



# A Prime Time for Action

**NEW EVIDENCE ON THE LINK  
BETWEEN TELEVISION AND ON-  
DEMAND MARKETING AND  
OBESITY**

**MARCH 2018**

## REFERENCE

This report should be referred to as follows:

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## CANCER RESEARCH UK

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This research was funded by the Policy Research Centre for Cancer Prevention, Cancer Research UK. For more information please contact [PRCP-team@cancer.org.uk](mailto:PRCP-team@cancer.org.uk)



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# LIST OF ACRONYMS

High in fat, salt or sugar

HFSS

Cancer Research UK

CRUK

Policy Research Centre for Cancer Prevention

PRCP

Broadcasting Committee of Advertising Practice

BCAP

Youth Obesity Policy Survey

YOPS

# FOREWORD

Overweight and obesity are estimated to cause 5% of all cancer cases in the UK, at a substantial cost to the NHS. Results from this year's National Childhood Measurement Programme, run by Public Health England, show obesity rates at the end of primary school at the alarmingly high level of 30%. Obesity is also a global problem. We thus need all the evidence we can muster to support the design of effective strategies to address the problem.

This report aims to contribute to this evidence base on a critical but controversial topic: food marketing to young people. The third in a series of reports identifying findings from the Youth Obesity Policy Survey run by the Policy Research Centre for Cancer Prevention at Cancer Research UK, examines the association between young people's body mass index (BMI) and their ability to recall advertising for foods high in fats, sugars and salt delivered through a range of platforms.

While the study is not designed to establish any causal link between marketing and obesity, it shows very strongly that there is some form of interaction between having a high BMI and marketing of fatty, sugary and salty foods. As such, it provides further evidence that the marketing of these foods is not providing a supportive environment for young people who experience obesity. It also shows that young people in deprived communities are more likely to recall having seen marketing for foods high in fats, sugars and salt and that children of all ages - including teenagers - can recall marketing.

The UK government and food and marketing industries have a considerable opportunity to ensure that young people are surrounded by consistent messaging that provides support to young people in making food choices. I encourage policy makers and all relevant stakeholders to consider the evidence presented in this report in their work to design effective actions that support the health and wellbeing of young people.



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# EXECUTIVE SUMMARY

## HOW DOES OBESITY IN CHILDHOOD AFFECT CANCER RISK AS AN ADULT?



Obesity is the biggest preventable cause of cancer in the UK after smoking. Being overweight or obese is associated with more than 18,000 cancer cases a year in the UK (approximately 5% of all cancer cases)<sup>1</sup>. The largest number of weight-linked cases in the UK are breast, bowel and womb<sup>2</sup>. Modelling studies estimate that if current trends continue, there will be 670,000 obesity associated UK cancer cases between 2015 and 2035<sup>3</sup>. The cost of this rise in obesity to the NHS could be up to an extra £2.5 billion/year<sup>3</sup>.

Childhood obesity is a specific problem in the UK. As Public Health England's National Childhood Measurement Programme trends analysis report recently showed, childhood obesity rates have plateaued at an alarmingly high rate<sup>4</sup>. Furthermore, an obese child is around five times more likely to become an obese adult<sup>5</sup>. There is no sole explanation for the rise in levels of obesity amongst young people. Explanations in the research literature are as diverse as genetics, increased calorie intake and lower levels of exercise<sup>6-10</sup>. However, increasing calorie intake is thought to be the most significant factor in explaining how obesity has risen to current levels in just a few decades<sup>6,8,11</sup>.

There is a growing amount of literature

highlighting the link between junk food marketing and increasing BMI<sup>12-18</sup>. Ofcom regulations were introduced ten years ago to prevent junk food advertisements being shown in or around programmes specifically made for children<sup>19</sup>. This UK-wide and representative study of 11-19-year old's diet, weight, and marketing exposure investigates whether they are fit for purpose ten years on.

This report builds on an already substantial evidence base and justifies action on junk food marketing in the UK. This is part three in a series of reports<sup>20,21</sup> emphasising the various impacts of junk food marketing on young people, including influences of television as well as other marketing platforms on diet, alongside health inequalities.

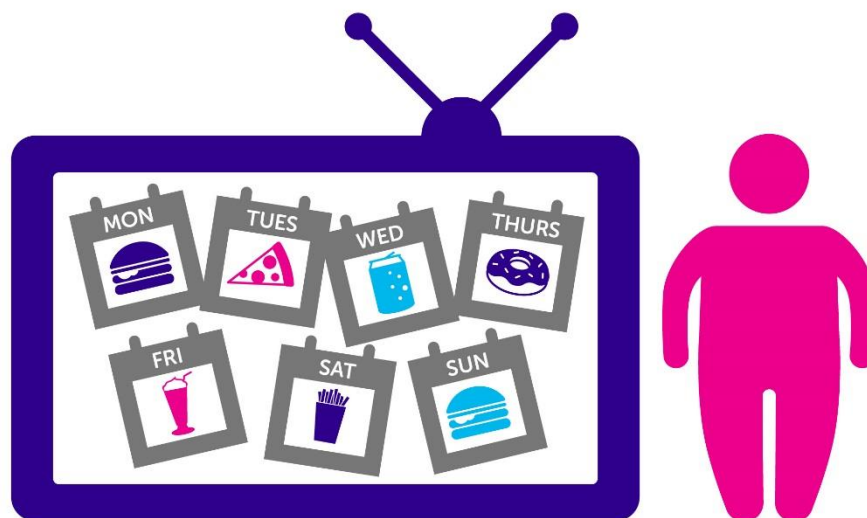
### LET'S REDUCE ADVERT EXPOSURE TO YOUNG PEOPLE



TIME FOR JUNK FOOD AD RESTRICTIONS BEFORE 9PM

# KEY FINDINGS

## JUNK FOOD ADVERT RECALL IS ASSOCIATED WITH OBESITY



**YOUNG PEOPLE WHO RECALLED SEEING JUNK FOOD ADVERTS EVERY DAY WERE MORE THAN TWICE AS LIKELY TO BE OBESE.**

Five key questions have been identified on the association between junk food marketing and obesity. Our findings provide evidence that answers these questions, and clarifies whether junk food marketing restrictions are the logical next step.

### **1) IS HIGH RECALL OF JUNK FOOD ADS RELATED TO A PERSON'S WEIGHT?**

**Yes** - our data found that young people are associated with a significantly increased likelihood of being obese when they can regularly recall seeing adverts on television, billboard and social media marketing. This points towards overconsumption being a consequence of high recall of seeing junk food advertising.

