Safefood

Our Kids' Exposure to Unhealthy Food Marketing Online

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Publication date: February 2026

Suggested citation: Tatlow-Golden, M., Vaughan, E., Muc, M., Brown, E., Lennox, O. and Kelly, C. (2026) *Our kids' exposure to unhealthy food marketing online*. Safefood.

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Executive summary

How much marketing of unhealthy food and drink do children and teenagers actually see online? What do they and their parents – and advertisers who create it – think about it? This transdisciplinary, multi-stakeholder study of digital food marketing to children up to and including age 17 on the island of Ireland answers these questions. It reveals the landscape of digital food marketing to children and also, for the first time in Europe, the extent of actual exposure to such marketing.

Background

The negative effects on behaviour and health of unhealthy food and drink marketing, where products are high in saturated fats, sugar or salt, have been known for decades. The marketing of food and non-alcoholic beverages – referred to in this report as "food marketing" – fuels positive feelings about these products and affects children's food and drink preferences. It increases their purchase requests, unhealthy eating and calorie intake, and lowers the quality of their diet. The evidence, declared "unequivocal" by the World Health Organization (WHO) in 2016 (WHO, 2016a), was reconfirmed by a 2022 systematic review and meta-analysis encompassing 96 studies of over 19,000 participants (Boyland, McGale, Maden, Hounsome, Boland, Angus et al., 2022a). This study found that food marketing was associated with an increase in purchase requests, and also an increase in the intake, choice of and preference for test items among children and adolescents.

Although the impact of unhealthy food marketing is well established, understanding the extent and nature of digital food marketing presents a particular challenge. Marketing is served to each individual digital media user – including children – on their personal devices, based on their personal interests and directed by algorithms, in micro-second automated actions online. As a result, every person sees different marketing content, and we cannot easily know what is promoted to children via their digital devices, games and social media.

Organisations representing the food and advertising industries generally argue that children are not targeted with food marketing, that the lack of complaints about digital food marketing indicates they are not exposed to it (ASAI, 2022), and that

current self-regulatory systems therefore adequately protect children and adolescents. Our study aimed to examine actual exposure to digital food marketing on the island of Ireland.

WHO guidance on monitoring digital food marketing to children

To face the challenge of understanding and measuring digital food marketing to children, WHO convened tech and health experts to develop research and monitoring guidance known as the CLICK framework (WHO, 2019). In CLICK, WHO recommends researchers carry out multi-stage projects to:

- **C**omprehend the digital ecosystem
- Assess the **L**andscape of campaigns
- **I**nvestigate children's exposure
- **C**apture on screen what children actually see online on their devices
- Share **K**nowledge of findings to support advocacy and policy change

Study aims and methods

This study used CLICK's 5 steps to create a multi-stage, multi-stakeholder image of the digital food marketing landscape, and, as a key element of it, social media food marketing exposure, as follows.

To ***C****omprehend the digital ecosystem*, we:

- reviewed existing evidence on current knowledge and methods of digital food marketing
- described global and island of Ireland digital marketing systems that market food to children
- identified children's digital media practices on the island of Ireland
- assessed awareness of and attitudes to digital food marketing among children and parents (which involved conducting interviews and focus groups with 175 children aged 4–17 and 49 parents of children aged 4–17 in urban and rural areas around Belfast and Galway)

To assess the ***L****andscape of campaigns*, we:

- reviewed Ireland's social media marketing landscape, including identifying industry-showcased i.e. industry-described examples of digital food marketing campaigns
- analysed the social media campaigns of high-sales food brands
- held confidential interviews with 15 advertisers (almost all senior executives) to gain their insights about digital food marketing and regulation on the island of Ireland

To ***I****nvestigate exposure* and ***C****apture on screen*, we recorded the screens of 38 children aged 13–17 years on the island of Ireland while they scrolled through social media, thus measuring their *actual exposure* to this key element of digital food marketing

Finally, to inform future ***K****nowledge sharing*, we consulted with island of Ireland and international stakeholders regarding our study findings and next steps. These participants were representatives from government departments of health; health agencies; and NGOs focusing on health or youth. The study was also underpinned by collaboration with subject experts and parent and youth advisory groups.

Findings

Reviews of existing evidence

To review the existing international evidence in this field, we carried out 3 systematic searches and scoping reviews. These examined:

- the impact of digital food marketing on children's behaviour
- awareness and attitudes among children and parents
- methods for measuring children's actual exposure to such marketing

The impact of digital food marketing on children

A systematic literature search of reviews of digital food marketing identified a total of 12 reviews. These examined the impact, extent and nature of digital food marketing on children. They confirmed that a strong body of evidence connects digital food

marketing to children's diet and behaviour and that this marketing is likely to adversely affect their health.

After completion of the study, a more recent systematic literature review of digital food marketing was published (Harris, Reed *et al*., 2024). This identified 62 further studies too recent to have been included in the above reviews, indicating a thriving research field – yet one where many knowledge gaps remain. Harris and colleagues (2024) concluded that food marketing is widespread on digital platforms, nearly all of it for unhealthy foods. They noted that digital marketing in diverse formats has similar negative effects to those identified for traditional marketing, and that these effects are seen not only among younger children but also among adolescents.

They also pointed to many substantial gaps in our understanding of digital food marketing. For example, we need more knowledge of social media marketing; children's actual exposure to digital food marketing; and the socio-cultural impact of digital marketing – which includes "parasocial" relationships and peer dissemination. (Parasocial relationships are the links people feel they have with fictional characters or on-screen media personalities.) This research study addresses several of these gaps.

Attitudes and awareness to digital marketing among children and parents

Our registered systematic scoping review of children's and parents' awareness (Vaughan *et al*., 2025) identified 40 previous studies, mostly quantitative studies of children and young people's self-reported exposure. Although 8 studies explored attitudes and awareness more fully, several were from over a decade ago. This indicates a substantial gap in knowledge of contemporary attitudes at a time when media and technologies are changing fast.

These studies suggest that some children and young people understand social media marketing tactics, but others struggle to recognise ads, such as on Instagram. This is not surprising, as indications are that general literacy in digital advertising only reaches adult levels in late adolescence (Zarouali *et al*., 2020). Studies also found that children and young people prefer influencer and "native" marketing that mimics social media content. They enjoy visual style and colour, and ads with music, celebrities or influencers, positive emotions, humour, fun and youth culture.

Our review (Vaughan *et al*., 2025) also found there is limited evidence for parents' views, as we identified just 9 studies. Several of these are also over a decade old and suggest that parents have low awareness of marketing tactics that target children and have unclear opinions on regulation. Finally, we found just 2 studies that explored food marketing regulation with young people. The systematic scoping review searches did not identify any research exploring child or parent views of the links between marketing and children's rights.

Screen capture methods for assessing children's actual exposure

Finally, to complete the set of reviews, we examined methods for capturing children's actual exposure to food marketing in digital media (Muc *et al*., in press 2025). The search identified 25 papers reporting on 16 studies in 11 countries, with tools often still in development. The methods used were grouped into 4 categories:

- screen capture on the individual's own device
- use of wearable cameras
- user-generated screenshots of self-identified marketing content i.e. the individual takes a screenshot of online content that they perceive as marketing content
- automated metadata extraction (for paid-for ads only) e.g. getting information about how the digital content is used such as ad duration, view counts, keywords without user input.

The review concluded that, to date, screen capture is the most comprehensive and valid method to measure children's actual exposure to unhealthy food marketing in digital media.

In sum, the 3 reviews carried out for this study concluded the following.

- The negative impact of unhealthy food marketing on children is long established.
- Few recent studies examine awareness and attitude – how far children and parents are aware of this marketing in digital media and how they feel about it.

- Very few studies, and none in Europe, have measured children's actual exposure to digital food marketing.

This study aimed to fill these gaps, specifically for the island of Ireland, which spans 2 jurisdictions: Northern Ireland (UK) and Ireland (an EU member state).

The context: Digital food marketing and use of social media by children and young people on the island of Ireland

The next step was to look at the digital marketing landscape on the island of Ireland. To build this picture, the study examined:

- research studies with a strategic focus on grey literature and industry sources
- reports published by agencies on the island of Ireland such as the Future of Media Commission and the Competition and Consumer Protection Commission
- as recommended by CLICK (WHO, 2019), industry-led descriptions of digital marketing campaigns (such as features and awards)
- interviews with advertising executives
- focus groups with parents and children

These are the main features of the digital marketing landscape.

- Digital marketing spend is growing year on year in Ireland, largely driven by social media growth, including the increasing popularity of YouTube and TikTok among young people.
- Children on the island of Ireland are immersed in a heavily brand-infused social media landscape, where marketing has melded into general content and lines between the 2 are consistently blurred.
- Influencers are becoming more prevalent and harder to identify. Advertisers are encouraging partnership with smaller-scale influencers and actively encouraging user-generated content.

Use of social media by children and young people on the island of Ireland

We identified existing research in Ireland and the UK that indicated levels of social media use and preferences of social media platforms.

- In a 2022 survey of 500 teens and 500 parents in Ireland, 99% of teens reported having at least one social media account. They accessed social media an average of 38 times per day. TikTok and Snapchat were the most popular social media platforms (each 68%) followed by YouTube (66%), Instagram (62%), Facebook (46%) and Twitter (now X) (30%). Of teens surveyed, 70% identified social media as the primary source exposing them to food marketing.
- In the UK, the preferred platforms among children and young people were TikTok (accessed by 37% of teens aged 13–17 in March 2021 (Ofcom, 2023)), Instagram, Snapchat, YouTube and food delivery apps (Just Eat and Uber Eats). Ofcom reported that although TikTok is banned for children under 13 years old, 44% of children aged 5–15 used the app to view content in 2020 (Ofcom, 2023).

When interviewing children aged 4–17 (n=175) and parents (n=49) on the island of Ireland in late 2023–early 2024, we also asked about all the ways children used devices and digital media.

Device use on the island of Ireland

- The 25 young children (4–6 years) all said they owned or had access to at least one device: a tablet, a phone, a computer or a laptop.
- The 75 primary school children (aged 7 and over) all had access to at least one digital device, usually via parents or siblings. Most did not own their own phone. However, they reported using a device every day for between 15 minutes and 3 hours (some over 8 hours).
- All the 75 secondary school participants had a smartphone. Most had access to other devices and reported using their phones for up to 10 hours a day, though on average 4.5 hours daily. (High reported levels were confirmed by researchers checking individuals' reports of phone use.)

Social media use on the island of Ireland

- The children aged 4-6 years used devices for watching videos, primarily on YouTube, and playing games on Roblox. The primary children said they used YouTube and TikTok (accessing TikTok on others' devices or via YouTube Shorts). They largely watched rather than interacted with these channels, though some engaged with social media to like, subscribe and share content. They followed influencers and content creators including gamers, YouTube personalities and celebrities such as footballers and musicians. Particularly prominent were influencers who had launched food and beverage brands, such as Mr Beast and KSI. They played games such as Roblox, Minecraft and Fortnite.
- For secondary school participants, TikTok was supreme, followed by Snapchat and Instagram. YouTube was viewed as something to grow out of. On TikTok (and other platforms), they followed friends and liked, shared, reposted or bookmarked videos. Very few posted their own content (and then only rarely). They also described their practice as largely passive, just scrolling through what was served to them – in other words, largely driven by the algorithm (such as For You on TikTok).

The landscape: Social media food marketing on the island of Ireland

We selected 20 high-sales brands popular with children and adolescents on the island of Ireland. We systematically sampled posts by these brands on TikTok and Instagram between March 2020 and December 2022, following the process specified in the WHO protocols and templates for monitoring digital food marketing (Tatlow-Golden *et al*., 2021).

- The content that the brands posted most frequently featured *ready-made and convenience foods and composite dishes* (from chained restaurants) followed by *beverages* (mostly carbonated) and *cakes, sweet biscuits and pastries*.
- Where a brand logo for a food product is displayed without showing a product or identifiable branded item, this is brand (rather than product) marketing. More than a quarter of the posts reviewed were brand marketing posts. Almost all marketing identified was in the form of regular (not pinned) posts.

(Pinned posts stays fixed at the top of a social media profile so they are always visible to the followers.)

- Almost all the marketed foods that could be nutrient profiled (meaning where it was possible to find out what the product contained) were classed as "not permitted" to be marketed to children using the WHO-Euro nutrient profile model (NPM) (WHO, 2015). The few items classed as "permitted" for marketing to children, based on the WHO-Euro NPM, were mostly burger-type items served at fast-food chain restaurants.
- We also identified the creative strategies to create marketing "power" (WHO, 2012) – the ability to influence prices – that are used by brands and products on island of Ireland social media. Predominant strategies involved use of humour, fun, taste, hashtags (usually for comedic effect, rather than to link to other content) and tagging other users or brands (partnerships with other brands or celebrities).
- Of the marketing posts we coded as appealing to teens and to children, the most popular power tool was the use of hashtags. Overall, marketing appealing to both children and teens used the tools of humour, fun, taste and special days to craft their appeal.

Children's and parents' attitudes to and awareness of digital food marketing on the island of Ireland

We spoke with 175 children aged 4–17 years across the island of Ireland. We spoke with children aged 4-6 years in paired conversations, and spoke with those aged 7–17 years in focus groups. We also spoke with 49 parents across the island of Ireland in online focus groups. We shared examples of digital food marketing partway through these conversations, to gauge participants' responses. We also asked them about child rights and whether they related to food marketing.

- Children of all ages often responded to digital food marketing examples by saying they were hungry or thirsty, and with pleasure, enjoyment or enthusiasm.

Many children, including adolescents, feel positively about branded content in social media, whether -it is from a brand, a content creator or another source. They consider marketing “relatable” if, for example, it mimics social media tropes such as recipes, or if it is presented to them by a favoured influencer.

