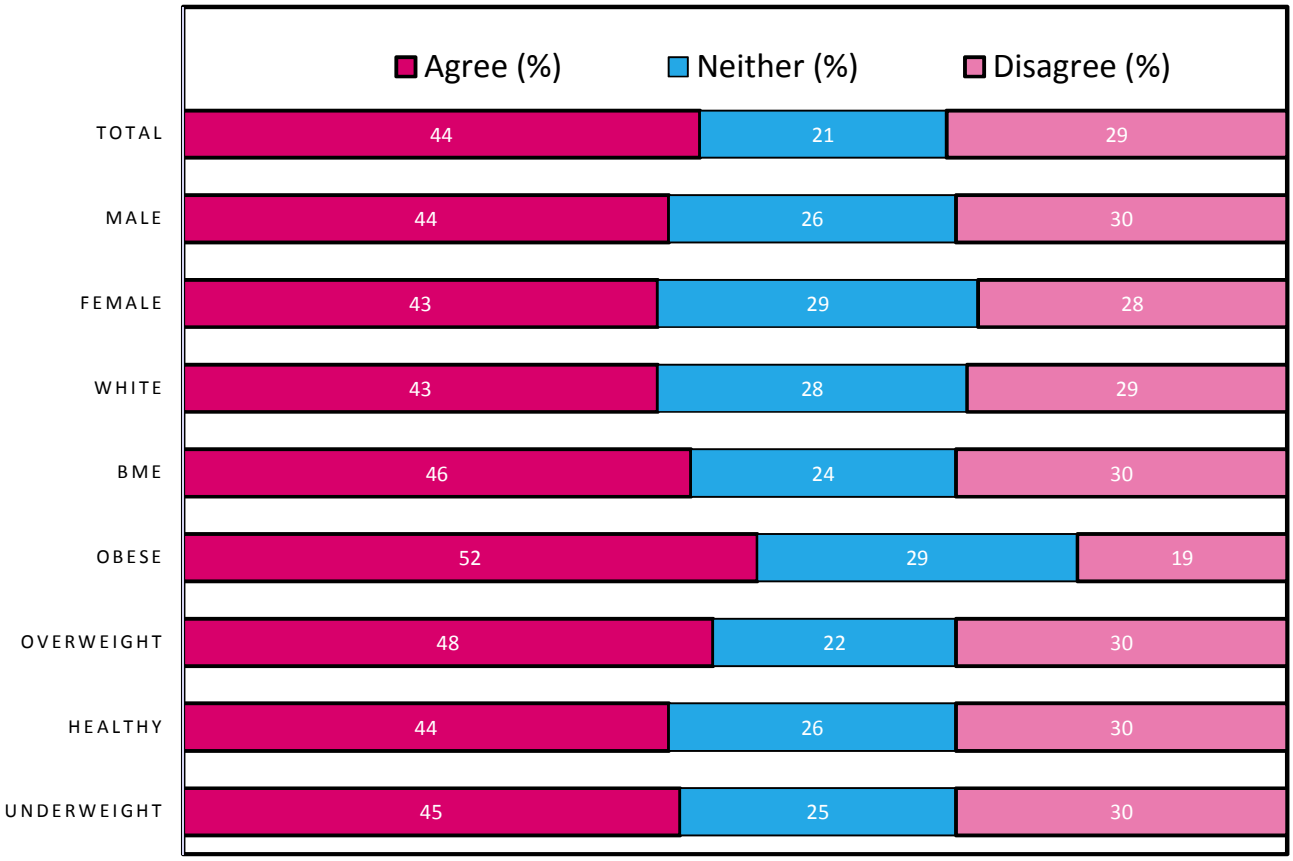



*Figure 3: Young people who felt there was pressure on them to eat and drink unhealthily.*

Almost half the participants agreed or strongly agreed with this statement and 15% more agreed than disagreed. Analysing the data further showed that those who had overweight (48%) or obesity (52%) were substantially more likely to agree and less likely to disagree than the other weight groups, which may imply greater exposure to obesogenic variables. Black and minority ethnic participants also agree with the statement more frequently than white participants (46% to 43%). However, there was generally consistent levels of agreement (43-52%) and disagreement (19-30%) across the study's demographics

# YOUNG PEOPLE SAY THEY FEEL PRESSURE TO EAT UNHEALTHILY


When asked to what extent you agree or disagree with the statement 'people are pressured to eat more unhealthily these days', 44% of participants agreed and only 29% disagreed. Agreement rose to 52% amongst obese participants.

## HOW HFSS MARKETING IS PERCEIVED TO WORK

The survey asked participants for their reactions to 3 HFSS adverts, indicating how they thought this type of marketing worked. This was split into the ability of the advert create temptation (*Figure 5*) and the impression of a product given by an advert (*Figure 6*):