- *The likelihood of being obese more than doubles when a person can recall seeing unhealthy food and drink adverts on television every day.*
- *The likelihood of being obese is twice as high when a person can recall seeing*

*unhealthy food and drink adverts on billboards every day.*

- *The likelihood of being obese increases two and a half times when a person can recall seeing unhealthy food and drink adverts on social media every day.*

### **2) DOES THE RELATIONSHIP HOLD FOR OLDER TEENAGERS, AS WELL AS YOUNGER CHILDREN?**

**Yes** - our study incorporated 3,348 11-19-year olds across all demographics. There was a significant relationship between marketing and obesity across all ages, not just those aged 12 and younger, where the literature is more prominent<sup>12,17,22-25</sup>. Age was not a significant predictor of obesity when analysed against all marketing platforms that were significantly associated.

- *Age was not a significant factor affecting weight outcomes, but high recall of seeing advertising was. This shows that all the ages tested are affected by marketing.*

### 3) DO ADS ON STREAMING SERVICES HAVE A SIMILAR RELATIONSHIP TO WEIGHT AS TV ADS?

**Yes** – reported hours of streaming screen time were consistently high within this study. When combining reported commercial screen time of both television and streaming services, there is significant association with an obese BMI for a young person. This indicates that both platforms influence weight outcomes in young people and require consideration in future regulation.

- *A high level of viewing of television and streaming services is associated with being almost twice as likely to be obese*
- *Non-commercial screen time reported in this study was not significantly associated with obesity*

### 4) ARE PEOPLE FROM MORE DEPRIVED COMMUNITIES MORE AFFECTED BY JUNK FOOD ADS ON TV?

**Yes** – Those from the most deprived communities are associated with a high recall of seeing junk food marketing. This, combined with their already recognised greater risk of

unhealthy weight outcomes<sup>26-28</sup>, suggest that they would potentially have the most to gain from regulation designed to reduce junk food advert exposure.

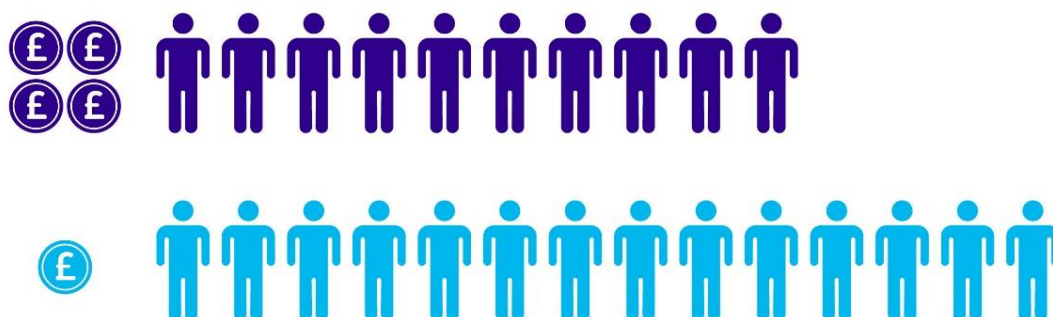
- *Those recalling seeing television adverts every day were found to be 40% more likely to be from the most deprived group, compared to the least deprived (most affluent) group.*
- *Within this study, 22% of obese respondents were from the most deprived quintile compared to 12% from the least deprived (most affluent) quintile.*

### 5) CAN REDUCED EXPOSURE TO JUNK FOOD ADS BENEFIT YOUNG PEOPLE'S HEALTH?

**Yes** - where there was a lower recall of seeing junk food marketing, there was also a significantly lower likelihood of being obese. Therefore, tighter regulation would likely be a health benefit to young people, as there would be less exposure to junk food advertising.

- *Respondents who recalled seeing junk food adverts less than once a week were 70% less likely to be obese, compared to those recalling seeing junk food adverts every day.*

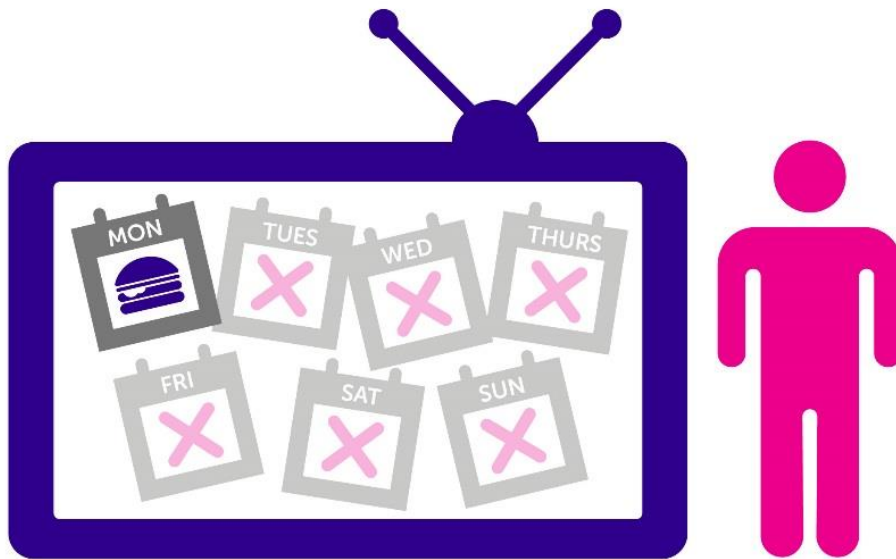
## JUNK FOOD AD RECALL WAS ASSOCIATED WITH WEALTH INEQUALITIES



**YOUNG PEOPLE FROM THE MORE DEPRIVED GROUP WERE FOUND TO BE 1.4 TIMES MORE LIKELY TO RECALL SEEING JUNK FOOD ADVERTS EVERY DAY.**



## CAN REDUCED EXPOSURE BENEFIT WEIGHT OUTCOMES?



YOUNG PEOPLE WERE FOUND TO BE **70% LESS LIKELY** TO BE OBESE WHEN RECALLING SEEING JUNK FOOD ADVERTS LESS THAN ONCE A WEEK.

### POLICY IMPLICATIONS

This report answers key questions about junk food advert restrictions, and provides detailed evidence supporting their implementation in the UK.

We subsequently suggest three key areas of change to help address marketing and help reduce the UK's obesity epidemic.

#### 1) UPDATE:

Updating the current regulation by introducing a 9pm watershed. This will then include family shows and evening shows, where HFSS advertising is especially high, combined with a larger audience of young people.

#### 2) EXPAND:

Expansion of the current regulation to increase the influence over streaming and on-demand services, as well as television. With more and more young people using these platforms, it is important to address how to reduce exposure to the adverts they see.