- Many children aged 7 or over understand that advertisers are trying to be persuasive. Crucially however, children of all ages, including those in their late teens, do not interpret much social media marketing as “advertising”, even (ironically) while they refer to it as an “ad”. Notably, some parents were also unclear on this.
- Parents are largely unaware of the scale or type of food marketing their children see, and of the influencers they follow.
    - After viewing examples of social media food marketing, parents used a variety of key words to describe it. They characterised the videos as “subtle”, “sinister”, “insidious”, “subliminal”, “sophisticated”, “clever” and “manipulative”. Parents felt that these marketing examples were psychologically effective and manipulative. They believed the marketing exploited their children's interests and was deceptive.
    - Additionally, parents were concerned about the ubiquitous nature of food marketing and its impact on children's dietary choices. They felt their limited knowledge of online spaces and practices, and their limited time to investigate, left their children at risk of exploitation by marketers and social media companies.
- Despite this, in general, children and parents discounted the idea that children are influenced by food marketing. Both groups believed children are more likely to be influenced by their peers, and that what children eat is the responsibility of children and their parents. Parents hoped that recognising an ad as an ad would be enough to guard against poor eating habits.
- Overall, children and parents were not very clear about what children’s rights are. However, in discussions, they easily made links between digital food marketing and child rights. They recognised key principles and rights, such as the need to protect children’s best interests; their evolving capacities; and their rights to health, privacy and freedom from economic exploitation.

Advertisers' attitudes to digital food marketing and its regulation

We spoke with 15 advertisers in individual interviews of an hour each. Almost all were senior executives, and all had expertise in different elements of the digital food marketing process.

- Advertisers recognised and enjoyed many new creative opportunities presented by new media.
- At the same time, most described social media marketing as "murky", "creepy", "sinister", a "grey area", "worrying" and more.
- Strikingly, advertisers used very similar language that the parents used about social media marketing power and strategies (although interviews were carried out by a different team who had not had sight of parent interviews).
- Discussions explored the difference between *targeting* children and teens as a pre-defined age group, as opposed to *reaching* them by other means such as through their interests and product design.
- Advertisers felt that children could easily be reached by food marketing on the island of Ireland despite existing regulations and platform restrictions. They were split as to whether children were *actually* reached by such marketing. A few advertisers thought exposure was likely quite low. However, that was because they felt the market in Ireland was under-developed, although rapidly growing, rather than because regulations were restricting it. More of the advertisers thought that children saw a great deal of unhealthy food marketing.
- Advertisers believed everyone is influenced by marketing – children and adults alike (including advertisers themselves). Here they differ from parents and children, who believe themselves immune from the effects of marketing.
- Many (but not all) advertisers believed that children's best interests should dominate in policymaking and that regulations should better protect children's health and their rights than at present.

Children's actual exposure to social media food marketing: Screen capture

A key aim of this study was to identify the extent and nature of *actual exposure* to unhealthy food marketing on social media among children on the island of Ireland. As the methods review had established, the only way to do this at present is to video-record children's own devices while they are using their social media. To do this, we must follow detailed rules on data protection. Perhaps due to challenges presented by the EU's GDPR constraints, this is the first time to our knowledge that screen capture has been used as a method of research in an EU country.

An additional challenge for researchers is to identify what constitutes food *marketing* in social media, as opposed to *incidental food brand exposures* within users' social media content. To address this, we developed a conservative method (described in more detail on page 47 of the report). We categorised 3 types of posts as "clear-cut" marketing:

- *paid-for* posts
- *owned* marketing from brands' own social media accounts
- *influencers with more than 10,000 followers who overtly featured a food brand* as the main focus of a post

However, various considerations limited our definition of marketing posts.

- There were many further brand exposures in social media that we did not categorise as marketing. These included content from influencers with fewer than 10,000 followers; user-generated content; and other content where an intention to market was less clear.
- We only counted each post as one marketing instance – as a study of TV advertising might do.
- Posts often contained multiple brand exposures.
- Focus group participants spoke about other sources of daily marketing exposure, such as fast-food brand apps.

The following data therefore are likely to represent a very conservative measure of the branded food exposures that the study participants experienced in social media. Nevertheless, we found that:

- Adolescents on the island of Ireland are exposed to vast volumes of “clear-cut” unhealthy food marketing in social media. The average across the 38 participants, per hour of social media we recorded, was 15–19 marketing posts for unhealthy food – one every 4 minutes.

- The range of exposure we identified was very wide. Some adolescents were exposed to just one social media marketing post every 30 minutes. Others were exposed to one every 40 seconds. Those interested in food generally, or unhealthy food in particular, were exposed to more than one post every 40 seconds.

- The average exposure across the participants in this study indicates that adolescents on the island of Ireland, if using social media for 2 hours a day, would see an average of 10,950 unhealthy food marketing posts a year. (Social media use of 2 hours per day was typical for the 75 primary school-aged children in the study.) Using this average exposure rate, young people using social media for 4.5 hours a day (a typical amount of time reported by the secondary school-aged participants) would see over 30,000 unhealthy food marketing posts a year on social media.
- Adolescents viewed food marketing posts from influencers for substantially longer than other food content: an average of 15 seconds per post. They viewed paid-for branded food social media posts for an average of 3 seconds and viewed food content that was not classified as marketing for an average of 7-10 seconds. They also engaged with influencer food marketing posts much more frequently than other food content – 44% of influencer posts compared to 7.5% of paid ads – predominantly by “liking” them. This indicates a particular role for influencer marketing in the promotion of unhealthy foods on the island of Ireland.

In the present study, the sample of screen capture participants was 38. This is comparable with one other study of 35 participants and fewer than in other studies. The sample also skewed female and predominantly consisted of Ireland-based participants. Note, however, that the range of food marketing exposure we recorded across the participant group was very wide. This indicates that we secured participants with a range of behaviours and social media interests, who

were therefore receiving varying amounts of food marketing. Importantly, the exposure rates we found are in line with those from global studies in Australia and Canada to date.

Consultations with stakeholders responding to the study's findings

As a final step, we consulted with a range of representatives from government health departments; and from health, youth and digital advocacy organisations across the island of Ireland and internationally. We shared our findings with them and sought their responses.

- These stakeholders argued strongly that relying on public awareness campaigns about digital food marketing, where the campaigns focused on media literacy or individual behaviour change alone, would likely divert authorities from meaningful policy reform.
- They believe that, to achieve policy action, the priority should be to educate policymakers and legislators rather than the general public.
- Stakeholders believe that the very high levels of digital food marketing exposure identified in this study means policy makers must focus on achieving more robust, mandatory and independently monitored regulation.

Summary

In summary, this research has identified a very high level of unhealthy digital food marketing exposure among children and adolescents on the island of Ireland. This is ubiquitous and includes concepts with many blurred lines, such as marketing from favoured influencers and content creators. As such, it often bypasses being recognised as advertising by both children and parents. Yet the evidence of several decades shows that less conscious processing of marketing still affects food preferences, purchase requests, purchases and consumption.

In social media, marketing mimics trending formats and content (such as recipes or challenges). Children form "parasocial" relationships: one-sided but often strong attachments to celebrities, influencers and content creators. Advertisers and parents hold negative views about this, with both groups describing it as sinister. Advertisers

view it as creepy and a grey area, and parents describe it as sophisticated and manipulative.

Although children understand marketing well, they often do not perceive that they are being advertised to. Marketing strategies in social media have been judged to undermine children's autonomy and violate their rights – to health, privacy and freedom from exploitation, among other rights (Tatlow-Golden and Garde, 2020; UNICEF and WHO, 2021). Given that our study found very high levels of exposure to unhealthy food marketing of children on the island of Ireland, self-regulation has clearly failed. Government-led, mandatory regulation is therefore required – as indicated by the WHO (2023) guideline on *Policies to protect children from the harmful impact of food marketing*.

Recommendations from the research

The main indications from our research are as follows.

- Children on the island of Ireland are exposed to high levels of unhealthy food marketing in social media.
- Parents are largely unaware of this high level of exposure.
- Children and parents often believe children are largely immune to the effects of such marketing, while at the same time describing many ways they are influenced by it.
- Many advertisers, while enjoying the creative opportunities afforded by digital marketing, also consider it has creepy and sinister elements.

To consider how policymakers should address this, the WHO guideline on *Policies to protect children from the harmful impact of food marketing* (WHO, 2023) makes recommendations, based on systematic reviews of the literature, about:

- the impact of food marketing on children
- the impact of mandatory, legally binding regulations as compared to voluntary, self-regulatory codes

The guideline recommends that all EU Member States implement “policies to restrict marketing of foods high in saturated fatty acids, trans-fatty acids, free sugars and/or salt to which children are exposed, and that such policies:

- be mandatory;
- protect children of all ages;
- use a government-led nutrient profile model to classify foods to be restricted from marketing;
- be sufficiently comprehensive to minimize the risk of migration of marketing to other media, to other spaces within the same medium or to other age groups; and
- restrict the power of food marketing to persuade” (2023, p. xii).

This study has shown that children on the island of Ireland are exposed to a great deal of unhealthy food marketing online. Our recommendations are based on the WHO guidance and an analysis (accompanying this study) of food marketing regulation from the perspective of children’s rights (Garde *et al*., 2026).

The authors of this study propose the following recommendations for consideration.

- Protect all children, including adolescents, from exposure to unhealthy food marketing, and digital food marketing specifically.
    - Prohibit the marketing of unhealthy food on all digital media.
- Ensure regulation is comprehensive.
    - It should encompass influencers and content creators. It needs to go beyond requiring them to disclose what they are paid for referencing a specific food product or brand.
    - It should encompass brand marketing (where marketing features a brand associated with unhealthy food products) and “owned” social media marketing (brand accounts on social media).

    - It should minimise the risk of marketing migrating to other media and other digital spaces, for example the various forms of virtual reality accessed on devices such as smart phones or computer screens.

- Regulation should be mandatory. The extremely high exposure of children to unhealthy marketing on social media clearly demonstrates that industry self-regulation is not working, and evidence shows that self-regulation is less effective than legally binding rules at protecting children from harmful marketing.

- Monitoring of food marketing regulation should be independent, effective, efficient and adequately supported.

    - Provide the necessary resources for comprehensive, regular, independent monitoring. Monitoring should assess compliance, enforce restrictions and inform future policy revisions.

    - Require nutritional information to be displayed in an easily accessible and standardised format that can be monitored automatically across a range of products.

    - Update nutrient profile models (which rate foods according to their nutritional values) to take into account portion size. This is especially relevant when evaluating restaurant meals, ready meals and other multi-component foods.

- Address policymakers as the key audience needing to learn from this research.

- In the UK, the Health and Care Act 2022 introduced a statutory ban on paid-for advertising online of less healthy food or drink products. The ban came into force from January 2026. It does not include a ban on brand marketing where no unhealthy food products are visible in the ads. It will thus permit ongoing marketing by brands selling such products. However, the legislation

is the first of its kind and is a step in the right direction. Our data support similar strengthening of regulation at EU level. We recommend the following:

  - Use the exposure data as evidence in working with partners in the EU to ensure cross-border marketing is effectively regulated at regional level for the benefit of all EU citizens.

  - Share insights from our study – the first in the EU to assess children's exposure – to inform evidence gathering and policy making at an EU level.

  - Ensure that EU rules on digital food marketing allow Member States flexibility to adopt national rules that are aligned with the WHO 2023 guideline and compatible with a human rights-based approach.

- The Irish Government should use the discretion allowed by EU law to implement the WHO guideline and protect child health and children's rights in Ireland. This step would be in keeping with the leadership demonstrated by Ireland as the first country to introduce a smoking ban (Public Health Tobacco Act 2004).

  - Work in partnership with key stakeholders with an interest in tackling the commercial determinants of health, such as alcohol, gambling, tobacco/vaping. This is because online marketing, as an intrinsic part of the advertising-based business model of social media, contributes to various sorts of harm.

A note on this summary report

This is a condensed report of key methods and findings from the comprehensive research project. All elements of the report are in preparation for peer review, under review or already published.

The research team also carried out a comprehensive legal and policy review of EU, Irish and UK law and regulation, including industry self-regulation, where relevant to digital food marketing on the island of Ireland. The findings of this review are published separately in the Safefood report *Towards a human rights-based approach to the regulation of digital food marketing to children on the island of Ireland* (Garde, Mellilo and Tatlow-Golden, 2026). Key findings are summarised at the end of that report.

A note on terminology regarding marketing and advertising

The terms “marketing” and “advertising” have different meanings but are often used interchangeably in the research and grey literature. Marketing, a more general term, refers to diverse promotional activities, while advertising is a sub-set of marketing involving explicitly paid-for promotion and communication. In this report, we favour the term marketing, as food promotion in digital media includes many “grey areas”. However, in discussion with children and parents, we used “advertising” and “ad” as these terms are more easily understood by the general public. We refer to practitioners as advertisers, as many of their professional and representative organisations do.

Abbreviations and acronyms

ASA (Ireland) or ASAI – Advertising Standards Authority for Ireland

ASA (UK) – Advertising Standards Authority of UK

ASMR – Autonomous Sensory Meridian Response

BAI – Broadcasting Authority of Ireland

CCPC – Competition and Consumer Protection Commission

CDD – Center for Digital Democracy

FSA – Food Standards Agency

GDPR – General Data Protection Regulation

HER – Healthy Eating Research (Duke University, USA)

HFSS food – Food high in fat, sugars and/or salt

IAB – Internet Advertising Bureau

IAPI – Institute of Advertising Practitioners

IHF – Irish Heart Foundation

FMC – Future Media Commission

NCDs – Non-communicable diseases

NGO – Non-governmental organisation

NPM – Nutrient profile model

Ofcom – Office of Communications

OSF – Open Science Foundation

PI – Principal investigator

UNICEF – United Nations Children's Fund

SES – Socioeconomic status

WHO – World Health Organization

WHO-Euro – World Health Organization Regional Office for Europe

Acknowledgements

This transdisciplinary study, funded by Safefood, was led by The Open University and carried out with the support of colleagues at the following universities across the island of Ireland, the UK, Australia and beyond.

The Open University, UK

Professor Mimi Tatlow-Golden (Principal Investigator)

Dr Magdalena Muc – Research Associate

University of Galway, Ireland

Professor Colette Kelly (Collaborator)

Dr Elena Vaughan – Research Fellow

Ms Eimer Brown – Research Assistant

Ms Olivia Nealon Lennox – Research Assistant

Dr Claire Kerins – Post-doctoral Researcher

University of Liverpool, UK

Professor Emma Boyland (Collaborator)

Professor Amandine Garde (Collaborator)

Dr Margherita Melillo – Post-doctoral Researcher

University College Dublin, Ireland

Dr Celine Murrin (Collaborator)

Ms JoAnn McComish – Research Assistant

Ulster University, Northern Ireland

Dr Lynsey Hollywood (Collaborator)

Deakin University, Australia

Professor Kathryn Backholer (Collaborator)

Professor Asim Bhatti (Collaborator)

Dr Navoda Liyana Pathirana – Research Fellow

Dr Leo Saif – Research Fellow

Project advisors

Associate Professor Dr Norah Campbell (Trinity College Dublin, Ireland)

Professor Emerita Kathryn Montgomery PhD (American University, Washington, DC)

More thanks

Thank you to University of Galway research assistants Rachael Maloney and Louise Lunney, research intern Ruth Heffernan, and placement students Roisin D'Arcy, Laura Ronayne and Ciana Staunton, who all supported the project.