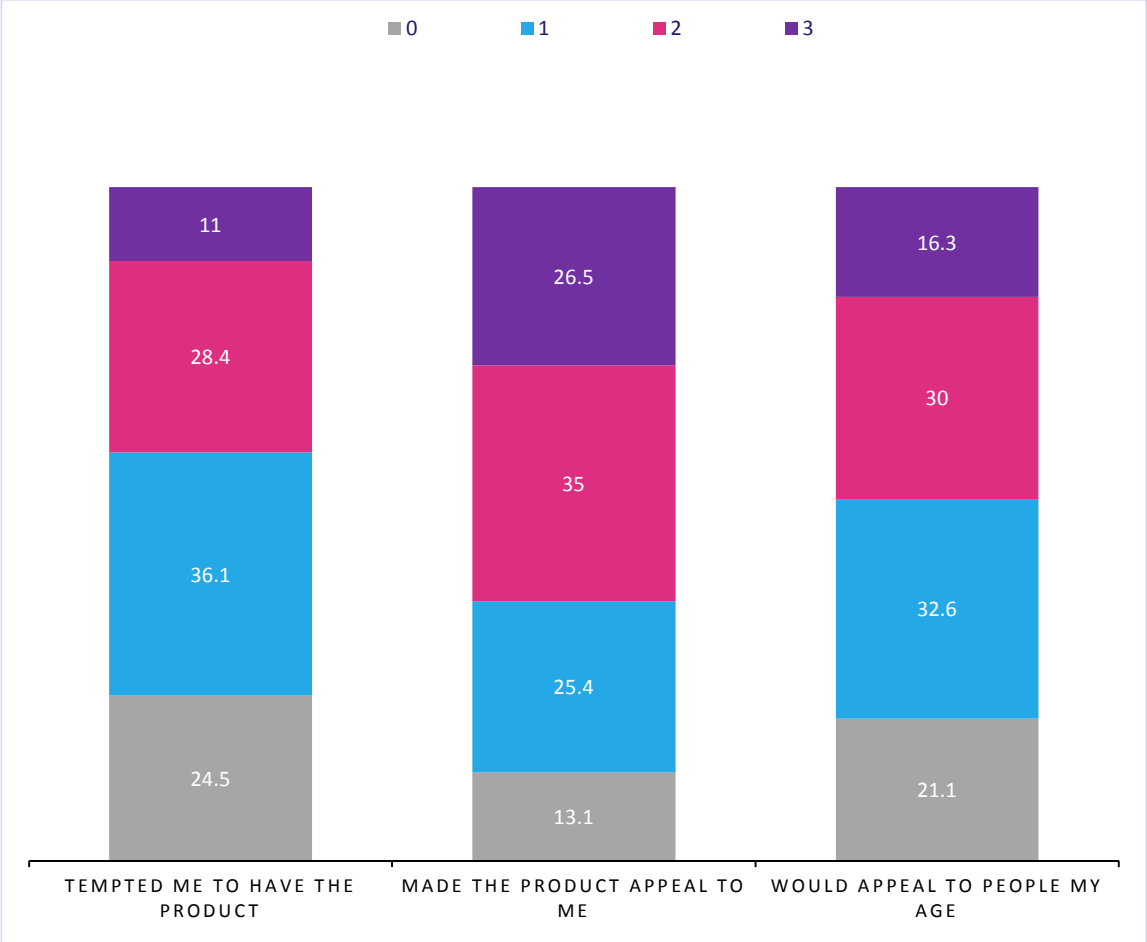



*Figure 4: Impressions of the advert or the advertised product of young people upon viewing a HFSS advert by percentage who agreed with the given statement for 0, 1, 2 or 3 of the three adverts shown.*

This shows that most young people in the UK find HFSS advertising appealing (86.9%), with 75.5% tempted to eat a product by an advert. The majority also thought HFSS adverts would be appealing to their peers (78.9%). Demographic breakdowns of these scores showed that obese people are statistically more likely to find a higher number of adverts appealing, or to believe it would be appealing to their age group ($p= 0.001$ and $p =0.029$). More deprived groups were had higher odds of being directly tempted by an advert ($p = 0.02$). Higher percentages of deprived groups also reported finding one or more adverts appealing – or feeling it would appeal to their peers – but these differences were not statistically significant at the 0.05 threshold.