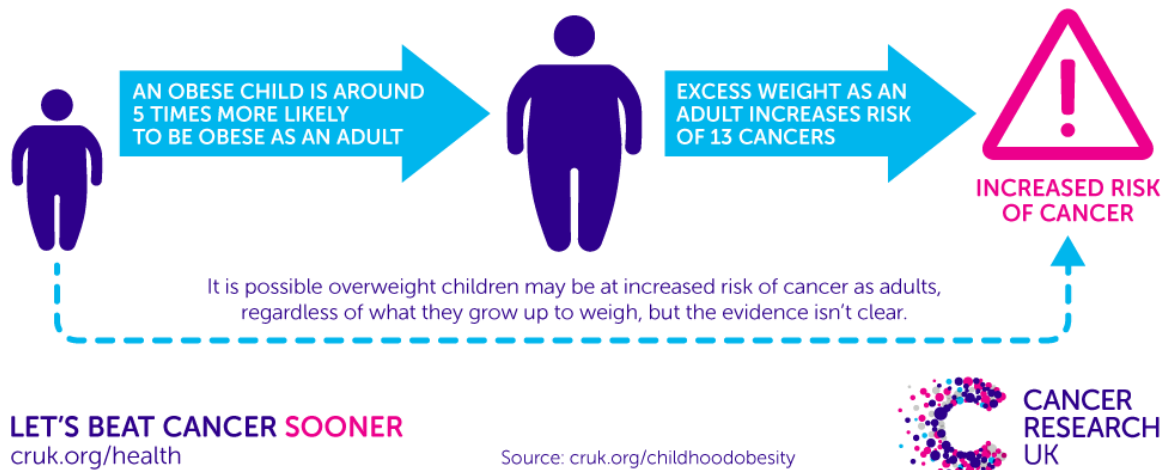
#### 3) INCLUDE:

Inclusion within obesity policy development, of 16-17-year olds (i.e. under 18), as they too are affected by advertising.

These recommendations constitute a simple way for policy makers to achieve success in both decreasing childhood obesity and sustainably improving public health.

# INTRODUCTION

## HOW DOES OBESITY IN CHILDHOOD AFFECT CANCER RISK AS AN ADULT?



*Figure 1: Childhood obesity increases the chance of obesity in adulthood by around 500%. This, in turn, increases cancer risk.*

Obesity is the biggest preventable cause of cancer in the UK after smoking. Being overweight or obese is associated with more than 18,000 cancer cases a year in the UK (approximately 5% of all cancer cases)<sup>1</sup>. The largest number of weight-linked cases in the UK are breast, bowel and womb<sup>2</sup>. Modelling studies estimate that if current trends continue, it will lead to a further 670,000 obesity associated cancer cases in the UK by 2035<sup>3</sup>. The cost of this rise in obesity to the NHS could lead to an extra £2.5 billion/year<sup>3</sup>.

Childhood obesity is a specific problem in the UK. Although incidence has plateaued, it is at a very high level and an obese child is around five times more likely to become an obese adult (*Figure 1*<sup>29</sup>)<sup>5</sup>. This increases cancer and other health risks in the long term<sup>30</sup>, but also risks psychological harm to the child<sup>31</sup>. There is no single explanation for the rise in levels of obesity amongst young people. Research has pointed to numerous factors as diverse as genetics, increased consumption and lower levels of exercise<sup>7-10,32</sup>. However, factors which increase (unhealthy) food/drink consumption are the best explanations for the increased prevalence seen in the last few decades.<sup>6,8,11</sup>

The association between recalling seeing marketing of high fat, salt or sugar (HFSS) food items and increased body mass index (BMI) in young people has been highlighted in a range of studies<sup>12-18</sup>. Research also shows that there is an enormous spend from advertisers on the marketing of junk food to children and young adults<sup>33</sup>, indicating that they are aware of the increased consumption from advertising to that consumer group<sup>34,35</sup>. Additionally, evidence shows that almost 98% of food advertisements seen by children are HFSS products<sup>36</sup>. The prominence of these advertisements, compared to those for healthier food options or nutritional education<sup>37,38</sup> indicates a disproportionate exposure to junk food marketing. Repeated exposure to such advertising has been shown to lead to behavioural change and influence the

attitudes of children and young people<sup>39,40</sup>. This is leading to repeated consumption of HFSS foods in those exposed to extensive junk food marketing<sup>41</sup>. Studies also indicate that obese BMI scores are associated with greater response to junk food marketing<sup>42</sup>, putting this group at greater risk if sufficient restrictions are not introduced.

New regulation was introduced in 2008. This primarily focused on preventing the direct marketing of HFSS products to young children, by restricting advertising on television shows aimed at children<sup>19</sup>. Since the introduction, public health experts have argued that these regulations were not stringent enough to protect children from the effects of marketing<sup>43,44</sup> particularly during 7pm-9pm<sup>37,45</sup>. The regulation does not include the influence of family shows (weekend and evening viewing)<sup>45</sup>, where children are one of the target audiences, creates cause for concern. These regulations also did not account for the increased popularity of streaming as a viewing habit of young people and adolescents. The World Health Assembly has previously stated that implementing marketing restrictions is crucial for all countries looking to address youth obesity<sup>46</sup>. Therefore, there is reason to review the 2008 Ofcom regulations to take all these factors into account.

The series of reports from this data seeks to address some of the remaining gaps on the awareness of junk food marketing and its association with obesity. Through their publication, we aim to answer some of the key questions that remain.

## RESEARCH AIMS

The main objectives of this study were to:

- expand the evidence base on the relationship between exposure to and recall of junk food marketing and BMI;
- address the benefits of reducing junk food marketing exposure;
- identify in which populations the strongest associations can be found;
- support public health policy in the UK.

# METHODOLOGY

The Youth Obesity Policy Survey (YOPS) was largely inspired by the Youth Tobacco Policy Survey as developed by University of Stirling through Cancer Research UK funding. The repeat cross-sectional survey monitors youth perceptions of tobacco over time<sup>47</sup>, allowing for health policy to account for new or emerging trends particularly following the introduction of legislation or regulatory change. With the YOPS survey we aim to test current policies that influence obesity and marketing in the UK alongside young people's perceptions of junk food advertising – using repeat surveys to assess any changes and evaluate any new policies that are introduced. Additionally, the continuation of the survey will provide a tool to monitor the role of marketing and its impact on obesity in young people.

This survey was designed to explore the relationships between young people's exposure to junk food marketing and their dietary behaviours alongside other demographic factors. 3,348 young people, representative of the UK population, participated in the survey. The full breakdown of the sample composition 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<sup>20,21</sup>.