The OU team was supported by Gráinne Cumbers and Clara Tatlow-Devally. Thanks also to Professor Laurent Muzellec at TCD Business School. Thanks also go to Assistant Professor Norah Campbell, whose additional contributions to the analysis of advertiser interviews were invaluable. Finally, we give heartfelt thanks to an advertising industry contact who facilitated the first snowballing of our drive to recruit advertising interviewees and must therefore remain anonymous.

The list above may look long, but there are well over 300 further people to whom we are indebted, as without them there would be no research. They all have to remain anonymous – but you know who you are. We are so grateful to the 175 children on the island of Ireland, their schools, head teachers and teachers for their support and engagement with the project's focus groups and interviews.

We are also grateful to:

- the 38 young participants who volunteered their time (and their screens) for the study

- the 49 parents who gave up an evening of their lives to talk about food marketing in yet another Zoom call
- the 15 advertisers on the island of Ireland and UK who contributed their time and views with such generous interest
- the stakeholders from commercial and service sectors across the island of Ireland and beyond who responded to the findings with such enthusiasm
- the members of the Parent Advisory Group and Youth Advisory Group from across the island of Ireland who advised thoughtfully on our study design and process from the outset

Introduction and background

Impact of food marketing on children and their health

Children today live in environments that constantly normalise and encourage unhealthy eating. The main factors affecting their health are primarily through multiple commercial determinants of health, of which food and beverage marketing is a significant element (Gilmore *et al*., 2023). Children are frequently targeted with unhealthy food and non-alcoholic beverage marketing (in this report, called "food marketing") throughout the day, on multiple channels, at home, on public transport, at school and in other settings (Signal *et al*., 2017). Brands use powerful marketing strategies to target them in these settings.

Poor diet is currently the leading cause of disease, disability and premature mortality (Afshin *et al*., 2019). Food marketing is directly linked to what children prefer, ask for, buy and eat (WHO, 2016a). The evidence of several decades was reconfirmed in 2022 in a systematic review and meta-analysis of over 19,000 participants in 96 studies (Boyland *et al*., 2022a). It found that food marketing was associated with increases in food intake among children and adolescents, and with their choice of, preference for and purchase requests for test items.

Even small increases in unhealthy food intake result in poor health outcomes over time, including childhood obesity. Russell *et al*. (2018) concluded that digital food marketing resulted in children aged 2–14 years consuming, on average, an extra 53.2k kcal compared to children exposed to non-food marketing. This additional intake in response to food marketing exposure, although small, would result in incremental weight gain over time.

Research on food marketing in digital media, including social media, is still in its early stages but is now growing rapidly (Harris and Taillie, 2024). It continues to show that food marketing affects children's preferences for unhealthy food and their eating patterns, and shapes their social preferences and perceptions of typical eating patterns. For example, UK pre-teens ate more after viewing posts from YouTube influencers' content featuring foods high in fat, sugars and/or salt (HFSS), and felt sympathy for influencers (Coates *et al*., 2019). Similarly, adolescents in

Ireland “like” and share peers’ social media profiles more when they contain HFSS ads, compared to those with healthy or non-food ads, and also prefer peers with HFSS content in their social media profiles (Murphy *et al*., 2020).

Evidence shows that food marketing delivered to children online has similar effects to marketing through other channels. It overwhelmingly:

- promotes unhealthy foods high in fat, sugars and/or salt foods,
- shapes their perceptions of what they and their peers should eat
- embeds unhealthy food into their social and cultural identities
- directly affects the foods they want, ask for, buy and eat

The digital marketing system globally and the dominance of major platforms

The explosion of digital media in recent decades has equipped marketers and brands with new, powerful, low-cost tools to promote unhealthy food to children. “Surveillance” advertising has become the business model of digital platforms. This means collecting data about users in social media and beyond, and using the data to target them, based on demographics, interests and behaviour, both online and offline. Highly personalised marketing increases appeal and can generate extraordinary profits. Diverse types of digital marketing take advantage of children’s relationships, connections, play and entertainment – and monetise them (WHO, 2016b).

In digital media, the lines between content and marketing are increasingly blurred. Marketing includes sponsored posts, influencer promotions, peer recommendations, event sponsorships, game streams, “earned” media (promoted virally by being shared or re-posted without payment) and “native” marketing that looks like social media content. Compared to more obvious paid advertising, native advertising is designed to mimic the content of users’ social media feeds and therefore gives rise to greater subconscious reactions. These forms of marketing make it difficult for children to recognise that they are being targeted by advertising.

Many different strategies are employed to engage children with marketing. These include:

- creating illusions that they have a connection with influencers or brands
- using humour, entertainment and celebrities popular among children and young people
- using and creating trends
- emotional messages
- personalising brands
- encouraging them to help create marketing content and share it on behalf of the brands (Tatlow-Golden and Garde, 2020; WHO, 2019)

Children's understanding of the media, marketing and food provide little protection against such powerful tools (WHO, 2016b).

Marketers constantly seek new, more effective ways of engaging and persuading children and young people. The World Advertising Research Center (WARC) (2024) describes Gen Alpha (children born from 2010 on) as the generation that "controls the purse strings" by earning money younger and influencing family purchasing decisions.

WARC recommends increasing impact with Gen Alpha through highly personalised and targeted marketing that "speaks directly to them". This means:

- reaching children through diverse channels, including digital platforms
- infusing marketing with messages that appeal to Gen Alpha values (such as the environment or anti-bullying)
- aiming to "grasp their motivations" and core values (such as self-expression, social justice and wellbeing) (WARC, 2024)

Currently, one of the primary means to reach young people is through influencers (also referred to as "content creators"). Ireland's 2022 Competition and Consumer Protection Commission report *Online Behaviour Influencer Marketing* (CCPC, 2022) defined an influencer as a "social media content creator who often promotes or recommends items on social media, often in exchange for compensation" (CCPC, 2022, p.14). It adds that brands take advantage of "the positive impact that influencers are likely to have on consumer perceptions" (p. 15).

“Influencer” is now listed as top of the list of many children’s dream jobs, which highlights its increasing popularity as an imagined lifestyle for many young people. Many users create their own influencer-style content and tag brands, because they hope to attract attention and sponsorship from brands. Here it can be difficult to identify whether content is influencer-generated or user-generated. Indeed, even adult consumers can struggle to identify the content as marketing (CCPC, 2022). Food is the second most active industry involving influencer marketing, and is promoted by influencers popular with children (Tatlow-Golden and Parker, 2020).

In the US, the Center for Digital Democracy (CDD) reported that, in 2020, marketers spent nearly $10 billion on influencer marketing, with numbers predicted to increase further. Among other major brands, food and beverage giants such as PepsiCo, Coca-Cola and KFC worked with Facebook’s creative team on influencer campaigns targeted specifically at young people (CDD, 2021).

Existing literature categorises influencers into nano, micro, mega and macro depending on numbers of followers (Borges-Tiago, Santiago and Tiago, 2022; Casais and Conde, 2023; Kay, Mulchay and Parkinson, 2020), but the boundaries or ranges of each category vary. Influencers include hugely famous pop-culture celebrities from film, music or sports industries; internet celebrities; and “relatable” micro- and nano-influencers. Definitions of influencers with the smallest followings (nano-influencers) range widely, from 500+ followers up to 10,000. We applied Campbell and Farrell’s (2020) parameter, which places the bar for micro-influencer at having more than 10,000 followers. This conservative interpretation of “influencer” meant that content from those with under 10,000 followers was classified as user-generated content.

As influencer marketing is embedded in social media, often within entertaining content, it has the appearance of greater authenticity and relatability compared to traditional marketing. As marketers began to understand the value of relatable content and sources in building meaningful connections with consumers, they started to focus attention on micro-influencer marketing and user-generated content. This became more mainstream around 2022 and 2023 (Euromonitor, 2024; Influencer Marketing Hub, 2022).

“Parasocial” interactions can be understood as a celebrity or influencer creating the idea of a real, tangible relationship with their followers. They appear to invite them into their personal life and to form a bond with them. Audiences are encouraged to interpret influencers’ brand content as recommendations from a friend, rather than seeing it as marketing. In this way, smaller-scale influencers are thought to generate greater relatability and relevance. This sort of marketing strengthens the feeling of connection between audience and influencer (Hill, 2024) and increases brand credibility, involvement and engagement (Teresa Borges-Tiago *et al*., 2023). The bond in these “parasocial” interactions is, however, one-sided. The influencer aims to monetise the relationship, and brands sponsoring them benefit financially when the influencer’s followers feel emotionally or intimately involved.

Monitoring food marketing in digital media and the WHO CLICK framework

Protecting children from harm inflicted by food marketing online is a child rights issue. With data-driven, targeted, surveillance marketing, food marketing violates not only children’s right to the best attainable standard of health and their right to good food, but also their right to privacy and to freedom from economic exploitation (Tatlow-Golden and Garde, 2020). As long ago as 2010, the World Health Assembly unanimously adopted the WHO Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children to urge states to protect children from harm. However, a decade and a half later, children continue to be exposed to large volumes of highly manipulative marketing, despite a multitude of calls from major health and children’s rights organisations, diverse United Nations child rights rapporteurs, and others.

As a complex and opaque system involving many actors, marketing in digital media is difficult to monitor and regulate (WHO, 2016b; WHO, 2019). Major platforms such as YouTube (Google), Instagram (Meta) and TikTok advertise to their users on a vast scale but keep the data on who they target and reach within closed “walled gardens” or “black boxes”. A walled garden is an online environment completely controlled by one digital business – so it is hard for either researchers or competitors to access data on users or content within the garden. A black box is the sum of

factors, such as hunger, lifestyle or peer pressure, that make someone decide to buy something; black box marketing involves identifying and appealing to these factors.

A UK Government Impact Assessment (2019–20) found no way to measure children's exposure to paid-for digital food marketing. It commissioned an estimate of such exposure, but this was contested (Tatlow-Golden and Parker, 2020). This was partly due to underlying assumptions, including the method of basing calculations on estimates of advertisers' spending rather than on assessing their reach. Also, the investigation failed to assess the extent and impact of many powerful forms of digital food marketing, including influencer marketing. The estimate was subsequently revised upwards substantially.

The WHO has stressed the importance of reducing marketing pressure on children. It highlights the need to reduce both *exposure* (in other words, frequency of viewing) and *power* (the creative strategies that marketing employs). The aim must be to protect children from the harm caused by marketing unhealthy food (WHO, 2010, 2012, 2016a, 2016b).

The WHO Guideline, *Policies to protect children from the harmful impact of food marketing* (2023)*,* builds on its earlier Set of Recommendations (WHO, 2010). It argues for more comprehensive laws, based on principles of child rights, to reduce children's exposure to unhealthy food marketing. This is because evidence shows that, if restrictions are to be effective, they must be mandatory and government-led, and should aim to protect all children up to the age of 18 (Boyland, 2022b; WHO, 2023). The 2023 Guideline extends its scope to all children up to 18 and includes all messages to which children are exposed (not just marketing directed at younger children).

To solve the problems that researchers face in assessing the extent and nature of digital marketing to children, the WHO Regional Office for Europe brought together global experts to develop the CLICK framework (WHO, 2019). CLICK outlined the key steps that would enable researchers and policymakers to fully understand and monitor digital food marketing and children's actual exposure to such marketing.

The WHO also supported the development of step-by-step guidance for researchers monitoring digital food marketing practices. This resulted in a WHO Internet

Monitoring Guide with associated coding templates and protocols (Tatlow-Golden *et al*., 2021). Elements of CLICK have since been applied in studies across the world, including in Mexico, Argentina, Colombia, the Philippines, Austria and elsewhere (see for example, Figueira *et al*., 2023; Valero-Morales *et al*., 2023; Naderer *et al*., 2024; Nieto *et al*., 2023; UNICEF 2021a; UNICEF 2021b; UNICEF 2023).

CLICK has 5 steps that researchers need to take.

- **C**omprehend the digital ecosystem.
- Identify the **L**andscape of campaigns.
- **I**nvestigate exposure to unhealthy food marketing.
- **C**apture on-screen children's total actual marketing exposure.
- Share **K**nowledge – to promote advocacy, public awareness and regulation.

Study aims and objectives

Our project aimed to use CLICK on the island of Ireland to gain a deep all-round understanding of food and beverage digital food marketing and its regulation, plus an analysis of children's rights. Combining scientific and social research methods, we examined the following aspects of digital food marketing on the island of Ireland that related to the CLICK steps.

The study, which is outlined in Figure 1, researched various perspectives on digital food marketing:

- digital marketing systems and operators
- children and their parents
- the regulations addressing digital food marketing

It also drew on recommendations from parents, young people and stakeholders advising on policy.

The research outcomes present a detailed picture of digital food marketing on the island of Ireland from multiple perspectives.