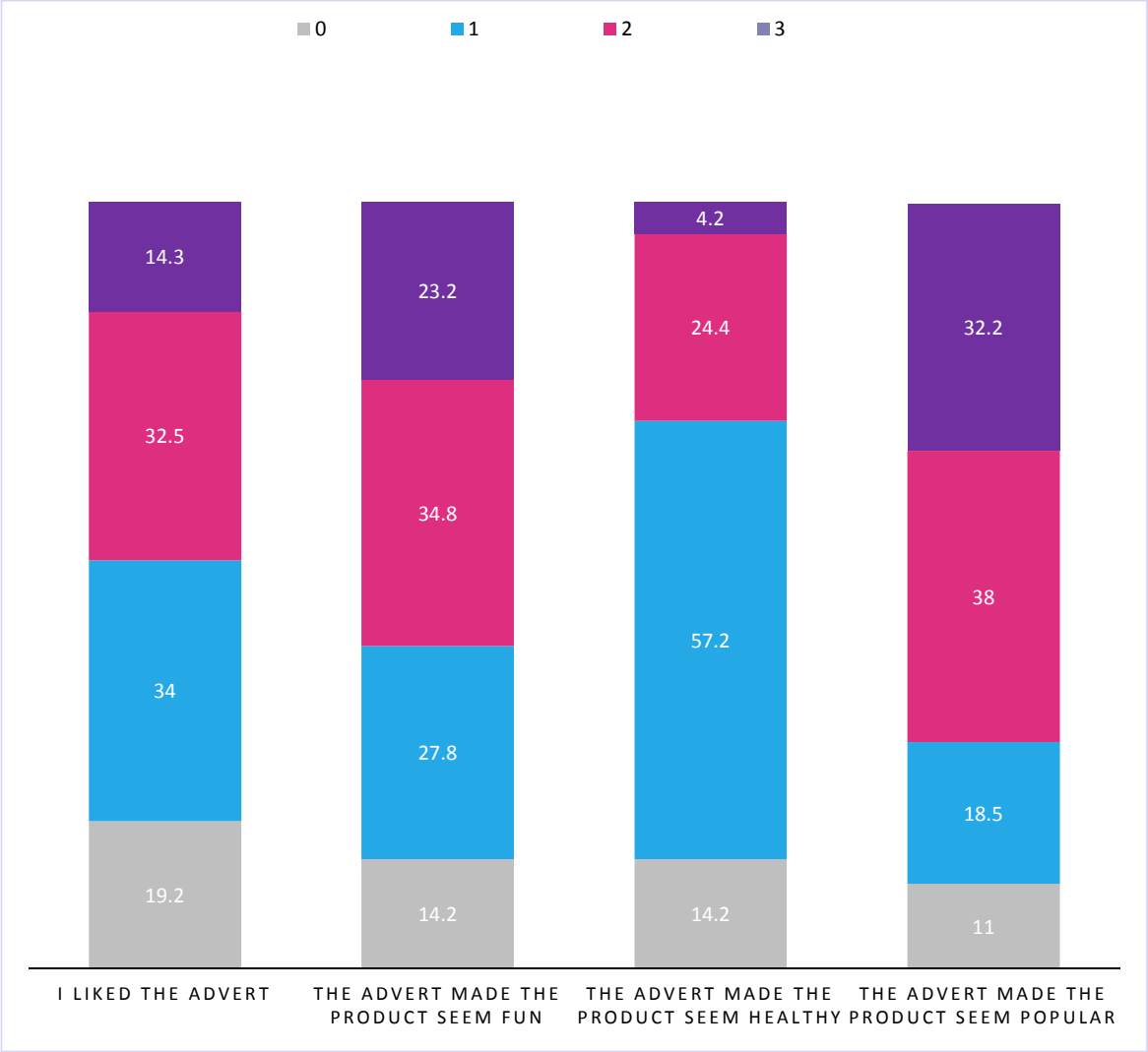



*Figure 5: Impressions of the advert or the advertised product of young people upon viewing a HFSS advert by percentage who agreed with the given statement for 0, 1, 2 or 3 of the three adverts shown.*

There was also substantial agreement that adverts made products seem healthy (85.8%), popular (89%) or fun (85.8%) and over 80% of participants liked at least one of the three adverts they were shown. Exploring the demographic breakdown again showed young people with obesity were particularly susceptible to adverts. They were significantly more likely to feel an advert made a product popular ($p = 0.033$) or fun ($p = 0.009$). There were no significant differences between deprived groups on this metric.

# 3. MARKETING AND DIET: TESTING ASSOCIATIONS

## BROADCAST MARKETING

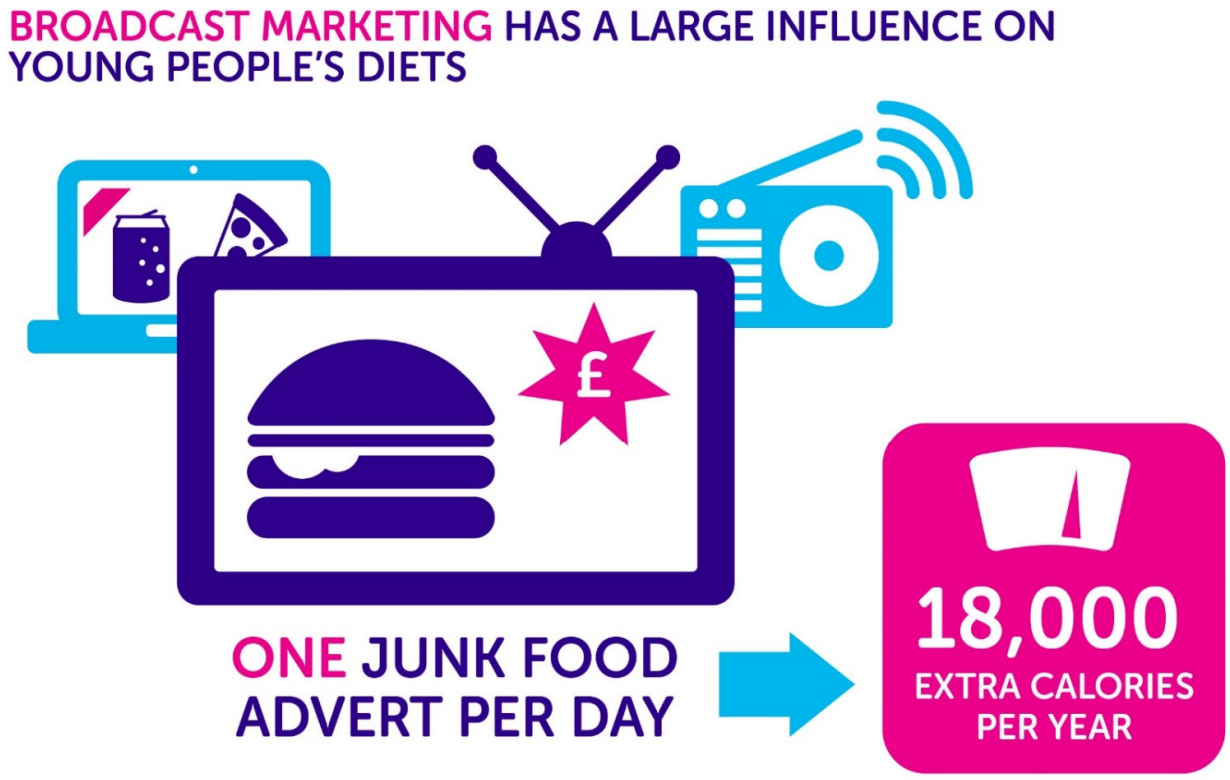
A linear regression showed a consistent association between broadcast marketing and consumption for 9 out of the 12 HFSS food and beverage groups tested (*Table 10*).

| | Product | Predicted Increase to Yearly Consumption (Portions) |
|---|---|---|
| **'Pocket Money' Items** | Cake/Biscuits | *Not Significant* |
| | Confectionary | 6.8 |
| | Sugary Drinks | 6.2 |
| | Crisps | 7.3 |
| | Desserts | *Not Significant* |
| | Energy Drinks | 6.2 |
| | **Sub-total** | **31.7** |
| **'Perceived' Healthy** | Flavoured Yogurts | 7.8 |
| | Milk Drinks | *Not Significant* |
| | Cereal | 6.8 |
| | **Sub-total** | **14.6** |
| **'Family bought' products** | Ready Meals | *Not significant* |
| | Fried Potatoes | 4.7 |
| | Takeaway | 7.3 |
| | **Sub-total** | **12.0** |
| **Alternatives to HFSS choices** | Diet Drinks | 5.7 |
| | **Sub-total** | **5.7** |
| **Healthy Products** | Fruit | *Not Significant* |
| | Vegetables | *Not significant* |
| | **Sub-total** | **No predicted change** |
| | **Total Predicted Extra HFSS Consumption** | **58.3** |

*Table 7: The association between broadcast marketing and diet. Coefficients are significant to the threshold of $P < 0.05$. Coefficients are the number of extra products predicted eaten where advertising exposure is 1 higher.*

In total, this means reporting having seen an extra advert on broadcast mediums over the last week predicts 58.3 extra HFSS items consumed per year. Takeaways (7.28, $p < 0.00$), crisps (7.28, $p = 0.042$) and flavoured yogurts (7.80, $p = 0.001$) are the foods that make up the largest proportion of these increased consumption, with fried potatoes being the smallest (4.68, $p = 0.034$). Large increases to confectionary, soft drinks and sugary cereals were also predicted.