## DATA CODING

The survey collected data on respondents recalling seeing marketing exposure, encompassing eleven different platforms (*Table 1*) to explore their relationship with a high BMI score. Throughout the report this is referred to as 'recall' to highlight the self-reported nature of this measure and represents young people's awareness of marketing. The demographic variables identified from the survey were used as controls in the models. Variables included in final models were firstly identified as significant in univariate analysis against the dependent variable, to ensure clarity and consistency of the model.

### *Dependent Variables: BMI of respondents*

The height and weight of participants was self-reported using open-ended questions to support this. As a result, the self-reported measure included some implausible responses, as well as non-response. However, of those who answered, a BMI score was calculated, accounting for the separate measurement for the under 18-year-old respondents where age and gender is considered when calculating BMI (as per IOTF guidelines). Combining scores with those aged over 18, the BMI scores were made into a binary variable. The dependent variable distinguished obese respondents, coded 1, from the other three BMI categories made up of overweight, healthy weight and underweight, coded 0.

Comparison of the self-reported figures alongside national averages of BMI categories for this age range indicated that the obese category was largely underrepresented within this research<sup>48</sup>. Inclusion of the responses of underweight respondents in the model was due to the difference in their marketing exposure behaviours not being significant in the data and would not influence the results. Therefore, including them ensured more responses were represented in the analysis, and also accounted for the scale of behaviours across the range of BMI weight categories.

Another variable was developed to identify the role of both television and streaming advertising on young people. Coding was chosen from existing research<sup>49</sup> and weekend and

weekday viewing of both television and streaming was weighted and combined into a weekly reported viewing time measure for participants. This was further split into three categories; low (< 7 hours per week), medium (7 – 42 hours per week) and high (42 hours or more per week).

### **Independent Variables: Marketing Platforms**

Questions regarding the recall of seeing HFSS food and drink advertising on different marketing platforms were asked using Likert scales – ranging from every day recall to not recalling any adverts in the last month. The survey included eleven different platforms, (Table 1), encompassing street media, broadcast media, social media and added value media such as endorsements. Inclusion in the final model was based on significance to the dependent variable in a univariate analysis.

<b>Marketing Platforms</b>	
Television	Social Media
Engagement with social media	Print
Billboard	Streaming
Price Promotions	Radio
Sport Sponsorship	Celebrity Endorsement
Competition	

*Table 1: The range of marketing platforms identified in the survey.*

### **Control Variables**

Controls were selected based on any potential influence they may have had on the model, to avoid any researcher bias and to ensure the outputs from the model were comparable where possible. The chosen controls included age, gender, ethnicity, activity levels and socio-economic status<sup>49-53</sup>. Ethnicity was re-coded into a binary variable where 0 – white and 1 – non-white, to be used as a control in the model. However, following univariate analysis of the variable ethnicity against the dependent variable, there was not a strong enough correlation for it to be included in the final models. This was also the case for activity levels whereby self-reporting minutes of weekly exercise was analysed in a univariate analysis but no significant correlation was found. Index of Multiple Deprivation (IMD) scores were coded into a binary variable with the lower two quintiles, made up of the most deprived, combined and the higher three, made up of the least deprived (most affluent), also combined. Least deprived were coded as ‘0’ and most deprived as ‘1’. Gender was coded ‘0’ male and ‘1’ female. The controls included in the final models were age, gender and IMD score. These were used in all the models unless stated otherwise.

## **DATA ANALYSIS**

Undertaking a descriptive analysis of the raw data allowed exploration of the different variables acquired through the questionnaire. Cross-tabular analysis of key variables including BMI calculations, screen time exposure and recall of seeing advertising from an array of platforms enabled the creation of accurate variables as identified above.

Following this, evidence gaps were identified within the current literature surrounding the introduction of updated regulations for junk food marketing. The development of the key questions was undertaken in relation to the current literature and topical policy discussions

around the issue. We carried out binary logistic regressions to address these five questions. Binary logistic regression was decided to be the most appropriate model as the distribution of recall response levels was different for the array of platforms.

#### ***A) Advertising and Weight***

Following individual regressions of all selected variables, those found to be significant platforms of marketing, as well as the significant control factors against the dependent variable of BMI outcomes were analysed in the final multivariate model. The model was used to show any association between high recall of seeing adverts on marketing platforms and obesity.

#### ***B) Ages***

The model used to analyse any link between recall and obesity was also utilised to address the relationship with age. The model accounted for the influence of age, against weight outcomes, in line with the influence of marketing which helps to identify whether age is a significant factor from the respondents.

#### ***C) Streaming Influence***

The model was adapted to use the additional variable of combined reported commercial screen time of both television and streaming. This variable enabled investigation of the influence of commercial advertising on the sample studied. The model continued to account for significant control factors.

#### ***D) Health Inequalities***

Focusing on the effects of recalling HFSS advertising on television, the IMD variable was used as the dependent variable, to identify any association of recall and related level of deprivation. Therefore, the final model continued to use the remaining significant control variables whilst identifying the marketing platform of television.

#### ***E) Beneficial to health***

This section uses the same model, but alters the independent variable to test the impact of low junk food advertising exposure on BMI outcomes.

The table output from the univariate variables analysed for this methodology, as well as the final model output of each of the questions can be found in the **appendix 2** of this report.

## **ETHICS**

Ethical approvals were granted in January 2017 for the study by the General University Ethics Panel (GUEP) at the University of Stirling. This ethical approval 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 AND DISCUSSION

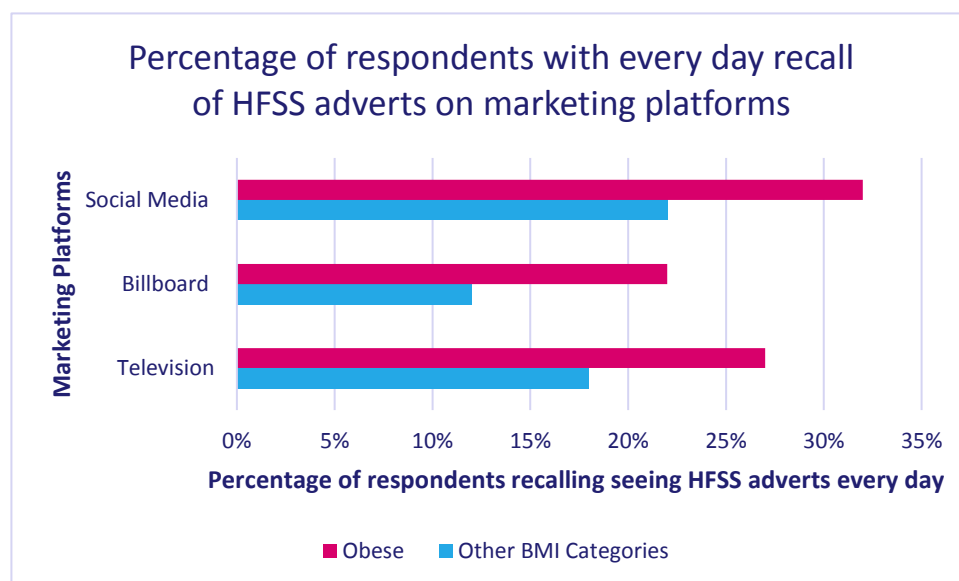
Ten years on from their introduction, it is useful to understand the impact of the current regulations, and address any areas that need improvement. The following five questions were raised following the release of the earlier reports in this series.