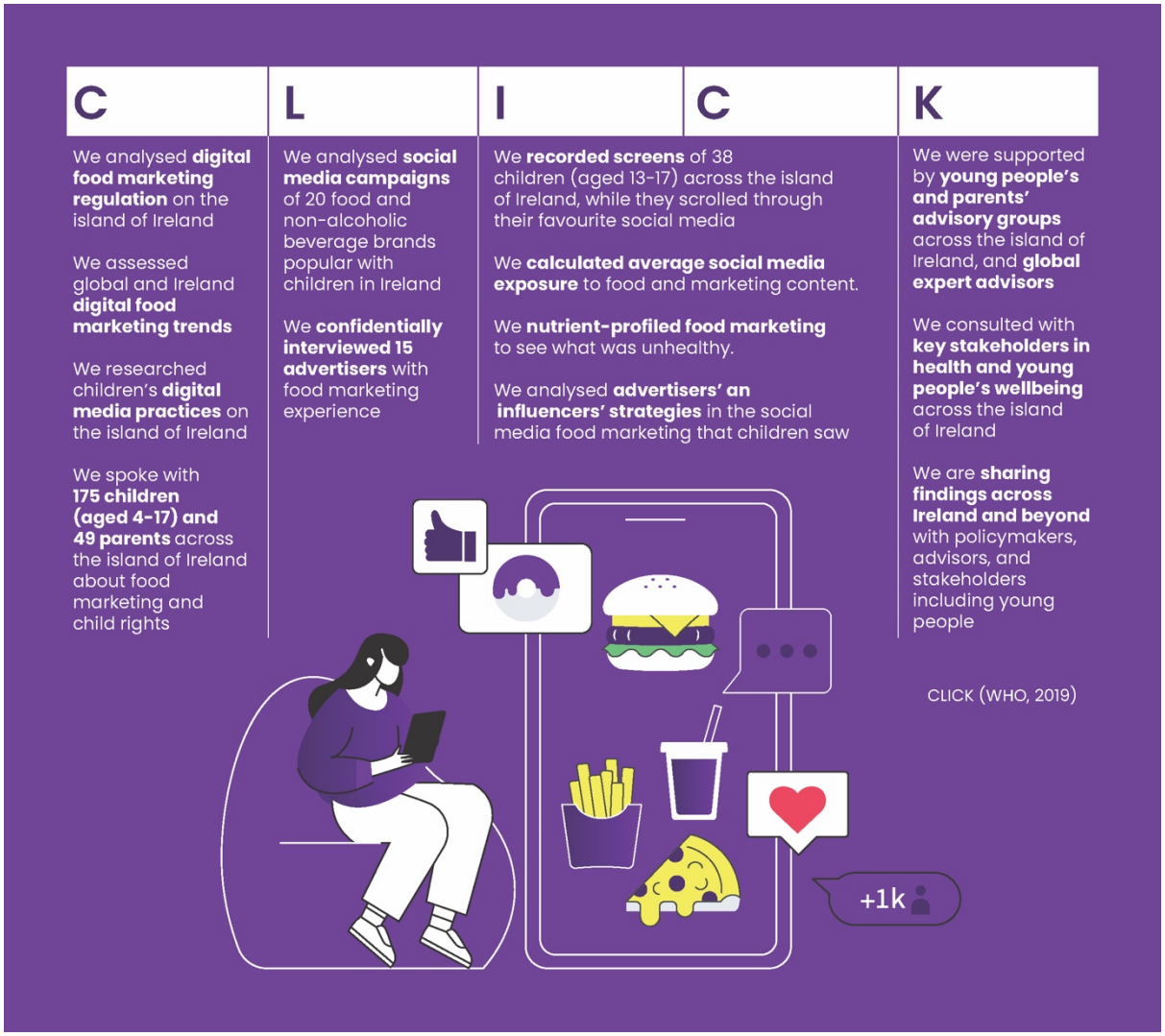

Figure 1 **Study of digital food marketing to children on the island of Ireland**

Methods

This section outlines our approach to conducting the research. We started with a data protection review and ethical review to ensure our study complied with data protection, legal and ethical standards. We then used 2 primary methods – desk research and empirical research – to examine the following.

Desk research

1. Review: Current knowledge about the impact of digital food marketing awareness of it and attitudes to it; and available methods for measuring actual digital food marketing exposure.
2. The context: Digital food marketing and use of social media by children and young people on the island of Ireland.
3. The landscape: Social media food marketing on the island of Ireland.

Empirical research

4. Advertisers' attitudes to food marketing and regulation
5. Children's and parents' attitudes to digital food marketing on the island of Ireland
6. Children's actual exposure to social media food marketing: Screen capture
7. Consultations with stakeholders

Ethical review

The procedures for all elements of the study involving empirical data collection were reviewed by the University of Galway Research Ethics Committee (as the main data collection site) and received approval on 13 September 2023.[1] Following this, the study was reviewed by the Human Research Ethics Committee of The Open University and was approved on 5 October 2023.[2]

The University of Galway's data protection officer sought external legal review in Dublin and Belfast for the screen capture method for assessing actual exposure to digital food marketing. This legal review concluded that, with adequate safeguards and a data protection impact assessment, a screen capture study involving children

was permissible under the EU's General Data Protection Regulation. This ruling was due to the potential benefits it would provide in understanding factors affecting children's health.

Participants of all ages took part with informed consent, using age-appropriate information forms for different age groups of children. All participants whose screens were recorded – children and adolescents aged 4-17 years, parents and advertisers – were aware that this study was examining food ads online.

Project methods – Desk research

1. Reviews of current knowledge and methods

The reviews of current knowledge and methods covered the following areas:

The impact of digital food marketing on children

We carried out a rapid review to assess current evidence for the extent, nature and impact of digital food marketing. Rapid reviews assist policy-makers and programme-makers who require rapid, robust, systematic evidence gathering and synthesis (Tricco *et al*., 2017). Similar techniques to the traditional systematic review are used.[3]

Digital marketing attitudes and awareness among children and parents, and screen capture methods for assessing children's actual exposure

We carried out 2 systematic scoping reviews. Systematic scoping reviews are useful to identify the types of evidence available on a particular topic and analyse knowledge gaps (Munn *et al*., 2018). The first assessed existing knowledge of child and parent attitudes to and awareness of digital food marketing. The second assessed existing screen capture methods to measure the actual exposure of children and young people to digital food marketing.[4]

2. The context: Digital food marketing and use of social media by children and young people on the island of Ireland

Desk research was carried out to assess digital food marketing on the island of Ireland. This involved strategic web searching, primarily of grey literature and industry sources (rather than academic sources). The analysis also included insights from the research advisory team and available industry information, as recommended in CLICK (Annex 3; WHO, 2019). We consulted:

- peer-reviewed sources
- NGO reports
- articles in trade press and other media
- World Advertising Research Council (WARC) reports
- Ireland-specific industry sources, including the All-Ireland Marketing Awards, Effies (marketing industry effectiveness awards) and the Institute of Advertising Practitioners (IAPI) blog

Together, these provide a snapshot of global/island of Ireland digital media and advertiser systems, and of creative strategies in digital marketing campaigns in Ireland.

3. The landscape: Social media food marketing on the island of Ireland

Desk research followed the methods of monitoring social media marketing as detailed in the WHO Internet Monitoring Guide's Protocols and Templates (see Tatlow-Golden *et al*., 2021; WHO, n.d.).

Selecting social media platforms and brands

Data for Ireland and the UK indicated TikTok and Instagram were primary social media platforms. To select food products and brands popular among island of Ireland children, we followed the process described in WHO Protocols and Templates (Tatlow-Golden *et al*., 2021). We drew on sales data from Euromonitor International on food and non-alcoholic drink products in Ireland, considering:

- relevance to young people, drawing on the findings of an internal study of 500 young people in Ireland commissioned for the Irish Heart Foundation, and recommendations of the study's Youth Advisory Group
- category retail value position i.e. the ranking of a food product within its product category based on total retail sales value
- category variety i.e. refers to the breadth or number of different product lines, types, or sub-groups within a specific product category in retail sales data
- food delivery apps i.e. the availability of the food product or brand through popular online ordering platforms
- local representativeness (Ireland and Northern Ireland) plus relevant global brands i.e. food products with strong sales presence or availability in Ireland and Northern Ireland, supplemented by globally recognised brands

A sample of 20 food products and brands popular among island of Ireland children was selected using this approach.

Data collection, coding and analysis

On each brand's Instagram and TikTok accounts, researchers captured posts in reverse chronological order, capturing the 20 most recent posts (or as many as were available), including current "stories" or pinned posts in Instagram. The content was coded, based on the WHO Internet Monitoring Guide's Protocols and Templates (see Tatlow-Golden *et al*., 2021; WHO, n.d.) for social media pages, using MS Excel coding templates created for Instagram and TikTok. Each item was coded for exposure, nutrient profile (WHO, 2015) and power variables.

Power variables are creative strategies that appeal to consumers – for example, branding elements, the ad's claims and characteristics, and who features in it. We classified content as potentially appealing to under-12s and teenagers aged 13–17, following the WHO Internet Monitoring Guide's Protocols and Templates. To ensure coding was consistent, it was checked and rechecked by independent coders until they reached at least 80% agreement.[5]

Project methods – Empirical research

4. Advertisers' attitudes to food marketing and regulation

Qualitative expert interviews took an exploratory approach. The aim was to understand the attitudes and intentions of those with experience of working in the field of digital marketing (Bogner and Menz, 2018; Flick, 2022; Edwards and Holland, 2013).

Participants

A total of 15 advertisers, almost all senior executives, took part. These were 6 men and 9 women aged from 20 to over 50, working at 11 advertising agencies (one in Northern Ireland, one in the UK and 9 in Ireland). They were recruited through snowball sampling, where our advisors, contacts and study participants approached other potential participants from among their connections. At least 20 advertisers were contacted, although due to the snowball sampling method and requirement for confidentiality, the total number of advertisers contacted is not known.

Participants had been working in advertising from a minimum of one year to over 25 years, with experience across Ireland, Northern Ireland, the UK, Australia and France. They came from a range of above- and below-the-line agencies: international network agencies, large corporate consultancies, large-scale agencies in Ireland, independent agencies and digital-only agencies. Almost all were senior executives with 10 years' marketing experience or more. Two relatively new advertisers were digital advertising specialists (and gave particularly insightful interviews).

Participants had experience in creative fields, copywriting, design, social and digital innovation, community management, client services, account management, planning and digital/social media buying. All had experience of marketing an aspect of food, beverages or alcohol. These included confectionery, carbonated beverages, dairy products, fast-food franchises, frozen foods, beers and spirits.

Interviews and analysis

Interviews ranged from 35 to 84 minutes long (average of 61 minutes). A semi-structured interview schedule, developed with project collaborators and advisors with marketing expertise, was adapted for each interview according to the participant's expertise and experience. All interviews were conducted online in MS Teams. They were recorded and transcribed verbatim except for identifying details, and the recordings were deleted after transcription. Two members of the research team analysed and grouped the content into thematic clusters., with themes emerging iteratively through successive rounds of discussion.

5. Children's and parents' attitudes to digital food marketing

To recruit children aged 4 to 17 years for the focus groups, we used networks and a mail-out to all primary schools in Galway City and County; all urban DEIS (Delivering Equality of Opportunity in Schools) post-primary schools in Galway City and County and all rural post-primary schools (excluding special schools and Gaelscoileanna). We visited 5 primary schools and 2 secondary schools in urban and rural areas. Ulster University collaborators recruited primary and post-primary schools in NI through their networks (recruitment was challenging as it had been in Ireland). In all primary schools visited, we requested the option to recruit junior infants/reception class pupils for the early years portion of the research. Three schools agreed: 2 in Ireland and one in NI.

Child and parent participants

A total of 224 children and parents took part in interviews and focus groups. "Young primary" participants were 24 primary school pupils aged 4–7 years (14 Ireland,10 NI). The "primary" and "secondary" participants were 150 children aged 7–17 (99 from Ireland, 51 from NI, in 25 focus groups). Primary school participants were equally matched for gender, and mostly from lower socioeconomic status (SES) communities. Secondary school participants skewed towards girls from higher SES communities. Participant demographics are summarised in Table 1.

Table 1 **Participants in child and parent interviews and focus groups**

		Young primary	Primary	Secondary	***Child total n=174***	Parents n=49	**Total n=224**
Gender	Male	8	36	12	***56***	11	**67**
	Female	16	39	63	***118***	38	**156**
SES	Low	14	52	18	***84***	7	**91**
	High	10	23	57	***90***	42	**132**
Area	Rural	15	44	13	***72***	12	**90**
	Urban	9	31	62	***102***	37	**139**
Country	IE	14	56	43	***113***	33	**146**
	NI	10	19	32	***61***	16	**77**

Parents were recruited through diverse means: email and poster callouts, sports and other groups, and diverse contacts. A total of 49 parents took part (33 from Ireland, 16 from NI, in 14 focus groups). In the event, parents who responded to calls for participation had relatively high levels of education (13 with PhDs, 29 with university degrees or Masters). Note however that Ireland has high levels of education in the general young adult population: in 2024, 65% of those aged 25–34 had a tertiary degree (CSO, 2024). In Table 1, parent SES is represented by parent education as a proxy (those with a university degree are coded as high SES). Parents had 94 children, split evenly for gender, ranging from infants to 17 years and 26 had a child aged 13 or older.

Procedure and analysis

Paired interviews (with young children) and focus groups (with those aged 7 years and older) were conducted face to face in Ireland and Northern Ireland. They were audio-recorded and transcribed. Focus groups with parents were conducted online via MS Teams and recorded (one was conducted face to face and audio recorded). All interviews and focus groups involved showing examples of social media food marketing – stills for young primary children and videos for older children and parents.

Focus groups lasted 45 to 60 minutes. The level of detail, examples and explanations were all tailored to each participant group and to the time available. A semi-structured schedule guided the group interviews. With all groups except young primary children, where time permitted, participants were asked about child rights in relation to food marketing. To gauge recognition, brand awareness and feelings about the products and marketing approaches, we showed social media logos (Figure 2) and food marketing stills or food marketing videos.

Visual prompts used in interviews and focus groups with young children and parents

For the young primary participants (aged 4–7: junior infants Ireland; year 1 NI), we showed printed stills of Irish and global brands with design features appealing to young children (for example, Colin the Caterpillar) or content marketed online (for example, Feastables chocolates marketed by Mr Beast, and Prime energy drink promoted by KSI and Logan Paul). We also showed logos of YouTube Kids, YouTube, TikTok, Instagram and Facebook (Figure 2). Mr Beast's YouTube channel has one of the largest global followings, and he sells branded chocolate among other items (available in Ireland).

Figure 2 **Social media brand logos**

Food marketing examples for primary, secondary and parent focus groups

Children and parents were shown TikTok or YouTube videos or both (as time permitted) of different digital marketing formats featuring popular snack and drink brands: Tayto, Magnum, Coca-Cola, Pepsi and Goodfella's Pizza (Table 2). We selected these brands and videos following extensive investigation of the branded and influencer social media landscape. They reflected a range of social media marketing strategies, global and local brands, and types of packaged food and beverage favoured by children: crisps, ice cream, carbonated colas and pizza. They often featured Ireland-based influencers and global celebrities, user-generated content and a popular social media recipe format.