Reporting in extra 'HFSS products' is a style of quantification that assumes that one HFSS product is equal to another. Given the range of products we tested – from cereal to takeaways – it makes sense to estimate and report this in total calories. To do this, statistically significant coefficients are multiplied by an estimate of average calories in each product (as taken from the literature and listed in **Appendix 2**). This method gives us a final estimate of 17,784 calories/person/year or 342 calories/person/week (2% of the maximum guideline calorie intake for this age group). This is the equivalent of approximately two servings of a sugar sweetened drink a week, or 105 extra servings over a year. In real world terms, and given the average junk food adverts seen was six, this would apply on average to **those who see just one junk food advert per day (7/week).**




Young people who recall one extra advert on any broadcast medium ate a predicted 18,000 calories extra per year on average.

## 'ADDED VALUE' MARKETING

"Added value" advertising was also associated with dietary choices. The coefficients were slightly larger, though fewer HFSS products were statistically significant in the model *(Table 7):*

| | Product | Predicted Increase to Yearly Consumption (Portions) |
|---|---|---|
| **'Pocket Money' Items** | Cake/Biscuits | *Not Significant* |
| | Confectionary | *Not significant* |
| | Sugary Drinks | 6.2 |
| | Crisps | *Not significant* |
| | Desserts | *Not significant* |
| | Energy Drinks | 8.1 |
| | **Sub-total** | **14.3** |
| **'Perceived' Healthy** | Flavoured Yogurts | 6.8 |
| | Milk Drinks | *Not significant* |
| | Cereal | 7.0 |
| | **Sub-total** | **13.8** |
| **'Family bought' products** | Ready Meals | 8.8 |
| | Fried Potatoes | 8.0 |
| | Takeaway | 8.9 |
| | **Sub-total** | **25.7** |
| **Alternatives to HFSS choices** | Diet Drinks | *Not significant* |
| | **Sub-total** | **No net change** |
| **Healthy Products** | Fruit | *Not significant* |
| | Vegetables | *Not significant* |
| | **Sub-total** | **No net change** |
| | **Total Predicted Extra HFSS Consumption** | **53.8** |

*Table 8: Coefficients over a week and over a year for products with a significant association with 'added value' HFSS marketing. Significance threshold is set at $P < 0.05$.*

7 of the 12 unhealthy foods or drinks were significantly associated with added value marketing. The coefficients were 9.36 for takeaways ($p < 0.00$) and ready meals ($p < 0.00$). The smallest was sugary drinks (6.2, $p = 0.004$). The narrow range of coefficients indicate a relatively consistent level of association between marketing and these HFSS groups.

## OFFLINE NON-BROADCAST MARKETING

There was no association between seeing offline, non-broadcast marketing and HFSS consumption in this study. Some potential implications of this are described in the discussion.

# 4. OTHER PREDICTORS OF HFSS CONSUMPTION

This section briefly outlines other factors which predicted changes in yearly HFSS consumption (*Table 12*).

| | Product | Predicted Change to Yearly Consumption | | |
|---|---|---|---|---|
| | | **+ 1 year in age (within 11-19 range)** | **Male** | **+1 affluence score** |
| **'Pocket Money' Items** | Cake/Biscuits | -3.7 | 5.4 | *Not significant* |
| | Confectionary | -4.2 | *Not significant* | *Not significant* |
| | Sugary Drinks | *Not significant* | +6.0 | -5.0 |
| | Crisps | -5.9 | +6.4 | -3.4 |
| | Desserts | -8.2 | +5.1 | +3.0 |
| | Energy Drinks | *Not significant* | +5.0 | -4.3 |
| | **Sub-total** | **-22** | **+27.9** | **-9.7** |
| **'Perceived' Healthy** | Flavoured Yogurts | -5.0 | *Not significant* | -3.0 |
| | Milk Drinks | -4.6 | +5.1 | -3.4 |
| | Cereal | -5.3 | +5.8 | *Not significant* |
| | **Sub-total** | **-14.9** | **+10.9** | **-6.4** |
| **'Family bought' products** | Ready Meals | *Not significant* | *Not significant* | -6.3 |
| | Fried Potatoes | *Not significant* | +5.3 | *-3.7* |
| | Takeaway | *Not significant* | +4.6 | -4.4 |
| | **Sub-total** | **Not net change** | **+9.9** | **-14.4** |
| **Alternatives to HFSS choices** | Diet Drinks | *Not significant* | +4.4 | *Not significant* |
| | **Sub-total** | **No net change** | **+4.4** | **No net change** |
| **Healthy Products** | Fruit | -4.6 | -5.0 | +4.3 |
| | Vegetables | *Not significant* | -5.5 | +8.0 |
| | **Sub-total** | **-4.6** | **-10.5** | **+12.3** |

*Table 9: Statistically significant results from the controls in our model with a threshold of P < 0.05.*

Gender accounted for some differences in consumption behaviours. Men were consistently associated with increased consumption of HFSS products. This was the case for 9 of the 12

unhealthy foods in the model, including cake/biscuits, fried potatoes, sugary drinks, crisps, desserts, energy drinks, milk drinks, cereal and takeaway. They were also associated with decreased consumption of fruit and vegetables (-5.0, $p = 0.002$ for fruit; -5.5, $p = 0.001$ for vegetables).