## 1. ADVERTISING AND WEIGHT

### **QUESTION: IS HIGH RECALL OF JUNK FOOD ADS RELATED TO A PERSON'S WEIGHT?**

Advertising is used by industry to encourage certain behaviours, such as individuals interacting with an advert and consequently being influenced to purchase and consume that brand or product<sup>54</sup>. It could be argued that advertisements attempt to persuade viewers to consume that brand instead of other brands with the same or similar product<sup>55</sup>. Therefore, advertising could just result in the switching brands of current consumed food. Alternatively, young people can be encouraged to eat these new brands, in addition to their typical consumption habits.

### **ANSWER: YES, THERE IS AN ASSOCIATION BETWEEN HIGHER ADVERTISING RECALL AND OBESITY**



*Figure 2: Percentage of respondents in weight categories recalling HFSS adverts every day in different marketing platforms.*

Young people who were obese recalled seeing junk food marketing on television every day more than those in other weight categories (*Figure 2*). Logistic regression modelling found that recalling seeing unhealthy food and drink advertising every day was significantly associated with increased likelihood of being obese (OR: 2.2, p-value: 0.03), all else remaining constant.

The same was true for billboard advertising where obese respondents reported seeing more of this kind of advertising than other BMI categories (*Figure 2*). Within the regression model those recalling seeing HFSS adverts on billboards every day were significantly more likely to be obese (OR: 2.3, p-value: 0.01). Social media advertising recall also showed an increased association to



obese weight outcomes, with every day recall respondents found to be more likely to be obese (OR: 2.5, p-value: 0.03). However, it should be noted that social media influence represents behaviours prior to regulation updates to reduce advertising on non-broadcast media<sup>56</sup>, indicating a potentially stronger influence as a result.

These results highlight a significantly increased association of being obese for those who can recall seeing adverts on television, billboard and social media platforms every day, compared to those who could not recall seeing any in the last month. This association was significant even when accounting for age, gender and socio-economic status. This reinforces the associations that were identified in the paper that preceded this report, which found that where there is high exposure to junk food adverts, there is increased consumption of HFSS products<sup>20</sup>. Therefore, instead of brand switching, young people were found to be increasing their consumption of junk food products and are consequently at an increased risk of being obese.

Additionally, previous qualitative research by the PRCP<sup>57</sup> supported the prevalence of high interaction with junk food adverts amongst young people. They could recall details of several advertisements, largely unprompted, showing the long-lasting impression of these adverts. The behavioural influence that adverts have on young people highlights the potential impact on their consumption habits, leading to an unhealthy weight outcome following extensive exposure to junk food marketing.

## 2. AGE INFLUENCE

### ***QUESTION: DOES THE ASSOCIATION HOLD FOR OLDER TEENAGERS, AS WELL AS YOUNGER CHILDREN?***

Previous research predominately identifies that junk food marketing exposure influences younger children. This is shown with the current regulation defining children as under 16, and excluding those aged 18 and under, resulting in insufficient protection for adolescents within current policy. Currently there are restrictions for the targeting of marketing only on children-specific TV shows, as opposed to encompassing family TV viewing where the age range of viewers expands. As such, the regulation is limited and does not protect all young people from the potential health effects of frequent exposure to junk food marketing. Therefore, more research is required to support the inclusion of adolescents.

### ***ANSWER: YES, THE ASSOCIATION HOLDS FOR ALL 11-19 YEAR OLDS, AS AGE IS NOT A SIGNIFICANT FACTOR***

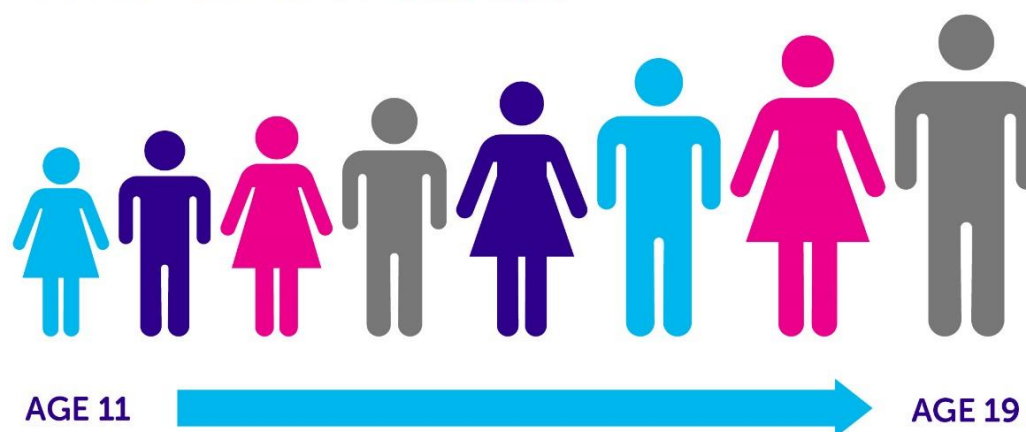
This research purposefully studied a larger demographic of 11-19-year olds, to explore the influence that junk food marketing has on the weight of adolescents, as well as children. It has addressed the current gaps in literature that primarily focuses on younger children<sup>12,17,22-25</sup>, to ensure that regulation protects all young people who may be affected by exposure to junk food marketing.

Age was used as a control variable in the analysis identifying the significant influence of three different marketing platforms against weight outcomes. However, for each of the final models run, age was not significant (p-value = 0.070, television model; p-value = 0.06, billboard model; p-value = 0.12, social media model). As such, age was not found to be a significant factor in the weight outcomes of respondents, whereas their high recall with marketing does have



significant impact. This suggests that BMI scores of all the ages tested was associated with marketing recall. The inclusion of 11-19-year olds in the study, consequently shows how a larger age demographic should be considered in future regulation.