Table 2 Social media food marketing examples shown to children and parents

Video	Description
Tayto Influencer marketing with brand character	A TikTok video produced by an influencer/content creator and their family. They get a "surprise" visit from life-size brand equity character Mr Tayto and do a dance together in the family kitchen. The video was not marked as #ad on TikTok. It was shared by Tayto on other platforms, where it was identified as an ad.
Magnum Owned marketing "recipe"	This TikTok video uses the very popular social media recipe format. An AI voiceover says, "This is your sign to treat yourself for breakfast", showing close-ups of preparing a dish of oats, strawberries sautéed with honey, and a Magnum mini ice cream. A version of a song by R&B artist Larissa Lambert plays – an online hit in 2021, with over 100 million Spotify streams.
#PepsiCanChallenge Viral hashtag challenge (user-generated)	In a house, teenage girls do dance moves, handstands and other choreographed/gymnastic moves to upbeat music accompanied by rap lyrics in Spanish, while throwing a can of Pepsi to one another. At the end, 7 girls perform synchronised moves in the kitchen, while cans of Pepsi balance, despite being tilted, on the kitchen counter.

Video	Description
Goodfella's Influencer marketing (brand collaboration)	A make-up and style influencer/content creator is seen at home on the couch in her pyjamas avidly watching Love Island. The show comes to a commercial break and her tummy rumbles loudly. She rushes to the kitchen, opens the freezer, the camera zooms in on a Goodfella's microwaveable pizza pocket. She microwaves it and settles back to watch her show with her snack. The soundtrack features American Celtic punk band, the Dropkick Murphys.
Coca-Cola Owned paid marketing (traditional celebrity ad format)	The Jonas Brothers, an American pop-rock band, open a Walmart delivery with cans of Coca-Cola Y3000. As they sip, pop music strikes up; their clothes magically change into shiny, glamourous outfits. They strut down a hallway to the song Year 3000. It cuts suddenly, and the only sound is their shoes squeaking on the floor.

Focus groups were recorded and the recordings were transcribed verbatim. Four researchers applied qualitative content analysis to code the transcripts and create themes in an iterative process of discussion and amendment. Analyses were primarily deductive – they arrived at general conclusions based on people's responses to our research questions. The topics covered attitudes to and awareness of food marketing, digital marketing formats and responses, and child rights issues. Some analyses were inductive – identifying further themes from information gathered in the dataset.[6]

6. Children's actual exposure to social media food marketing: Screen capture

Actual exposure to social media food marketing on the island of Ireland was measured by video recording participants' use of their personal devices. The recording took place with their consent in online meetings in MS Teams. During the online meetings, each participant shared their screen and the researcher recorded it. This process required us to follow the rules on data protection with great care. Perhaps due to the challenge of the EU's GDPR constraints, this was the first time to our knowledge that this approach had been used in an EU country.

For analysis, we used the methods and materials in the WHO Internet Monitoring Guide Protocols and Templates (Tatlow-Golden *et al*., 2021; WHO, n.d.), developing them to suit the data we encountered.

Participants and data collection

Almost all secondary school participants taking part in the focus groups across the island of Ireland (n=68 of 75) were offered the opportunity to take part in the screen capture portion of the study. Take-up was greater in the Galway region (n=16) than in the Belfast region (n=2). Further recruitment took place in the Galway region through prior participants, parents' WhatsApp groups and a poster campaign in local libraries, creches and family resource centres.

Screen capture participants were 38 adolescents aged 12–17. Of these 38, there were 29 girls and 9 boys, with 36 from Ireland and 2 from Northern Ireland. Eleven said they lived in a rural area, 27 in an urban area. They took part online (n=24) or in person (n=14) at the University of Galway. Each received €50 or sterling equivalent.

In-person participants joined the online call in a separate room from the researcher. During recordings, they first reconfirmed their consent to take part in the recording in discussion with the researcher. They then switched from video to screen share and scrolled and interacted on social media for 30 minutes on up to 3 of their preferred social media platforms. In a 10-minute debrief interview, we assessed their recall of any food marketing.

Analysis

All screen recordings were face-blurred. We coded all declared marketing for food and non-food items; unbranded food; and branded food (Table 3).

Table 3 Coding of marketing and food content in screen capture videos

	Food and non-food marketing	Unbranded food content	Branded food content
Exposure count (per post)	x	x	x
Food category according to WHO-Euro NPM	-	x	x
Nutrient profiling using 3 NPM systems (WHO-Euro, UK, Ireland)	-	-	xxx
Source of marketing	-	-	x
Power of marketing	-	-	x

Branded food appearances, as Table 3 shows, were therefore analysed in 5 different ways:

- *Exposure* counts per post
- *Food exposure source* classified into 5 categories (described below)
- *Food categories* using categories in the WHO-Euro Nutrient Profile Model (WHO-Euro NPM) (WHO, 2015)
- *Nutrient profiling* applying 3 models: WHO-Euro NPM, UK and Ireland. All 3 had been designed to categorise products according to whether they might be marketed to children or not
- *Power* coding (WHO, 2012) to assess brands' creative strategies

Applying conservative assumptions in analyses

Throughout the analysis, we applied conservative assumptions to coding a social media post as marketing. That is, we were cautious about classifying posts as clear-cut marketing. First, we reported exposure *per post* (as in for example, a TV study, where each ad was counted as one instance). An alternative option would have been to log every instance of a brand logo appearing, which frequently happens more than once per ad. However, we took the view that this would unduly inflate the digital marketing exposure rates.

Similarly, where Instagram's Explore feed displayed a checkerboard of images that the user could click into, we coded and timed their visits. Only if they revisited their Explore feed for longer than one second was this coded as a separate exposure.

Blurred lines: Who is an influencer and is it marketing?

Further conservative assumptions were applied in coding content from influencers. We devised our coding method in consultation with academic marketing experts and project advisors at Trinity College Dublin Business School. Content was coded as marketing only if (a) it focused strongly on branded content in the post and (b) the social media user who posted it was at least a 'micro-influencer' with 10,000 followers or more.

This definition of micro-influencers is in widespread use (Campbell and Farrell, 2020). By setting the bar high in terms of the number of followers, we again used a conservative assumption. Others classify micro-influencers as having just 1,000 followers or more (Kay, Mulcahey and Parkinson, 2020). Increasingly, advertisers are seeking to work with nano-influencers – those with a following of between 1,000 and 10,000.

Some posts were marked #AD to show they were ads. Even without the marker, we coded posts as ads where there was a sustained and overt focus on a product or brand, and they came from users with over 10,000 followers.

In contrast, if a social media user with fewer than 10,000 followers overtly featured food products or brands, we coded this as *user-generated content*, rather than marketing. Influencer posts on other topics, where food featured only briefly, were coded as *branded food in other content* even where the influencer had 10,000 followers or more. This might be, for example, when the post focused on travel, study, humour or "hacks" (tactics to boost reach or influence) – but food was visible in the background.

Brand-created content: Paid-for and owned marketing

A considerable amount of branded food content in participants' social media was clearly created by the brand itself. In these instances, the brand either pays the platform to boost content, targeting it at certain users – or it simply posts on its own account.

In paid boosting (where posts are targeted via various demographics or users' other interests), these are tagged by the social media platform, for example with an "Ad" label. These social media posts were coded as *paid-for ads*. For example, there was an Uber Eats post which was also advertising McDonald's delivery, with a large image of a Big Mac and a (very small) "Ad" disclosure label.

Alternatively, brands post on their own social media accounts without paid-for boosting. In this case they hope for "organic traction" – where the content attracts and retains followers without the need to pay for actual advertising.

Where brand posts did not display an "Ad" disclosure, we assumed the brands had not paid for boosting. We coded these posts as *owned media*. We also included them in the "clear-cut marketing" measure, as the brand had placed the content on social media with the intent to reach users.

Typology of food brand exposures

From the above, we created a typology of food brand exposure sources.

- *Paid-for ads*: "Ad" was displayed on a brand's social media content.
- *Owned marketing*: No "Ad" disclosure was displayed but the content came from a brand account.
- *Influencer marketing:* The post included a sustained, overt focus on a branded food item, and the influencer had 10,000 followers or more. #Ad or similar disclosure may or may not have been shown.

- *Branded food in other content*: Branded food was shown in a post by an influencer or another source, but food was not the main focus of the post.

- *User-generated content*: Branded food appeared in posts of social media influencers with fewer than 10,000 followers, or influencers we could not identify on social media.

Clear-cut marketing

Again taking a conservative approach, we determined that only *paid-for ads*, *influencer marketing* and *owned marketing* constitute clear-cut marketing, as all are created with the overt purpose of showcasing a product or brand. Other posts – those featuring *branded food in other content*, or *user-generated content* – are less clear in terms of marketing intent (even though they may originate from influencers or be user-generated content encouraged by brands). We excluded these and created a composite *clear-cut marketing* variable for later analyses by combining *paid-for*, *influencer* and *owned marketing* only.

Intercoder reliability

Two researchers independently coded 5 screen capture videos of 30 minutes, then met with a third researcher to compare and agree on their coding decisions. Agreement of at least 80% between the 2 main coders was set as the threshold for key variables.[7]

Descriptive and inferential analyses

We calculated the following statistics and tested relationships between the following variables:[8]

- frequencies of all marketing (food and non-food)
- frequencies of food environment (branded and unbranded)
- the nature of the food environment (branded and unbranded)
- frequencies of all posts with food brands
- source of posts with food brands (such as paid-for or user-generated ads)
- proportion of posts with food brands that constitute clear-cut marketing
- proportion of posts with food products or brands that are less healthy and thus “not permitted” for marketing to children (according to the WHO-Euro, UK and Ireland nutrient profile models)

- proportion of unhealthy food marketing exposures, by age, gender and “social media age”
- the nature of food marketing – its “power” (WHO, 2012)

For many of these frequencies, we also calculated a mean average across the participant group as a whole and converted this to a per-hour rate of exposure to social media content. This enabled us to estimate annual average exposure rates suggested by the data, based on reports from participants of their daily social media use.

Participant recall

To assess the strength of participants’ recall, we counted the brands they accurately named in the debrief interview following their social media viewing. This was first unprompted and then repeated with prompts.

Nutrient profiling of food products and items featured in posts

Globally, diverse nutrient profile models (NPMs) are in use to decide which foods should be permitted for marketing to children. On the island of Ireland, the 2 relevant models are:

- UK NPM (DHSC UK, 2011), originally developed by the Food Standards Agency and applied to all 4 UK nations
- Ireland NPM, which was adapted from the UK NPM by the Broadcasting Authority of Ireland (BAI, 2013). Ireland exempts cheese products, but in all other respects the UK and Ireland NPMs are the same.

Additionally, the WHO Regional Office for Europe has developed NPMs for use across the WHO European Region (53 countries, including the UK). As this NPM is widely used in monitoring, research and advocacy, we also analysed the data using WHO NPM v1, the model available at the time our study began, to compare research findings across studies. Therefore, a third NPM was also applied: WHO Regional Office for Europe Nutrient Profile Model (WHO-Euro NPM v1) (WHO, 2015).

Brand marketing

Finally, we noted many instances of brand marketing as such – posts featuring a brand associated with foods, such as McDonald's or Coca-Cola, but not featuring a product. As the above NPMs apply to food *products*, we followed the WHO Internet Monitoring Guide Protocols and Templates. This involved nutrient profiling the most prominent item featured on the landing page of each brand's website on the day the coding took place.

These 3 nutrient profiling systems were applied to assess all the branded food content identified in the study. All 3 are described briefly below.

WHO-Euro nutrient profile model

We used the first edition of the WHO-Euro NPM (WHO, 2015). (The second edition had not been finalised when the research project started.) It classifies food products as "permitted" or "not permitted" to be marketed to children based on category-specific thresholds of fat (total and saturated), sugar, artificial sweeteners, salt and calories per 100g/ml. Some categories are classed as not eligible for marketing to children (chocolates, cakes, ice creams) or eligible (for example, fresh fruits and vegetables), regardless of the nutritional profile.

UK and Ireland nutrient profile models

UK nutrient profiling guidance was developed by the Food Standards Agency (FSA) in 2004–2005 to be used by Ofcom (the broadcast regulator) in the context of TV advertising. As for the WHO-Euro NPM, the UK NPM also applies per 100g/ml. But it assesses eligibility for marketing to children by scoring food products for "negative" features (saturated fat, kilojoules, salt, sugar) and "positive" nutrients (fruit, vegetables and nuts, protein, fibre). This model has different HFSS threshold scores for foods compared to beverages, but no exemptions or category-specific criteria. The product information we looked at often did not give the fruit, vegetable and nut percentages required for the UK NPM, but in 98% of cases (393 of 401) such figures would not have changed the product classification.

The *Ireland NPM* was based on the model developed by the UK Food Standards Agency, and was introduced in 2007 (BAI, 2013). It follows the UK rules except for cheese products, which are exempted from the Ireland restrictions and do not have to be scored.

Imputing eligibility proportions by food category

Due to lack of nutrient information, 20–36% of brand posts could not be classified with the above NPMs. The items with missing nutritional information included meals from US brands (for example, Bangin Buns, Baba's Chicken, The Red Chickz) or local small businesses in Ireland featuring items such as fried chicken, pizza, chips or fries, milkshakes and frappés, cakes, biscuits, pastries, sweet bakes, chocolate, sweets, energy bars and ice creams.

To make overall assessments of actual exposure to unhealthy and healthy food ads, we categorised the missing items as healthy or unhealthy. We did so by first assigning each to the relevant WHO-Euro NPM food type category and then assuming it shared the same proportions of healthy or unhealthy elements as other products in that category.

All posts with branded food were nutrient profiled. Brand advertising (where brand imagery but no identifiable product was shown) was coded using the process described in the WHO Internet Monitoring Guide and Templates for social media marketing.

7. Consultations with stakeholders

Finally, to develop knowledge sharing and policy recommendations, group and individual consultations took place with 15 stakeholders. These represented Ireland and Northern Ireland Departments of Health, Public Health Agency and Food Standards Agency NI, Food Safety Authority of Ireland, Health Service Executive (Ireland), Irish Heart Foundation, the National Youth Council of Ireland, further NGO representatives and members of the project's expert Advisory Group. Views of the Parent and Youth Advisory Group members were also integrated. Discussions were anonymised and content was analysed for common and contrasting themes and perspectives.