There was some association between age and dietary choices. Unit increases in age were generally associated with drops in HFSS consumption. This was true for 7 of the 12 unhealthy foods and drinks, including cake/biscuits, crisps, desserts, flavoured yogurts, milk drinks, sweetened cereal and confectionary. Coefficients ranged from -5.2 for cake/biscuits and confectionary ($p = 0.015$ and 0.001 respectively) to -9.36 for desserts ($p < 0.00$)

Increases in socioeconomic status (SES) were correlated to decreases in consumption of HFSS foods for 7 of the 12 HFSS foods and drinks. Increases in affluence were also associated with increases in both fruit and vegetable consumption (4.3, $p = 0.002$ and 8.0, $p < 0.00$ respectively). The only HFSS food where increased affluence predicted increased consumption for was desserts (3.0, $p = 0.037$), though this is a relatively small coefficient and does not interrupt the general trend.

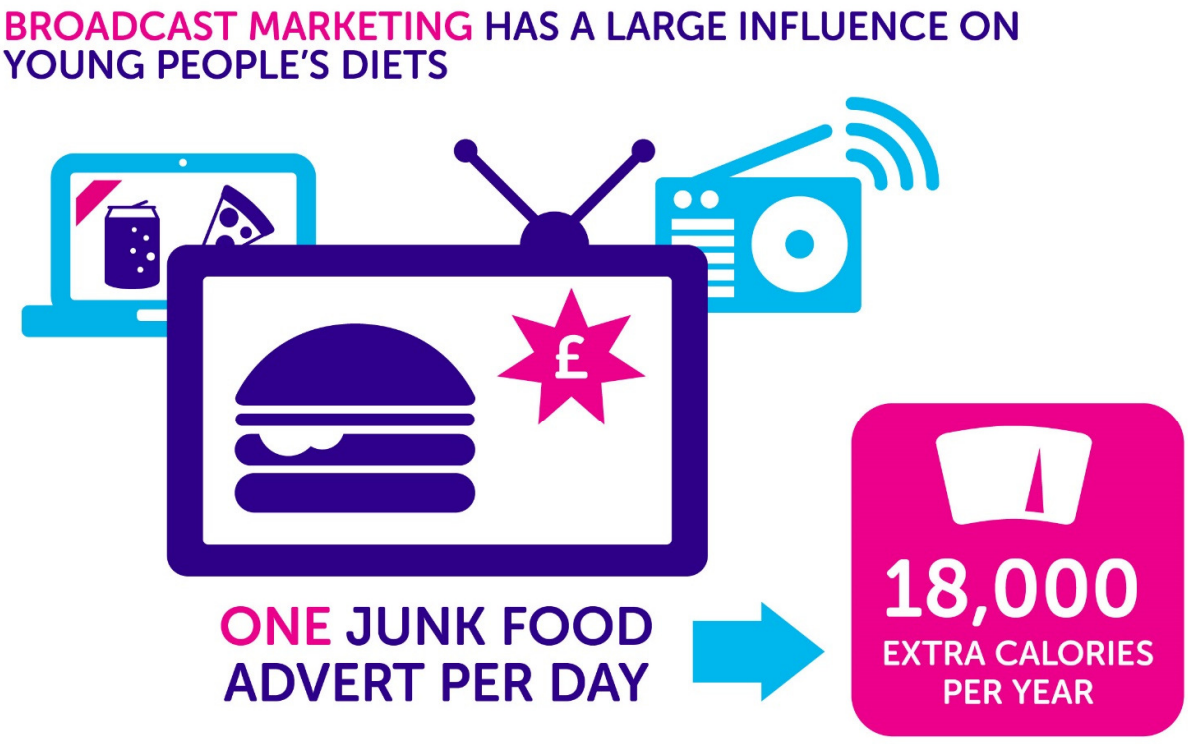
Health awareness and ethnicity were also covariates in the models, however there was no association between either and consumption of HFSS in this analysis.

# DISCUSSION

This study investigated HFSS consumption, marketing exposure and any associations between the two. It shows a clear and consistent correlation between HFSS marketing and HFSS consumption amongst 11-19-year olds in the UK. It also shows that HFSS consumption remains at harmful levels, and that young people feel under pressure to eat or drink these products.

Broadcast marketing predicted increased HFSS consumption, with 75% of tested HFSS product types having a statistically significant association with higher advert exposure. This coheres with previous literature, including experimental studies[10,11], survey studies[11,25,46] and meta-analyses[12] that have found a substantial link between HFSS marketing and HFSS consumption. Our evidence thus reiterates that, despite Ofcom's regulations in 2008, there is still a clear and consistent association between the marketing young people see and the foods young people eat in UK.

Small increases in calorie consumption over a long period of time can explain increases in BMI and worse weight outcomes[9,47]. Public Health England has attributed much of the increased incidence of obesity to 300 extra calories overeating per day amongst the adult population with children following suit[28,48]. The analysis here shows that seeing just one extra HFSS broadcast advert per week predicts almost 350 extra calories per week (18,000/year). In real world terms, and given the average junk food adverts seen was six, this would apply on average to **those who see just one junk food advert per day.** Moreover, participants with obesity did, on average, report seeing *one extra HFSS broadcast advert per week* - a further indication that




Young people who recall one extra advert on any broadcast medium ate a predicted 18,000 calories extra per year on average.

broadcast marketing could be nudging young people towards harmful long-term weight increases.

These figures can be interpreted in several other ways. Given that young people consumed around 6,350 calories/week from HFSS sources, the 350 calories/week predicted by an extra broadcast advert could be said to explain 5% of all HFSS calories. Equally, almost 20,000 calories is over 100 cans of soft drinks or portions of cake per year. Either way, and given that obesity is a hugely complex issue, this is a substantial amount for one environmental factor to predict. Mitigating it could be a substantial step towards the 300 calorie/day reduction in HFSS eating and drinking mentioned in the previous paragraph.