## JUNK FOOD MARKETING WAS ASSOCIATED WITH OBESITY IN YOUNG PEOPLE OF ALL AGES



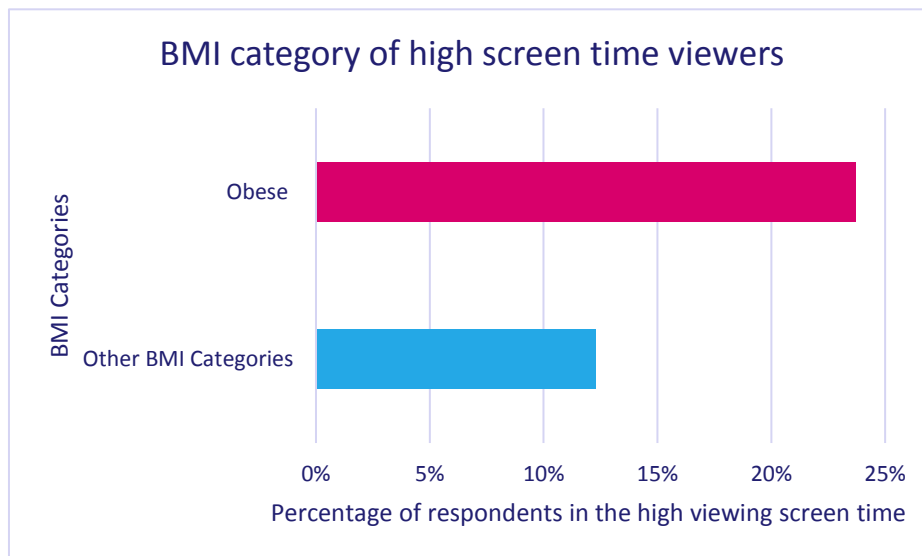
No age category was significantly more or less affected.

## 3. STREAMING OR TELEVISION?

### **QUESTION: ARE ADS ON STREAMING SERVICES ASSOCIATED WITH WEIGHT IN A SIMILAR WAY AS TV ADS?**

Following the introduction of streaming and social media platforms, their use - particularly amongst young people - has significantly increased <sup>37,45</sup>. Evidence gaps exist around the knowledge of how streaming and on-demand services are associated with unhealthy weight outcomes. This series of obesity reports has focused on television but has also addressed the increasing use of streaming. To effectively influence junk food marketing, it is important to address all evolving platforms that should be regulated, alongside television advertising. This has been previously shown with updates to the regulation on advertising to include non-broadcast mediums in 2017<sup>56</sup>.

## **ANSWER: YES, THE EFFECT IS STILL SHOWN WITH STREAMING AND TELEVISION**

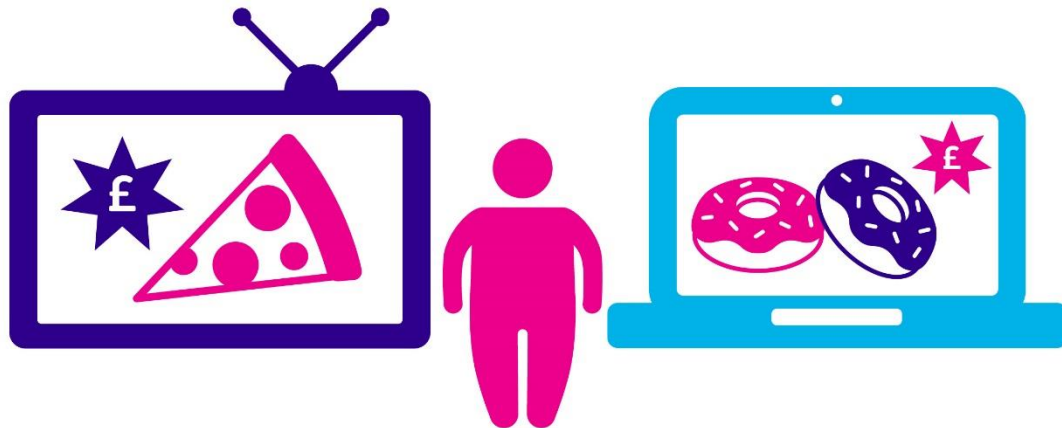


*Figure 3: Percentage of respondents in different weight categories in high viewing screen times from television and streaming weekly.*

High commercial screen time (combining both television and streaming services), was significantly associated with an increased likelihood of having obese weight outcomes (OR: 1.9, p-value: <0.03) (Figure 3). However, when the variables were replicated for non-commercial screen time, there was no significance. This demonstrates that it is the exposure to the adverts, aside from the sedentary act of screen time exposure, that is increasing obesity risk<sup>17,18</sup>.

Even though traditional television viewing is becoming less popular amongst young people, the amount of overall commercial screen time exposure they are reporting is not reducing. Instead, Ofcom data advises it is moving to new platforms such as online streaming i.e. on demand and catch up services, where commercial advertising is still prevalent<sup>45</sup>. The high level of reported commercial screen time was also identified within our research, recognising both the potential exposure to advertising and the growing popularity of streaming. As such, the idea that television popularity is decreasing and not affecting the influence of commercial screen time is incorrect. Marketing exposure is still related to weight outcomes even if the marketing is moving to new platforms. Addressing youth exposure to junk food marketing via both streaming and television will more accurately reflect young people's viewing habits, and thus be more protective of young people's health.

## ADS ON **STREAMING SERVICES** ARE ASSOCIATED WITH WEIGHT IN A SIMILAR WAY TO TV



**YOUNG PEOPLE WERE FOUND TO BE 1.9 TIMES MORE LIKELY TO BE OBESE WHEN VIEWING MORE COMMERCIAL SCREEN TIME ON TV AND STREAMING.**