Results

This section presents the project's findings about digital food marketing to children and young people in Ireland and the UK. The findings encompass the following sections:

1. Review of existing evidence:
    a. The impact of digital food marketing on children
    b. Attitudes to and awareness of digital marketing among children and parents
    c. Screen capture methods for assessing children's actual exposure
2. The digital marketing context:
    a. Digital food marketing on the island of Ireland
    b. Use of social media by children and young people
3. The landscape: Social media food marketing on the island of Ireland
4. Advertisers' attitudes to food marketing and regulation
5. Children's and parents' awareness of and attitudes to digital food marketing on the island of Ireland, specifically regarding:
    a. device use and digital media practices
    b. social media food marketing to children, including recognition and understanding of it
    c. views of food marketing and regulation as a child rights issue
6. Children's actual exposure to social media food marketing: Screen capture
7. Consultations with stakeholders

1. Review of existing evidence

1a. Review of existing evidence: The impact of digital food marketing on children

A total of 12 reviews of digital food marketing were identified. These examined the impact, extent and nature of digital food marketing on children and confirmed that a strong body of evidence connects digital food marketing to children's diet and behaviour, including behaviour likely to adversely affect their health. Significant associations exist between digital food marketing and attitudes, awareness and

recall of brands, intentions to purchase, pestering, consumption of unhealthy food and drinks and increased caloric intake. The evidence for longer-term impacts, obesity/overweight and dental health remains less well-developed.

Evidence is also less well-developed regarding the extent of digital food marketing to children, likely because it is difficult to access and measure individually targeted content on personal devices. This indicates a need to document the strategies and tactics used in digital food marketing towards children and to find new and ethical methods to measure its extent.

The most recent systematic literature review of digital food marketing (Harris, Reed *et al*., 2024), published as this study completed, identified 62 further studies too recent to have been included in existing reviews. This indicates a thriving research field – yet one where many knowledge gaps remain. Harris and colleagues concluded that food marketing is widespread on digital platforms, nearly all of it for unhealthy foods. They found that digital marketing in its diverse formats has similar negative effects to those identified for traditional marketing, effects also seen for adolescents.

Harris, Reed *et al*. (2024) noted, however, that many substantial gaps remain in our understanding of digital food marketing. These gaps include: social media marketing; the socio-cultural impact of digital marketing, including parasocial relationships and peer dissemination; and children's actual exposure to digital food marketing. Our research addresses several of these gaps.

1b. Review of existing evidence: Digital marketing attitudes and awareness among children and parents

Our registered systematic scoping review of children's and parents' awareness (Vaughan *et al*., in press) identified 40 previous studies. Most were quantitative studies of children and young people's self-reported exposure. Although 8 studies explored attitudes and awareness more fully, several were from over a decade ago. This indicates a substantial gap in knowledge of attitudes. These studies suggest that some children and young people understand social media marketing tactics, but

others struggle to recognise ads, for example on Instagram. This is not surprising, as general digital advertising literacy only reaches adult levels in late adolescence (Zarouali *et al*., 2020). Children and young people prefer influencer and "native" advertising that mimics social media content. They enjoy visual style and colour, and ads with music, celebrities or influencers, positive emotions, humour, fun and youth culture.

Our review found there is also limited evidence for parents' views. We identified only 9 studies, several of which are over a decade old. These suggest that parents have low awareness of marketing tactics targeting children and unclear opinions on regulation. Finally, just 2 studies explored food marketing regulation with young people, and the scoping review searches did not identify any research exploring child or parent views of the links between advertising and child rights.

1c. Review of existing evidence: Screen capture methods for assessing children's actual exposure

We found very few studies capturing children's actual exposure to food marketing in digital media. The search identified a final total of 25 papers reporting on 16 studies in 11 countries. We grouped the methods, many of which were still in development, into 4 categories:

- screen capture on the individual's own device
- use of wearable cameras
- participant-generated screenshots of self-identified marketing content
- automated metadata extraction (for paid-for ads only)

The methods differed in many ways: types of data extracted; validity; data security and privacy; invasiveness; usability and participant burden i.e. the time taken for the person to take part in the study; and cost. Notably, all 4 methods required researchers to spend considerable time and carry out manual coding of at least some elements.

Even where methods included some automated analyses, the researcher had to view digital marketing exposures and code them for key information such as:

- brand
- specific product advertised (to define eligibility using nutrient profile models)
- source of exposure (to define the type of marketing such as paid marketing, influencer marketing, owned marketing)
- the use of creative methods designed to increase the power (appeal and impact) of marketing

All methods were found to involve ethical and privacy-related challenges, as they involved recruiting child or adolescent participants. This required substantial time and resources. However, these time, resources and privacy-related costs should be weighed against the benefits of protecting children from harmful content (Tatlow-Golden *et al*., 2017).

The review concluded that, to date, screen capture is the most comprehensive and valid method to measure children's actual exposure to unhealthy food marketing in digital media.

2. The context: Digital food marketing and use of social media by children and young people on the island of Ireland

2a. Digital food marketing on the island of Ireland

With a global audience shift from traditional to digital media, advertisers worldwide have also shifted investment and innovation to digital sites. Ireland's Future of Media Commission (FMC) reported in 2022 that while traditional media outlets lost ad revenues between 2000 and 2020, growth in the digital media sector meant that Ireland's advertising market grew by over 40% (FMC, 2022). Digital advertising spend has continued to grow since then, with one estimate indicating year-on-year growth of 11% to €958 million in the year to 2023 (IAB, 2024). The year-on-year spend growth rate for social media in Ireland in 2023 is estimated as being even higher: up by 19% to €446 million (IAB, 2024).

In 2023, most tech companies reported year-on-year growth fuelled by greater AI-enabled capabilities in targeting, optimisation and reporting (Core, 2024). The largest growth category was social media spend, which grew by 13% to €414.5 million in 2023. The next largest was video, increasing by 10% to €450 million (including YouTube, Broadcaster and Social Video on Demand) (Core, 2024).

Social media in Ireland

Top growth categories are projected to be social media (13.5%) and video (10.4%). As is the case globally, the sector is dominated by tech giants Alphabet (Google, YouTube) and Meta (Facebook, Instagram), which accounted for 79% of the total digital ad spend in 2023 in Ireland – a market share that is expected to remain similar in 2024 (Core, 2024).

The most widely used platform across the whole population in Ireland is YouTube (FMC, 2022). Google's advertising resources indicate that YouTube had 4.02 million users in early 2023 (80% of Ireland's population). Google's ad planning tools show ad reach in Ireland increased by 70,000 users (+1.8%) between the start of 2022 and early 2023, and again by 50,000 users (+1.3%) between October 2022 and January 2023.

Meta's advertising tools indicate that Instagram had a total of 2.3 million users in Ireland in early 2023. The company's figures suggest Instagram's ad reach in Ireland was equivalent to 55% of eligible users (aged 13 and above) at the start of the year. 58% of Instagram's ad audience in Ireland was female.

TikTok is growing rapidly. Ad revenue grew significantly worldwide in 2020 during the pandemic, particularly among younger demographics (Core, 2024). TikTok was particularly popular with Irish users under 25 years (CCPC, 2022). In December 2023, TikTok announced that 2 million people per month across Ireland used TikTok. Forecasts predicted that TikTok would see a 42% increase in media spend in 2024 and account for 13% of Ireland's social media ad spend, predominantly driven by younger audiences. As TikTok's 2024 global share estimate was 20% (Core 2024), this suggests potential for future growth in Ireland. TikTok has developed in-app purchase tools as part of its broader push to integrate social commerce.

Influencers and the Irish marketing landscape

The influencer marketing industry is experiencing rapid growth. Ireland's Competition and Consumer Protection Commission (CCPC) recently examined consumer engagement with social media platforms and influencers (CCPC, 2022).

The CCPC research focused on adults and found that over two-thirds of under-24s followed a social media influencer, compared to less than a third of older adults. In a nationally representative survey, 4 out of 5 adults in Ireland were familiar with the term "influencer" and viewed them as disingenuous and engaging in false advertising. However, focus groups indicated that participants rarely characterised the people they themselves followed on social media as "influencers". One woman (aged 25–34) said, "Other people follow influencers. I follow people that are of interest to me." Respondents generally believed they themselves had a "genuine, personal and trust-based relationship" with people they followed (CCPC, 2022, p. 24).

Examples of Irish Influencers featuring fast-food content

Some of the major food brands are promoted by popular social media influencers on the island of Ireland, with themes of fun, taste and novelty. These may include demonstrating strange eating combinations.

Some examples of brands drawing on Irish culture and identity

The WHO CLICK Framework (WHO, 2019) recommends seeking industry descriptions of food marketing campaigns in order to describe the local food marketing landscape. One such source is the Irish Association of Advertising Professionals (IAPI) blog, which showcases many examples of current campaigns about foods. We searched this in reverse chronological order from the time of analysis (late 2024) to identify the food and beverage brands it had highlighted, and the creative strategies employed in brands' campaigns.

Brands such as Tayto crisps (IAPI, 2024a), Johnston, Mooney and O'Brien bread (IAPI, 2024b) and Cadbury's chocolates (IAPI, 2024c) market Irish identity and

culture as synonymous with their brands, presenting products as the “taste of home”, the “toast of Dublin” or a “St Patrick’s day-maker”.

Just Eat (food delivery app) marketing campaigns used the Irish language as a branding focus (IAPI, 2024d). They selected popular fast-food items in Ireland such as the chicken fillet roll and the spice bag, and gave them their own names *as Gaeilge* (in Irish): “Spíosra na beatha” or “Spice of life” for the spice bag, and “Grá mo chroí” or “Love of my heart” for the chicken fillet roll. Just Eat ads also incorporated the TikTok trend of a “girl dinner”, giving this viral trend an Irish name.

Leading up to Christmas 2023, Tayto crisps maximised Ireland’s most emotive holiday season, Christmas, with a brand tradition: the super-sized 20-pack season-themed Tayto crisps box. It showed brand character Mr Tayto saving Santa’s Christmas Day. Santa returns home to find he has no presents under his tree. Once he is asleep, Mr Tayto sneaks into Santa’s home and delivers the Tayto Christmas box. The ad ends with “It wouldn’t be Christmas without Tayto” (IAPI, 2024e).

Some examples of brands appealing to ethical interests, beliefs and core values

Brands such as food delivery app Just Eat and Cadbury’s chocolates have highlighted values and ethical considerations, such as health, sustainability or social equality, that are particularly meaningful to younger cohorts (as also highlighted in the Future of Media Commission report: FMC, 2022). Just Eat launched a campaign to promote LGBTQ+ Pride day in Ireland, pledging to pause food deliveries to encourage Irish audiences to participate in the parade and appearing with a company float (IAPI, 2024f).

Similarly, Cadbury interwove its brand identity with themes of equality. It drew on previous campaigns stating there was a glass and a half of milk in some chocolate products in the “Become a Supporter and a Half” campaign for women’s football clubs across Ireland, where it sponsored the women’s national football team (IAPI, 2024g).

Some examples of brands using sports, music and festivals

Sport and music are also popular angles through which food marketers in Ireland reach audiences. As noted, Cadbury incorporated women's football into a campaign. Kellogg's and Just Eat also used sports in Irish society to grow brand awareness. For 12 years, Kellogg's has run a campaign and cross-country competition for GAA clubs (Gaelic Athletic Association – the largest sporting organisation across Ireland) (GAA, 2015) where the clubs could win prize money (IAPI, 2024h, 2024i). Just Eat ran a "Deliver At Home" campaign to coincide with the UEFA Europa League Final in Dublin (IAPI, 2024j). Just Eat's campaign gained traction on social media and featured cameos from TNT Sports (UK TV) presenter Laura Woods and former England goalkeeper Ben Foster.

Recent Lucozade marketing with influencers was notable for engaging audiences. In 2023, Lucozade Energy launched a TikTok campaign with comedy, creativity and social media engagement. It showed the results of stories about Lucozade Energy written by ChatGPT and invited audiences to share their own "Lucozade stories". The brand also collaborated with music streaming platform Spotify and 5 Irish artists and DJs for a summer ad campaign, and ran social media competitions offering music festival tickets (IAPI, 2024k).

"Don't make ads, make TikToks"

Referencing TikTok's advice to advertisers to "make TikToks" rather than ads (Thinkhouse, 2022), the IAPI blog encourages brands and advertisers to move away from more produced content to a more "realist-organic" approach, blurring the lines between marketing and content. For Lucozade, Thinkhouse followed this advice, emulating TikTok quiz videos with UK-based influencers Eden Harvz (2.9 million followers) and Cole Anderson James (1.2 million followers). Similarly, frozen pizza brand Goodfella's collaborated with 6 up-and-coming Irish TikTok influencers to promote the brand's new product "2-minute pizza pockets" (Thinkhouse, 2021), incorporating the promotion into their content and social media style. Other similar examples in social media include Irish dancers the Gardiner Brothers, who dance with pizza pockets in their hands (Gardinerbrothers, 2021).

They have over a billion social media views and multiple disclosed brand collaborations (as of 2024) with McDonald's, Subway, Red Bull and Avonmore dairy products.

Award-winning digital marketing campaigns in Ireland

A further source of evidence for industry activity are accounts of awards given to particularly effective campaigns (WHO, 2019). The most recent media awards in Ireland featuring HFSS foods are the 2024 Irish Digital Media Awards (DMA, n.d.). Havas Media's campaign for Domino's experiential Out of Home won Best Out of Home Digital Campaign, and dentsu Ireland and Burger King won silver in Best Social Media Campaign for their (Burger) King of AR – A Whopper campaign.

For the Effie (marketing effectiveness) Awards Ireland 2024, in the FMCG (fast-moving consumer goods) and sponsorship categories, the Cadbury sponsorship campaign for Ireland women's football described above won bronze (IAPI, 2024j). In 2023, KFC Ireland won in the "New Product or Service Introduction" category with the launch of KFC's chicken fillet roll, a campaign that demonstrated the importance of influencers and locally themed content across the social media/food space. There had been low awareness of KFC in Ireland, with many respondents unaware that KFC existed. Sales were at a record low in 2019 after 7 consecutive years of decline, despite growth of 5% a year for this type of item (IAPI, 2023).