Ways of adding value to a brand or marketing campaign, such as celebrity endorsements, sponsorship or competitions, were also strong predictors of HFSS intake. These types of advertisement are delivered through other mediums – e.g. billboards, hoardings or 'messages from a sponsor'. This makes it hard to disassociate the exact predicted impact of this kind of advertising from the predicted impact of the other variables in the model. Rather, the association indicates that these specific types of adverts add further power to marketing[49] – including when used on broadcast mediums – increasing their potential influence on young people and further justifying policy to protect vulnerable groups from overexposure.

Offline non-broadcast marketing did not appear to predict HFSS consumption. However, caution should be taken in interpreting this. Firstly, this should not be confused with saying that the individual elements that make up our definition of offline non-broadcast marketing did not predict HFSS eating. Rather, this study suggests the more general conclusion that this type of marketing does not warrant policy prioritisation in the same way broadcast marketing does, though it may be an important element to a wider approach to obesity. Secondly, it should be remembered that this study only discussed advertisements young people see. It may be that certain non-broadcast adverts, such as price promotions, only show a statistically significant effect on consumption once interacted with (i.e. after purchase). This would cohere with the existing price promotions evidence[50-52]. It may also be that adults are more influenced by price than children and young people.

In sum, this evidence supports the case that broadcast marketing is a powerful and negative relationship with young people's nutritional choices. Yet, addressing this is more urgent if unhealthy messages are more prominent than healthy messages in the wider environment. There was evidence indicating this is the case. Most strikingly, there was a distinct sense of 'pressure' to eat unhealthily amongst all demographics. This was particularly seen amongst participants with obesity or overweight – a link suggestive of the weight outcome/unhealthy messaging association. Brand awareness responses further indicate the lack of balance between healthy and unhealthy stimuli. Brands with HFSS products amongst their best sellers were far more likely to be recalled by young people and, of the top ten brands recalled, 8 market products that can be easily associated with the category. Rates of recall were as high as 68% for some of these brands. By contrast, brands without HFSS products amongst their top sellers had lower levels of awareness. This result is compounded by comprehensive links between brand recall/recognition and consumption habits established elsewhere[53-55]. Content analyses have previously highlighted the extensive advertising for HFSS products compared to little advertising for healthy products[29].

Furthermore, there was evidence that broadcast marketing might be implicit in this pressurised and unhealthy environment. When shown HFSS adverts, most young found one or more of the

products immediately tempting or appealing. They also associated it with positive traits such as being healthy, popular or fun. Further, there were large numbers who felt the adverts would be appealing to their peers, suggesting the adverts are age appropriate and socially acceptable. It is possible to see how this could contribute to the perceived influence and efficacy of unhealthy messaging in young people's environment.

Perhaps unsurprisingly, given this environment, levels of HFSS consumption were at harmful levels across all demographics. Young people in the UK, on average, consumed 30 HFSS products a week – or almost 6,300 calories. This is a substantial proportion of their recommended guideline daily amount. This alone could justify population-level harm reduction policies. However, level of deprivation or affluence was a key predictor of diet. This is a reminder that questions of nutrition – and of health generally – cannot be disassociated from questions of health inequality. Policy instruments designed to help those with poor diet, such as marketing restrictions, have the clear potential to simultaneously address both questions if properly designed.

The primary message from this study is that young people are under to pressure to make unhealthy dietary choice. Marketing has a key role in this – presenting tempting, alluring products which are made to seem fun, healthy and popular to young people. In this environment, it is easy to see how healthy choices are hard to make and HFSS food products have become a core component of young people's diets. Young people and children need increased policy support to help rebalance the representation of foods and drinks and to nudge them back towards a balanced, healthy lifestyle.

# POLICY RECOMMENDATIONS

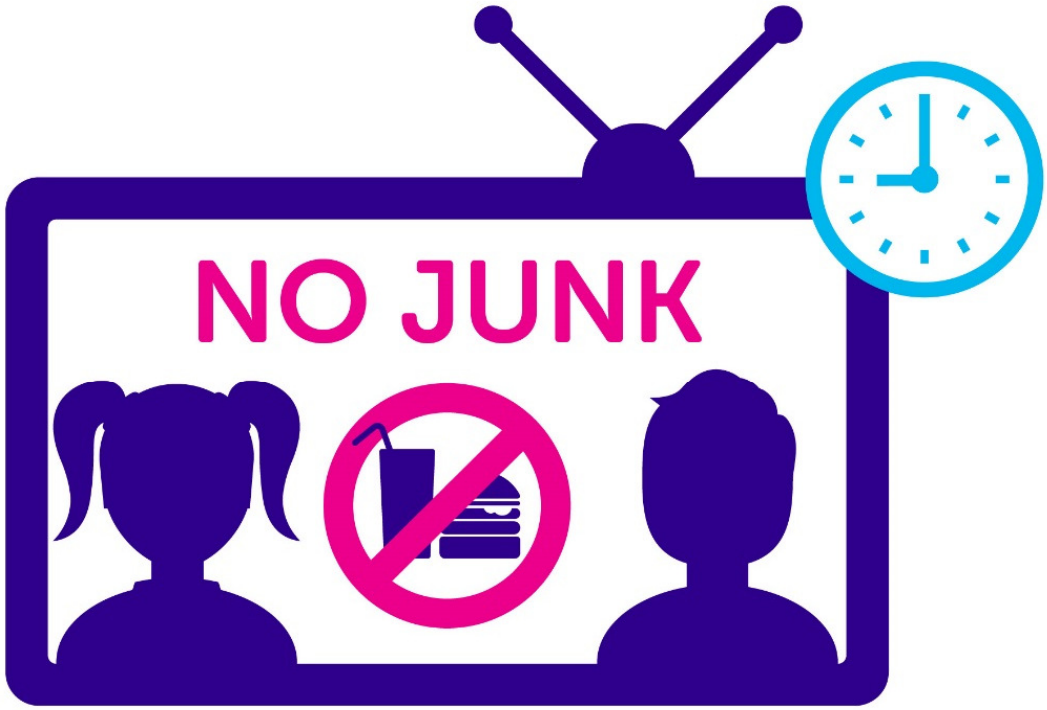
Our evidence shows that, 10 years on from the last update to broadcast marketing regulations, marketing's relationship with young people's diets is substantial enough to justify new restrictions. Specifically, several recommendations should be adopted throughout the UK:

1. **HFSS consumption is too high and population level interventions should be implemented:** HFSS consumption was a more prominent feature of young people's diets than healthy eating and generally a prominent feature of young people's weekly diets. We estimate that young people are consuming an estimated 35% of their guideline calories through HFSS eating which could lead to harmful weight increases and justifies policy action. Young people from deprived backgrounds were significantly more liable to HFSS consumption, meaning that if no action is taken this is an issue that will likely exacerbate existing health inequalities.
2. **Young people are under huge pressure from unhealthy messaging and updating broadcast advert regulations are the best way to help support them:** Exposure to an extra broadcast advert predicted 350 more calories consumed – or 2% of the highest recommended calorie intake for this age group – a substantial amount for one environmental factor. Broadcast marketing was also perceived as healthy, fun, popular and tempting, particularly amongst those with overweight, obesity or from deprived communities. It is likely this specific appeal to young people underpinned the feeling of pressure to eat unhealthily reported by participants. The most effective mechanism to support them would be a 9pm watershed, addressing the problem of family viewing on evenings and weekends.
3. **Restrictions should apply all broadcast mediums including television, online on-demand services and radio**. However, given the results of our previous study on television content specifically, TV should remain the government's priority[22]. This would help young people with the most harmful diets the most – which included those from the most deprived communities in this analysis.

Analysis showed HFSS consumption levels were relatively similar across the UK. This suggests UK-wide policy is justified and should receive support from policy makers and political figures across the four nations. However, this action should be taken in Westminster, where relevant legislative competencies reside. Analysis also showed deprived groups remain in need of urgent support, suggesting a watershed could be a useful policy instrument to improve health and contribute to addressing the UK's health inequalities problem.

Amendments to existing HFSS marketing restrictions are one constructive approach, though other measures will also be needed to tackle the issue fully. For example, we are aware of opportunities to act on non-broadcast marketing, amongst other areas, in the devolved nations – through the obesity strategies due in Scotland and Wales. Given the specific evidence base on these topics, and the powers available to the devolved nations, we support these policies. Nonetheless, this evidence indicates that broadcast marketing restrictions remain the pragmatic way forward for UK policy to have a large positive impact of children's dietary choices and weight outcomes, and should be Westminster's priority.

LET'S EASE THE PRESSURE ON YOUNG PEOPLE




TIME FOR JUNK FOOD AD RESTRICTIONS BEFORE 9PM

# LIMITATIONS

This study is a cross-sectional data capture, meaning causation cannot be established. Nonetheless, it provides contextual evidence which, in tandem with the comprehensive evidence base on the subject, helps justify the case for action on marketing. It is also a self-reported survey, which can lead to problems with recall – though this should be mitigated by the fact it impacts recalled consumption (the independent variable) and recalled marketing exposure (the dependent variable) alike. Equally, it provides a good account of advert awareness and though there may be moderating factors (memory, intelligence, education level of the child) the survey questions were adapted from a rigorously validated instrument (the YTPS) and subjected to full cognitive testing in advance of the survey being run.

# FURTHER RESEARCH

The Policy Research Centre for Cancer Prevention will be undertaking further research into deprivation, the link between marketing and weight, and the role of marketing engagement in diet. Current plans for reports in 2018 include explorations of the case for regulation, explorations of how HFSS marketing relates to deprivation and a more specific examination of interactive/digital marketing.

# APPENDICES

## 1. REGRESSION TABLES

Due to the quantity of regression tables necessary in this research, they have not been included in full. 15 regression tables are available for each different model. For enquiries, please email PRCP@cancer.org.uk.

## 2. REPRESENTATIVE FOODS AND DRINKS

The below table gives our sources for estimated category calorie content of each HFSS product type.

| Product | Calorific Content/portion | Source |
|---|---|---|
| **Cake/Biscuits** | 160 | Public Health England[56] |
| **Fried Potatoes** | 150 | FDA[57] |
| **Sugary Drinks** | 173 | Public Health England[56] |
| **Crisps** | 190 | Public Health England[48] |
| **Desserts** | 220 | Public Health England[56] |
| **Energy Drinks** | 173 | Public Health England[56] |
| **Flavoured Yogurts** | 120 | Public Health England[56] |
| **Milk Drinks** | 173 | Public Health England[48] |
| **Ready Meals** | 470 | Which?[58] |
| **Cereal** | 400 | Public Health England[56] |
| **Confectionary** | 163 | Public Health England[56] |
| **Takeaway** | 1203 | Which?[59] |

*Table 1: Sources of calorie estimates used alongside coefficients to estimate calorie intake from HFSS sources and calorie intake predicted by extra broadcast advertisements.*

| Product | How average calories were established |
|---|---|
| **Cake/Biscuits** | Average of average calories in a biscuit portion and cake portion as provided by Public Health England's report on sugar reformulation. |
| **Fried Potatoes** | The FDA has provided a calculation of calories in a serving of fries and this is taken directly from their report. |
| **Sugary Drinks** | Sales weighted average calorie content as provided in the annex of Public Health England's report on sugar reformulation. |
| **Crisps** | As released by Public Health England in their press release accompanying the Change4Life January 2018 campaign. |
| **Desserts** | Average of average calories in a portion as provided by Public Health England's report on sugar reformulation (see 'puddings'). |
| **Energy Drinks** | Sales weighted average calorie content as provided in the annex of Public Health England's report on sugar reformulation. As these are included in the 'soft drinks' average in this work, the same calorie count was adopted for energy drinks, milk-based drinks and fizzy drinks. |
| **Flavoured Yogurts** | Average of average calories in a portion as provided by Public Health England's report on sugar reformulation. |
| **Milk Drinks** | As these are included in the 'soft drinks' average in this work, the same calorie count was adopted for energy drinks, milk-based drinks and fizzy drinks. |
| **Ready Meals** | Calories in ½ a frozen pepperoni pizza (the survey's prompt for this question) – considered equal to 175 grams and based on Which? Data (takeaway food excluded). |
| **Cereal** | Average of average calories in a portion as provided by Public Health England's report on sugar reformulation. |
| **Confectionary** | Average of average calories in a sweets confectionary portion and chocolate confectionary portion as provided by Public Health England's report on sugar reformulation. |
| **Takeaway** | Average calories taken from Which? Data on calories in Indian, Chinese and Pizza takeaways |