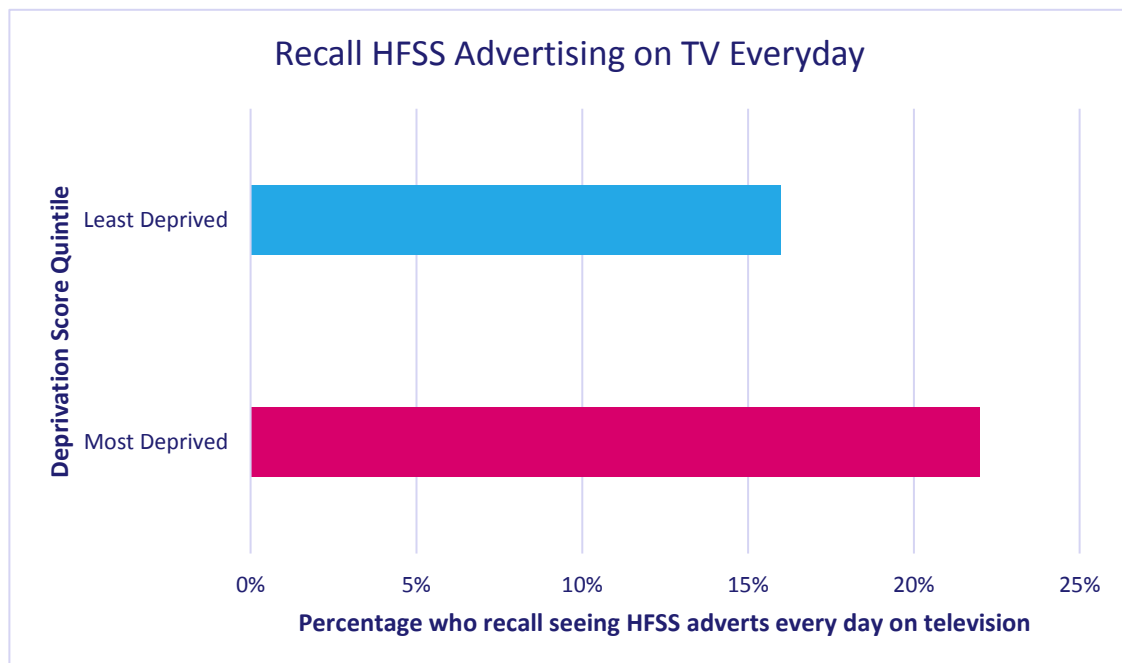
No significance was found for the association with weight and non-commercial screen time.

## 4.HEALTH INEQUALITIES

### **QUESTION: ARE PEOPLE FROM MORE DEPRIVED COMMUNITIES MORE AFFECTED BY JUNK FOOD ADS ON TV?**

The evidence base has shown that the more deprived population(s) are at a higher risk of unhealthy weight outcomes <sup>26-28</sup>. Similarly, this research demonstrates that of those self-reporting as obese, 22% were from the most deprived quintile of respondents compared to 12% in the least deprived (most affluent) quintile in the study. This association provides a context for research into what mechanisms or behaviours could be increasing the likelihood of showing these outcomes. This could include the possibility of targeted marketing of junk food products toward this demographic<sup>58</sup>. Therefore, any current health inequalities surrounding the association of marketing and weight, as addressed through this research, will support the benefits of regulation change on more deprived groups.

## **ANSWER: YES, THE MORE DEPRIVED COMMUNITIES WERE FOUND TO RECALL SEEING MORE JUNK FOOD ADS**



*Figure 4: Socio-economic association to recalling HFSS advertising on television every day.*

Young people from the most deprived group were significantly associated with seeing junk food advertising on television every day (Figure 4). Further modelling identified those who recalled seeing junk food marketing on television every day were significantly more likely to be from the more deprived group compared to those who could not recall seeing any in the last month (OR:1.4, p-value: <0.02). These findings, when compared alongside the identified association between high recall and obesity, demonstrate an inequality from the role of junk food marketing and weight outcomes.

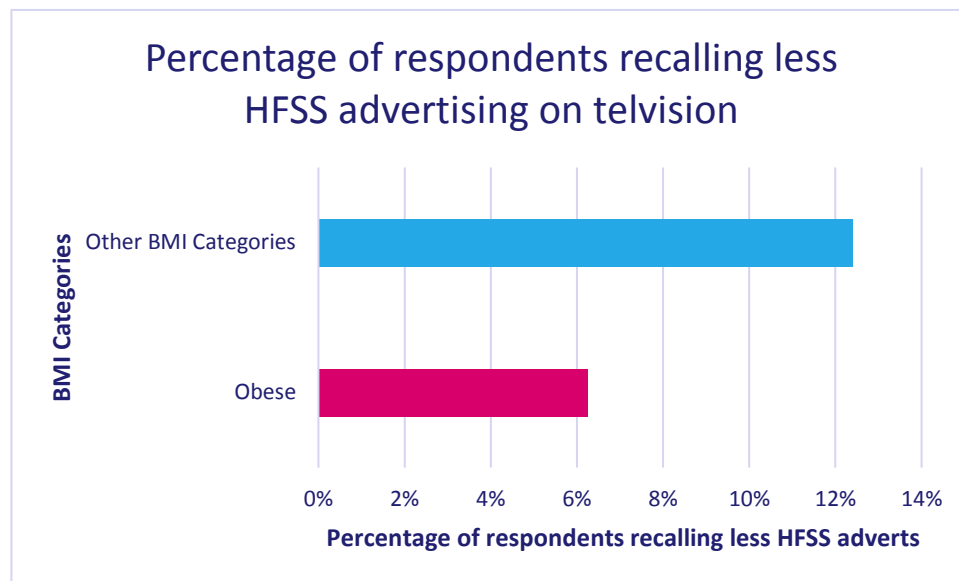
This association suggests there could be targeting of advertising to the more deprived populations, as respondents from this group recalled seeing more advertising than the least deprived (most affluent) respondents. This in turn is associated with obese BMI outcomes, as demonstrated throughout this report and the other reports in the series<sup>20,21</sup>. Additionally, previous research has found a greater risk of being overweight or obese for young people from more deprived communities<sup>26-28</sup>. These disparities between social grades indicates the more deprived have the most to gain from the reformulation of current policy surrounding the reduction of young people's exposure to junk food marketing.

## **5.CAN IT WORK?**

### **QUESTION: CAN REDUCED EXPOSURE TO JUNK FOOD ADS BE BENEFICIAL TO YOUNG PEOPLE'S HEALTH?**

Addressing the association between junk food marketing and obesity in young people has led to the proposal of various policy recommendations. A 9pm watershed has been identified to reduce young people's exposure to junk food marketing<sup>20,21</sup>. As such, ensuring there is research to support that a reduction in exposure would be beneficial to young people's health is important.

## **ANSWER: YES, LOWER ADVERT RECALL IS ASSOCIATED WITH BETTER HEALTH OUTCOMES**



*Figure 5: Percentage of respondents from different weight categories recalling seeing HFSS advertising less than once a week.*

Our research has found that when respondents recalled seeing adverts less frequently, they were less likely to be obese (*Figure 5*). This suggests that reduced exposure to and awareness of junk food marketing will be beneficial to the health of young people. Those recalling seeing HFSS advertising on television less than once a week were 70% less likely to be obese (OR: 0.3, p-value: < 0.01) compared to those recalling seeing adverts every day.