Describing its aim to reconnect to the Irish market through impact and emotion, KFC Ireland launched a new product that resonated with an Irish audience: the chicken fillet roll. The strategy used carefully chosen collaborators: influencers in food, entertainment and sport sectors, who could spread the word in their particular fun styles and reinforce a cheeky Irish tone of voice. The campaign delivered a 17% sales uplift in 8 weeks with 41 million media impressions (the total number of times the campaign content was displayed or potentially viewed across social media platforms, regardless of engagement), a third of which were earned (impressions generated organically through unpaid means, such as shares, reposts, or influencer mentions). The impact was so significant that paid media was paused (IAPI, 2023).

Taken together, these examples of industry-led food marketing campaigns show a wide range of creative, enjoyable and effective and impactful digital media activity in Ireland for local and global brands. Their strategies of Irish-themed, humorous content often showcases local celebrities and influencers. They often feature foods that would be categorised as less healthy and not classified as suitable for marketing to children by Ireland, UK or WHO nutrient profiling systems.

2b. Use of social media by children and young people

Ireland

In addition to describing the digital media system and the marketing landscape, the desk review also identified recent data for Ireland and the UK on young people's social media use and food marketing exposure. In a 2022 survey of 500 teens and 500 parents in Ireland, conducted by Empathy Research for the Irish Heart Foundation (IHF), 99% teens reported having at least one social media account and accessing social media an average of 38 times per day. TikTok and Snapchat were the most popular social media platforms (each 68%) followed by YouTube (66%), Instagram (62%), Facebook (46%) and Twitter (30%). Of teens surveyed, 70% identified social media as the primary source for exposure to food marketing.

UK

In the UK, the preferred platforms among children and young people were TikTok (accessed by 37% of teens aged 13–17 in March 2021; Ofcom, 2023), Instagram, Snapchat, YouTube and food delivery apps (Just Eat and Uber Eats). Ofcom's report highlighted that although TikTok was banned for children under 13 years old, 44% of children aged 5–15 used the app to view content in 2020 (Ofcom, 2023).

A Cancer Research UK study on young people's perceptions of food marketing and the food environment (Shields, 2022) combined 2021 data from a large-scale, UK-wide survey of adolescents aged 11–19 with 16 online UK-wide focus groups of 92 young people (54 female). The report highlighted how TikTok and food delivery apps had become major sources of food marketing exposure compared to similar studies in 2016 and 2019. These were the main findings.

- Conditions in the pandemic had generally caused children and young people to have increased digital and social media exposure.
- Young people saw the influence of social media and friends or peers as barriers to healthy practices.
- Young people viewed influencers as motivators to live more healthily. But, interestingly, they also felt influencers misled people about how realistic this was.

3. The landscape: Social media food marketing on the island of Ireland

Although landscape studies of social media marketing assess brand activity, they cannot measure children's *actual* marketing exposure. However, they can assess the marketing campaigns and creative strategies of brands popular with children; explore *potential exposure* and identifying marketing *power* (WHO, 2012).

Selecting social media platforms and brands

Data for Ireland and the UK indicated TikTok and Instagram were primary social media platforms. Using the approach outlined in the Method section, we selected a sample of 20 food products and brands that had high sales and retail value and were likely to be reasonably popular among children on the island of Ireland. These were:

- chained fast food outlets (Burger King, KFC, McDonald's, Supermac's, Domino's pizza)
- delivery services (Uber Eats delivery, Deliveroo, Just Eat)
- savoury snacks (Pringles, Tayto)
- confectionery, ice creams, etc (Ben & Jerry's ice cream, Magnum ice cream, Cadbury's chocolate, Nutella chocolate spread)
- bars and biscuits such as Fulfil nutrition bars, Oreos, McVitie's biscuits
- sugar or sweetener-flavoured carbonated beverages (Club soft drinks, Coca-Cola, MiWadi soft drinks)

For these 20 brands, we extracted, in reverse date order, 399 Instagram and 336 TikTok posts (735 food ads in total). All had been posted since December 2022 (when data was collected). The frequency of posting, and hence the time span covered, varied per brand.

Brand posting frequency

Almost all ads were regular (not pinned) posts (96.43% on TikTok, n=324; and 97.5% on Instagram, n=389). Brands tended to post more on weekdays and less on weekends. A per-week posting rate was calculated for each brand. Brands that posted most frequently (in descending order) on Instagram in Ireland were:

- more than once a day: Supermac's
- more than 3 times a week: Ben & Jerry's ice cream, Oreo biscuits, Cadbury's chocolate, MiWadi soft drinks, Uber Eats delivery, Fulfil nutrition bars and KFC fast food
- more than twice a week: Domino's pizza, McDonald's fast food, Magnum ice cream and Coca-Cola

On TikTok, on the island of Ireland up to 2022, brands posted less frequently:

- nearly 3 times a week: Deliveroo and Club soft drinks
- nearly twice a week: Burger King, Domino's and Ben & Jerry's ice cream

Based on interviews with advertisers, and TikTok's growth in advertising market share, its activity is likely to have increased there since 2022.

Food product category

Of the 735 items, 708 were assigned to a product category (see Table 4). Brands most frequently posted content featuring *ready-made and convenience foods and composite dishes* (from chained restaurants) (31% on both TikTok and Instagram). This was followed by *beverages* (mostly carbonated) on TikTok (15%), and *cakes, sweet biscuits and pastries* – Instagram (14%) and TikTok (13%).

Table 4 Product categories most frequently posted by brands on social media

WHO-Euro NPM category	TikTok n=336 n (%)	Instagram n=399 n (%)
Ready meals, composite dishes	103 (30.7)	122 (30.6)
Cakes, sweet biscuits, pastries	43 (12.8)	56 (14.0)
Edible ices	43 (12.8)	49 (12.3)
Beverages – other (sodas etc)	41 (12.2)	61 (15.3)
Chocolate, sweets, energy bars etc	33 (9.8)	57 (14.3)

Brand marketing

Where a brand logo is displayed without showing an identifiable food item, this is brand marketing. More than a quarter (28%) of Instagram and TikTok ads were brand ads. In one ad, a "Friday" diary page shows a Burger King order for 4pm. Although no food product is overtly shown, the colours and stacking of the diary entries subtly evoke a two-patty burger.

Nutrient profiling: Not permitted to be marketed to children

Due to lack of nutritional information, 11% of ads on TikTok (n=36) and 15% of ads on Instagram (n=59) could not be nutrient profiled. Almost all the foods that could be nutrient profiled were classed as "not permitted" to be marketed to children, using WHO-Euro NPM (WHO, 2015) (96.3% on TikTok, n=289; and 96.5% on Instagram, n=328).

The few items classed as "permitted" for marketing to children, based on the WHO-Euro NPM, were mostly burger-type items served at fast-food chain restaurants. On Instagram, permitted items, some of which featured in several ads, were: McDonald's McCrispy burger; Burger King Plant-based whopper; KFC fries; bunch of bananas; tin of chickpeas; Club soda water. On TikTok, they were McDonald's McCrispy burger, Domino's pizza – Veggie Supreme, and Supermac's Chicken breast sandwich.

Power analyses: TikTok

- Almost all posts (97%) had links or tags, most commonly hashtags (95%).
- Most featured packaging (71%), the product (63%) or the brand logo (62%).
- Over two-thirds of ads (68%) had elements appealing to teens and 36% had elements appealing to children under 12 years old.
- The most common creative strategies were fun (40%), taste (40%), prompts to engage (for example, comment, tag, share or like, 30%) and reference to "special" days or seasons (22%).

Power analyses: Instagram

- Most Instagram food ads featured the brand logo (65%), product (60%) and packaging (57%).
- 62% had a link to social media platform or account, with a hashtag present in 52% of posts.
- More than half (53%) had elements that would appeal to children or teens: 52% appealing to teens and 28% to younger children under 12 years old.
- The most common power strategies identified on Instagram in ads appealing to children or teens were prompts to engage with the post (41%), especially to comment on it (29%) and direct prompts to purchase (11%).
- Other common appeals included humour (40%), fun (37%), enjoyment/satisfaction (30%) and references to special days or seasons (29%).

Power strategies used by brands and products on island of Ireland social media

Many strategies were common across all food categories and brands. These were the use of humour, fun, taste, use of hashtags (usually for comedic effect, rather than to link to other content), tagging other users or brands (partnerships with other brands or celebrities).

Reference to "special" seasons or days has long been a social media marketing feature (Tatlow-Golden *et al.*, 2016). As data collection started mid-December 2022, its retrospective nature meant we captured campaigns for the run-up to Christmas (November–December) and also Halloween-themed marketing (October).

These kinds of “special” days appeal particularly to children because they are usually associated with positive emotions, festive feelings, family, treats and child-friendly characters such as Santa Claus or elves for Christmas and monsters for Halloween.

Coca-Cola has a strong tradition of Christmas-themed marketing, with a Santa Claus figure and Coca-Cola truck that travels between cities in the pre-Christmas weeks. Often these ads feature children, and references to magic – this was the case in Instagram’s Coca-Cola content. The brand also created a campaign with Christmas crafts made of Coca-Cola packaging, which could be particularly appealing to children.

Similarly, the chocolate brand Cadbury launched Christmas products that featured in its social media content. On TikTok, for example, it used a chocolate advent calendar to create a popular trend with “ASMR” content (autonomous sensory meridian response). This usually refers to a feeling evoked by certain sounds.

On the MiWadi soft drinks TikTok page, a Christmas theme was paired with an Irish theme. MiWadi also created a Halloween-themed campaign with a corporate social responsibility element: trick or treat for sick children. The campaign encouraged people to sign up, receive a party pack and throw a Halloween party to raise money for Children’s Health Ireland hospitals and urgent care centres in Dublin at Crumlin, Temple Street, Tallaght and Connolly.

The timing of data capture meant that posts encompassed the 2022 summer World Cup tournament, which was strongly represented in several marketing campaigns. Coca-Cola, the official tournament sponsor, featured small children, families (celebrating national team matches) and references to magic. All these are commonly classified as child-appealing elements.

In relation to World Cup-themed marketing, KFC created the “Colonel’s Arms”, a KFC-themed “pub” where supporters could watch football while having their food delivered, with gravy on tap. It was advertised in partnership with famous former England footballer and coach Jimmy Bullard.

Football also featured in food delivery apps that advertised having food delivered while watching games. A common theme associated with fast-food restaurant brands was delivery service (coded as convenience). Fast-food chains promoted the World Cup through food delivery social media pages. The delivery service Just Eat, for example, featured football as a theme and announced a partnership with fast-food chain McDonald's.

Brands in the savoury snacks category, such as Tayto and Pringles, most commonly deployed their brand equity characters (characters created by the brand for marketing purposes). The Tayto campaign strongly focused on the adventures of Mr Tayto and national or Irish themes.

Ice cream and chocolate brands used recipes as a way to promote their products. They often used fruits to create a "health halo" when they proposed it as part of a regular meal (breakfast). Two examples were a Magnum video featuring a recipe for breakfast oats with Magnum ice cream and fruits, and a recipe for a "Bloody Halloween Milkshake" from Ben & Jerry's ice cream.

Power strategies in ads appealing to children and teens

Finally, we assessed the power strategies most frequently used in ads that had been classified as appealing to teens and to children. After hashtags, which were the most popular power strategy overall, the top strategies with appeal to teens on TikTok and Instagram were humour, fun and taste, and for children humour, fun and special days. Overall, therefore, ads appealing to both children and teens used the devices of humour, fun, taste and special days to craft appeal to young audiences.

4. Advertisers' attitudes to digital food marketing and its regulation

The "C" and "L" steps of the WHO CLICK framework *Comprehend the digital ecosystem* and *Landscape of campaigns* (WHO, 2019) recommend interviewing advertisers with relevant expertise as part of advertising system and landscape analysis. Through industry contacts, we secured confidential interviews with 15 advertisers with experience in digital marketing and the marketing of HFSS products

and brands. We were seeking to understand their attitudes regarding digital food advertising to children.

All 15 participating advertisers were on the island of Ireland or in the UK. Thirteen had 10–20+ years' experience and many had specific digital expertise. They described experiences of marketing food and beverages, including major packaged foods, fast-food franchises, carbonated beverages and alcohol. Those with alcohol marketing experience drew on Ireland's alcohol regulations when discussing regulatory issues in the HFSS arena.

These advertisers described a young generation that has grown up using devices, and lives in a world that often requires access to a smartphone. Advertisers noted that phones, normalised from infancy when children are handed them to play with, have become integrated not only into children's social lives but also into civic infrastructure. They discussed the ubiquity of digital devices at all ages, and the centrality of YouTube for younger children and of TikTok for older ones. They saw young people as very technically competent, but also as being swept away by influencer trends and peers. They also noted that social media functions both as a search engine and as a "sacred space" for social sharing and identity building. Young people are technically adept in some ways, yet vulnerable to digital culture and to the exploitation of their developmental needs by influencers and brands.

Advertisers expressed significant unease with marketing in social media, and particularly the powerful, word-of-mouth impact of influencer marketing strategies. They believe this mode of marketing is poorly regulated. They describe how it takes advantage of young people's dependence on the social worlds of digital media and on their need for connection, identity and relationship.

Many invoked not just their professional experiences but also their perspectives as parents, aunts or uncles. Even advertisers who dealt with social media trends professionally noted they were not seeing the same content as their children. For example, they declared themselves baffled by sudden demands from children to make an Oreo mug cake.

Advertisers are very uneasy about social media marketing

Almost every advertiser interviewed mentioned the blurred lines of social media – where it is unclear what is marketing and what is non-marketing content. There was a notable sense of concern, despite their professional interest in the creative developments and opportunities afforded by the new medium. Many referred to their experiences as parents, aunts, uncles and cousins of young people who were affected in some way. For instance, they wanted to post about junk food on social media or made purchase requests.