*Table 2: Method of extracting calorie estimates for each category from the literature. Where possible, UK government estimates of sales weighted average calories for a product type are preferred.*

## 3. DIET DISTRIBUTIONS IN THE DEVOLVED NATIONS

The distributions of consumption in the devolved nations was relatively homogenous with England and UK data. However, some differences did exist and these are given here via the same categories used in the all-UK table.

TABLE 1. EXTREMELY HIGH CONSUMERS (%) OF HFSS PRODUCTS IN EACH UK NATION

| | **Product** | **Extremely high consumers (%)** | | | |
|---|---|---|---|---|---|
| | | England | Scotland | Wales | Northern Ireland |
| **'Pocket Money' Items** | Cake/Biscuits | 27 | 30 | 28 | 42 |
| | Confectionary | 18 | 24 | 17 | 23 |
| | Sugary Drinks | 10 | 14 | 9 | 16 |
| | Crisps | 20 | 18 | 20 | 16 |
| | Desserts | 16 | 9 | 14 | 4 |
| | Energy Drinks | 2 | 3 | 1 | 8 |
| **'Perceived' Healthy** | Flavoured Yogurts | 6 | 6 | 4 | 12 |
| | Milk Drinks | 6 | 7 | 6 | 8 |
| | Cereal | 12 | 13 | 14 | 14 |
| **'Family bought' products** | Ready Meals | 4 | 4 | 2 | 6 |
| | Fried Potatoes | 5 | 6 | 2 | 7 |
| | Takeaway | 1 | 1 | 0 | 1 |
| **Alternatives to HFSS choices** | Diet Drinks | 13 | 17 | 11 | 12 |

## TABLE 2. HIGH CONSUMERS (%) OF HFSS PRODUCTS IN EACH UK NATION

| | Product | High consumers (%) | | | |
|---|---|---|---|---|---|
| | | England | Scotland | Wales | Northern Ireland |
| **'Pocket Money' Items** | Cake/Biscuits | 35 | 36 | 28 | 42 |
| | Confectionary | 45 | 50 | 37 | 38 |
| | Sugary Drinks | 22 | 24 | 22 | 30 |
| | Crisps | 37 | 41 | 37 | 47 |
| | Desserts | 36 | 34 | 37 | 27 |
| | Energy Drinks | 5 | 4 | 2 | 6 |
| **'Perceived' Healthy** | Flavoured Yogurts | 20 | 19 | 21 | 20 |
| | Milk Drinks | 12 | 10 | 13 | 11 |
| | Cereal | 23 | 26 | 23 | 28 |
| **'Family bought' products** | Ready Meals | 30 | 31 | 35 | 31 |
| | Fried Potatoes | 31 | 37 | 35 | 44 |
| | Takeaway | 8 | 9 | 7 | 12 |
| **Alternatives to HFSS choices** | Diet Drinks | 20 | 19 | 15 | 23 |

## TABLE 3. MODERATE CONSUMERS (%) OF HFSS PRODUCTS IN EACH UK NATION

| | Product | Moderate Consumers (%) | | | |
|---|---|---|---|---|---|
| | | England | Scotland | Wales | Northern Ireland |
| **'Pocket Money' Items** | Cake/Biscuits | 28 | 23 | 31 | 22 |
| | Confectionary | 27 | 19 | 28 | 22 |
| | Sugary Drinks | 31 | 28 | 34 | 28 |
| | Crisps | 27 | 26 | 26 | 24 |
| | Desserts | 31 | 35 | 33 | 46 |
| | Energy Drinks | 10 | 10 | 8 | 10 |
| **'Perceived' Healthy** | Flavoured Yogurts | 21 | 24 | 25 | 19 |
| | Milk Drinks | 23 | 22 | 21 | 19 |
| | Cereal | 20 | 18 | 13 | 17 |
| **'Family bought' products** | Ready Meals | 42 | 41 | 40 | 37 |
| | Fried Potatoes | 51 | 45 | 50 | 34 |
| | Takeaway | 50 | 55 | 49 | 62 |
| **Alternatives to HFSS choices** | Diet Drinks | 21 | 24 | 26 | 23 |

## TABLE 4. OCCASIONAL CONSUMERS IN EACH UK NATION

| | Product | Infrequent consumers (%) | | | |
|---|---|---|---|---|---|
| | | England | Scotland | Wales | Northern Ireland |
| **'Pocket Money' Items** | Cake/Biscuits | 10 | 10 | 10 | 9 |
| | Confectionary | 8 | 7 | 5 | 6 |
| | Sugary Drinks | 34 | 33 | 33 | 25 |
| | Crisps | 14 | 16 | 16 | 11 |
| | Desserts | 14 | 22 | 14 | 21 |
| | Energy Drinks | 81 | 83 | 89 | 66 |
| **'Perceived' Healthy** | Flavoured Yogurts | 51 | 49 | 47 | 47 |
| | Milk Drinks | 58 | 60 | 58 | 61 |
| | Cereal | 44 | 41 | 49 | 38 |
| **'Family bought' products** | Ready Meals | 23 | 21 | 22 | 26 |
| | Fried Potatoes | 13 | 11 | 12 | 14 |
| | Takeaway | 39 | 34 | 42 | 24 |
| **Alternatives to HFSS choices** | Diet Drinks | 44 | 38 | 46 | 39 |

# REFERENCES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