The introduction of regulation, which seeks to reduce young people's exposure with junk food marketing, may be beneficial to their weight outcomes. This builds on previous work<sup>20,21,59</sup> which showed that increasing advertising exposure increases the risk of HFSS food consumption. Therefore, attempting to reduce the exposure of marketing across different platforms, such as through a 9pm watershed, may lead to better health outcomes for young people.

# POLICY IMPLICATIONS

This report addresses the association between junk food advertising and the weight outcomes of young people, through five key questions around exposure to junk food marketing. The hypothesis was that high frequency recall from advertising platforms would be associated with an increase in the weight of young people, indicating that exposure to junk food marketing may increase their risk of poorer health. The results presented in the report have confirmed this by addressing the identified questions. The findings within this report are in addition to a series of papers that have identified the roles of junk food marketing and the obesity problem in young people throughout the UK<sup>20,21</sup>.

In this study we found that an increase in the frequency in recalling seeing unhealthy food and drink advertisements is associated with having an unhealthy BMI. As such, a specific health risk associated to increased exposure of junk food marketing has been identified, expanding the evidence base available for advancing health policy.

This research confirms that a decade since their introduction, current regulations are no longer fit for purpose. By not accounting for family and evening shows<sup>45</sup>, where young people make up a large proportion of the audience, the regulation is not protecting young people from this advertising. This is reinforced with research previously identifying that the genre of television where HFSS adverts are most prominent is entertainment shows<sup>20</sup>, most commonly aimed at family and evening viewing. Including a large demographic that encompassed ages 11-19 ensured this research could identify if there was a need to incorporate older age categories into newly formulated policy where previously emphasis had been on younger children. The likelihood that family shows are being viewed by this inclusive age range is even greater and thus, even more impressionable viewers are exposed to the effects of junk food marketing leading to calls for policy recommendations as outlined.

This report has enabled some of the remaining questions on this issue to be addressed. The evidence here should increase clarity around the association of junk food marketing and obesity in young people. In turn this leads to a clear policy call to regulate junk food marketing on TV to improve young people's health.

## RECOMMENDATIONS

Three priority areas were identified following analysis of this data and the assessment of existing literature. These include:

### **1. Update to include family and evening shows in regulation:**

The current regulation places specific emphasis on TV shows directed solely to 'children's television', however this is limiting the impact the regulation can have. This research has shown that young people are recalling seeing junk food marketing from an array of platforms, including television, and therefore they are still exposed to advertising despite current regulation. Indications from Ofcom data suggests there is increased audience viewing from young people for evening and family shows, as included in this study, and therefore to extend the restriction to these timings would be beneficial to their health.

### **2. Include adolescents in regulation:**

This research was inclusive of a larger age range, from 11-19-year olds, than prior research and

found that age was not a significant factor. Thus, there is a significant association between exposure to junk food marketing among all the ages studied. This suggests expanding the age range to include under 18-year olds in the regulation will ensure greater protection. Research has highlighted that viewing between 6 – 9pm is where this demographic is most prevalent<sup>37</sup> and is where there is an increased number of adverts for HFSS products. As such, considering a 9pm watershed to approach this issue would offer more suitable protection for young people as a collective.

### **3. Addressing the need for an update on regulation:**

It is apparent from this study, alongside previous papers in this series and other existing literature, that the current regulations in place are no longer fit for purpose. The association between high frequency recall of seeing junk food marketing and unhealthy BMI outcomes in 11-19-year olds, as highlighted in this report, indicates that more can be done to protect the health of young people.

Based upon these three priority areas, we advocate for three key changes to current regulation throughout the UK to improve health outcomes of young people:

#### **UPDATE:**

Updating current regulations to include family shows and evening television to protect young people from the effects of junk food marketing. This could be achieved through a 9pm watershed for the advertisement of HFSS products, to limit the amount of exposure to younger audiences. The watershed would encourage a distinct reduction in the volume of HFSS advertising seen by young people. Significant reduction in this number, would be helpful in reducing the association this study has found between extensive exposure to junk food marketing and both their consumption habits and their weight.

#### **EXPAND:**

Following the understanding that there is increasing influence from streaming services, in addition to the effects of television, it is clear that regulation should be expanded. There is an increasing use of streaming amongst young people and therefore to develop regulation in line with these viewing changes is essential.

#### **INCLUDE:**

Inclusion of all children (i.e. under 18 years old) within the regulations will ensure that there is protection within the update for every age where this research has found an association. Suggestions that younger children are affected more significantly than older children were addressed and not supported in this research; instead, it is indicated that the entire range of 11-19-year olds are affected. Therefore, inclusion of adolescents would be better practice, supported by the action having been previously called for in the World Health Assembly<sup>46</sup>.

## **STRENGTHS AND LIMITATIONS:**

The key strength of this report is that it is the largest UK representative study on this subject, with 3,348 respondents across the four nations. This encouraged the provision of unique richness in the data collected to approach any changes since this update. Moreover, the time spent running scoping studies, pilot testing and reviewing similar surveys has added to the specific relevance of the scope of the finalised survey. A second strength is that the report

provides up to date evidence on the current behaviour patterns around marketing recall and screen time of young people in the UK to influence future research calls and policy updates.

One limitation of the report is the use of self-reported figures, which could potentially lead to overestimations of screen time and underestimations of BMI scores from respondents<sup>60</sup>. This limitation is typical of the online survey methodology. These were addressed with the removal of extreme values as well as coding which addressed many of the skews potentially in the data. The self-reporting awareness within the report may also have led to under-reporting due to participants not recognising subtle forms of marketing or differences in recall ability. Additionally, a limitation is the cross-sectional survey approach, which means the evidence is correlational not causation.



# APPENDICES

## 1. WEIGHTS USED FOR SURVEY DATA

Men	11 to 12	11.0%
	13 to 15	16.0%
	16 to 17	12.0%
	18 to 19	12.0%
Women	11 to 12	10.0%
	13 to 15	16.0%
	16 to 17	11.0%
	18 to 19	12.0%
Ethnicity	White	82.00%
	BME	18.00%
IMD	1,2	20.00%
	3,4	20.00%
	5,6	20.00%
	7,8	20.00%
	9,10	20.00%
Region	North East	4.0%
	North West	11.1%
	Yorkshire & Humber	8.5%
	East Midlands	7.3%
	West Midlands	9.3%
	East	9.3%
	London	12.7%
	South East	14.0%
	South West	8.2%
	Wales	4.7%
	Scotland	7.8%
	Northern Ireland	3.1%

## 2. REGRESSION TABLES

Due to the quantity of regression tables necessary in this research, they have not been included in full. All regression outputs are available for each different model (all five responses to questions). Should you be interested in seeing them, please email [PRCP@cancer.org.uk](mailto:PRCP@cancer.org.uk).

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