We collated the terms they used across all the interviews to express their concerns, and they are clustered here with the topics they were discussing from across the 15 interviews (verbatim in italics):

- Food marketing in social media: *Feels inescapable.*
- Social media creating a general culture of overconsumption: *Worry. Disturbing.*
- Social media marketing**:** *Scary. Tricky. Sinister. Worrying. Question mark.*
- Influencers/content creators**:** *Uncomfortable. Very big, very scary. Grey areas. Blurred. Tricky. Influential. Infiltrated. Dangerous.*
- Targeting in digital media: *Pretty shocking. Murky. Grey areas. Sinister. Slippery and slimy*.
- New methods in digital media*: It's dark. Can get away with more stuff.*
- Regulation of this area: *Grey area. Wild West.*

It was notable that many advertisers used the same or very similar negative terms as many parents had. This happened even though these comments were from separate study work packages carried out by different research teams who had not had sight of the others' findings.

Targeting children with food marketing

A central aim of the interviews was to understand advertisers' views on whether children are targeted with digital food marketing on the island of Ireland. Almost all these discussions followed a similar path.

At first, participants simply said such targeting is not possible, because platforms do not offer age-based targeting options for under-18s in social media. Yet almost all advertisers noted that children may be exposed to unhealthy food marketing in digital media in many ways. Some cited children using a parent's device, or children with a fake "social media age" of over 18. In further reflections, the blurred line between "targeting" and "reaching" was further illuminated. Discussions explored the difference between *targeting* children and teens as a pre-defined age group as opposed to *reaching* them by other means such as through their interests or through product design.

Many advertisers stressed the importance to them personally, or to their agencies, of following the rules because it was not right to target children – and yet, sometimes in the same breath, added that there were other ways to reach them:

> "We're very strict on, like, we do not target towards children, on ads, because it's you know it's not right. You know, they don't need to be influenced like that. There's other ways. Another way is to use like influencers" [Advertiser 15].

As several advertisers pointed out, in digital media everything is targeted, and by many means. Indeed, they noted that TikTok (which they said is "booming") makes it easy for them as advertisers, as it helps them to reach young audiences via their interests. Another added that advertisers target young people by speaking their language, or through the ad's creative content – something that "everyone knows" happens. Targeting via creative strategies, some noted, also included product and packaging design.

Another advertiser noted that even though social media platforms no longer offer advertisers the option to specify age-based targets under 18, the platforms must themselves be using demographic and age-based data to target children. They had seen this play out on TikTok when they had taken a fresh phone and sim card and simply entered the age 13:

> "It was pretty shocking, in terms of I think the first 12 ads like … the first 10 ads, 7 of them were for you know Oreo or McDonald's and then they just test you in batches" [Advertiser 2].

Advertisers also noted that, even though specific age-based targeting of under-18s is not available, they can still reach younger audiences by targeting the 18–24 group. This reaches teens too, who have an aspirational view of young adulthood and share many interests, design and activity preferences.

In many ways, therefore, advertisers felt that children could easily be reached by food marketing on the island of Ireland despite existing regulations and platform restrictions. As to whether children are actually reached by such marketing, the advertisers were split. A few of them thought exposure was likely quite low, albeit saying this would be the case because the market in Ireland is under-developed. However, more of the 15 advertisers thought that children saw a great deal of unhealthy food marketing.

Advertisers' views on regulation and rights

Advertisers felt that regulation was absent, not complied with or not effective in digital spaces, compared to TV, radio and print. This partly reflected the rapid pace of change in digital media, they said, where legal provisions struggle to keep up, but also because social media marketing is more about speed and rapid change than traditional media.

On social media, advertisers also felt that influencers were a particularly grey area. The #Ad requirement was not always followed and, even when it was, it was poorly visible at the bottom of the screen. Advertisers felt nobody knew how to regulate social media and that the absence of understanding among policymakers was problematic. Some said more attention needed to be paid to the platforms, as they were the ones with the data.

There was a perception that there are more regulations in the UK than Ireland, although some felt UK marketing regulations were weak. Several discussed the UK online ban (in the UK's Health and Care Act 2022, due to be implemented in January 2026). As this ban on product advertising does not involve a restriction on brand marketing, advertisers suggested they would still find it very easy to promote any major brand, and it was therefore pointless.

As solutions to digital marketing, many advertisers proposed education and parent–child communication. One noted this would amount to using such messaging to fill a policy deficit. This was underlined by another advertiser who, while believing that healthy messaging could create change, noted that it could only be effective if unhealthy advertising were reduced – otherwise the messages would conflict.

The final issue explored with advertisers was how to balance the rights of the many stakeholders in this field. This question was deliberately framed in a non-directive way. About half the participants responded that it was simple: the government needed to consider what is healthy for a population and acknowledge that the marketing and promotion of unhealthy food aims to increase volumes of sales – and that this cannot be healthy. These advertisers emphasised children's best interests and health, and several mentioned up front that regulation was needed.

Some advertisers were more conflicted, feeling that balancing rights was difficult. They suggested trade-offs across brands, media companies and parents, and invoked parental responsibility. Yet many considered it evident that government-led, legally binding regulation was required, given the gravity of the issues in social media they had discussed. Indeed, many said they would welcome legislation, which would change attitudes and create the required cultural shift, just as it had led the way over cigarette smoking. The consensus from advertisers about the idea of more unhealthy food marketing regulation could be characterised as "we're creative people, we will work it out".

Several advertisers mentioned partnering with the food industry to develop better practices. In contrast, others pointed to what they considered to be advertisers' own responsibility not to engage in practices that cause harm to the public. Advertisers felt that the public would not push back against regulation. They said people want healthier foods and parents certainly do not want pressure from children at the tills; they are under great pressure and need support. The fight that advertisers anticipated would be against the pressure of lobbying, as brands would continue seeking increased sales and high shareholder price. There would be political heat, one advertiser felt, but policymakers could certainly withstand it by pointing to the pressures upon national health systems in Ireland and Northern Ireland.

Finally, advertisers discussed the need for regulation across channels, mentioning retail, outdoors and planning regulation. They felt that social media platform-level regulation was unlikely, noting that TikTok was expected to introduce alcohol advertising (currently not permitted). A few mentioned age-gating and an internet age verification passport, and felt it was only a question of time before it would be introduced. One noted that only the EU seemed to be trying to regulate social media. They believed that national-level regulation, such as the forthcoming implementation of the UK legislation, was less likely in the EU, particularly given EU cross-border marketing rules.

In the end, the advertisers noted, 2 key challenges remain. One is the issue of who would create rules and who would monitor them:

> "I think it's more so that if there's no one to check that the rules are followed. Or to create those rules even to begin with" [Advertiser 12].

The other challenge is that, in their view, unhealthy food – compared to other challenges such as sustainability – is not yet fully in people's sights; nor indeed is the link between unhealthy food, overconsumption and sustainability:

> "I just don't think that junk food has been enough of a demon to society as sustainability has – yet" [Advertiser 10].

In summary, these 15 advertisers on the island of Ireland and UK, most of them senior, many with specific digital expertise and all with HFSS marketing experience, engaged with the issues frankly and at length. Despite interest and excitement at the creative possibilities offered by new modes of digital marketing, they expressed significant unease with social media marketing, and particularly with the powerful word-of-mouth impact of influencer marketing. They believe it is poorly regulated and is taking advantage of young people's developmental needs for connection, relationship and identity.

They described a world where digital devices are becoming infrastructure. In this world a generation of young people on the island of Ireland is technically adept in some ways, yet vulnerable to digital marketing strategies.

The advertisers believe children under 18 are not directly targeted by age with food marketing, but can be reached in many other ways by platforms, brands and advertisers.

As solutions, some suggested partnering with industry, education or public communication – though one noted that communications would only cut through if the volume of unhealthy content was reduced. Several were adamant that government bravery and leadership were necessary to protect children's health.

5. Children's and parents' attitudes to and awareness of digital food marketing on the island of Ireland

WHO's CLICK framework recommends researchers "Comprehend the digital ecosystem" by carrying out focus groups to "gauge children's and parents/guardians' experience and awareness of marketing techniques and campaigns" (WHO, 2019, p. xi). We explored the following topics with 175 children aged 4–17 years and 49 parents on the island of Ireland:

5a. Device use and digital media practices
5b. Awareness of and attitudes to digital food marketing to children, and their recognition and understanding of food marketing
5c. Food marketing and regulation as a child rights issue

5a. Children's and parent's device use and digital media practices

Device use

All the children aged 4–6 (n=25) said they owned or had access to at least one device: 16 had a tablet, 5 had a phone, and 2 had a computer or laptop. The primary school children (n=75, aged 7–13 years) all had access to at least one digital device, usually via parents or siblings. Most did not own their own phone. However, they reported using a device daily, estimating 15 minutes to 3 hours daily (some over 8 hours). All the secondary school participants (n=75, 13–17 years) had a smartphone. Most had access to other devices and reported using their phones on

average 4.5 hours daily, but up to 10 hours daily in some cases (with high reported levels confirmed by phone use reports).

Digital media practices – young children

The young children used devices for watching videos, primarily on YouTube, and playing games on Roblox.

Digital media practices – primary school children

The primary children said they used YouTube and TikTok (accessing TikTok on others' devices or on YouTube Shorts), which they largely watched rather than interacted with. However, some engaged with social media to like, subscribe and share content. They followed influencers and content creators, including gamers, other YouTube personalities and celebrities such as footballers and musicians. Particularly prominent were influencers who had launched food and beverage brands, such as Mr Beast and KSI. They played games such as Roblox, Minecraft and Fortnite.

Digital media practices – secondary school participants

For these participants, TikTok was supreme, followed by Snapchat and Instagram. YouTube was viewed as something to grow out of. On TikTok (and other platforms), they followed friends and liked, shared, reposted or bookmarked videos. Very few posted their own content (and then only rarely). They also described their practice as largely passive, just scrolling through what was served to them – in other words, largely driven by the algorithm (for example, For You on TikTok). Several said it was sometimes well-tailored to their interests and sometimes "random". They described scrolling on TikTok:

> "It's just more For You page, just scrolling through it" (boy, NI, Y14).

Sometimes the content served aligned with their preferences; other times it did not:

> "It's very random, like, there will be some days where it's like, specified, like my likings and then some days, it will be like the most random videos I think I've ever seen in my life" (girl, NI, Y13).

They followed many local and some global influencers and were interested in beauty, make-up, hair and clothes (including #GRWM Get Ready With Me); lifestyle, fitness and gym influencers; gaming, humour and comedy; sports teams or personalities; football; musicians, pop stars and other celebrities; animal videos; and TV shows:

> "If somebody like interesting comes up I will follow them but I have liked too many people to like know exactly who I'm following. But it's mostly like sports and like" (boy, Ireland, 1st Y).

A few participants named specific influencers they follow: many local Irish TikTok content creators including Lauren Whelan, Olivia Neill, Megan McKenna, Alix Earle, Annlivia Hynds, Miriam Mullins, Anna Paul, Anna Archer, Mollie Mae and Tadgh Fleming; and global YouTubers including Logan Paul, KSI, Mr Beast and Moriah Elizabeth. Although Irish creators were often preferred for their local connection, more global content creators, musicians, pop stars and others were also part of the picture. These included Taylor Swift, actors from Korean K-dramas and 19-year-old American dancer and content creator Nicole Laeno.

Digital media practices – parents

Parents' (n = 49; 33 from Ireland, 16 from NI) accounts largely aligned with children's in terms of devices, platforms and games children engaged with online. However, almost all said children only received smartphones or accessed social media from the age of 13. In contrast, many young and primary children described accessing devices (and sometimes owning phones). No parents reported under-13s accessing TikTok via YouTube Shorts. They were not very aware of the influencers their children were watching and what influencers did, or the actual content children were engaging with overall.

Parents' mediation of children's online activities largely entailed attempting to moderate device use through time limits and sometimes software controls, and trying (not always successfully) to resist requests for products they had never heard of.

5b. Children's and parents' awareness of and attitudes to digital food marketing to children, and their recognition and understanding of food marketing

See the Methods section for the examples of digital marketing that were shown during the paired interviews with young children and the focus groups with all other participants.

Young children

Young children's responses to the images were almost all positive, with participants recognising the characters (whether cakes, YouTubers or a rugby player). They would say they were "hungry", "happy" or "excited", and that they wanted to taste the items or "go to Supermac's". For the image of influencers KSI and Logan Paul with Prime, 15 of the 25 said they recognised Prime, and 11 named it correctly – "You can drink Prime".

Prime's cultural value was evident even among these youngest children: some said they collected Prime cans, several said older family members used it ("I saw my uncle with it"), and 2 said they had seen people drink it on TikTok. Although 3 misidentified the product, they named other similar brands – "They're holding a Coke", "That's a Fanta and a lemonade", "McDonald's" – showing they already recognised unhealthy food brands and food categories.

Thirteen of the 25 young children recognised YouTuber Mr Beast: "I know who he is, he's Mr Beast! I watch him, his real name is Jimmy! You can eat Mr Beast chocolate!". Four of the children knew about him (citing videos, YouTube and knowing that he was eating a lot) but couldn't name him: "He's a YouTuber. He ate so much that he was puking." Just 4 didn't know or talked about other things. The post for Supermac's was shown to 10 participants from Ireland. All recognised the brand, naming either Supermac's or burgers.

Primary school participants

Children in all primary school groups reported noticing marketing for food and beverages, brands, restaurants and delivery services online. They cited carbonated

and energy drinks Prime and Coca-Cola; salty snacks Tayto crisps and Manhattan popcorn; chocolate and sweets Cadbury's Dairy Milk and Creme Egg, Aero, Haribo, Feastibles, KitKat; restaurants and fast-food chains Apache Pizza, Papa John's, Domino's Pizza, McDonald's, Nando's, Supermac's, Burger King and KFC; food delivery services Deliveroo and Just Eat; and supermarkets and convenience stores Aldi, Lidl, SuperValu, Centra and Spar. They said food marketing did not affect them – yet after watching ads, many described feeling hungry or thirsty.

Some felt that online influencers (as they were later also to say about food companies) were simply in it for gain:

"Some just like to make money but some like to influence kids" (NI, primary, year 5).

Yet many also described feeling a closeness with content creators. They described the creator's interests, likes and dislikes as their own; they cited content creators' perceived kindness, honesty, authenticity or generosity – traits that related to their perceived trustworthiness. This closeness also extended to the brand character Mr Tayto. They particularly enjoyed the Tayto/Fleming family mash-up video as it was funny, Irish and recognisable. Indeed, while discussing whether crisps were healthy, participants felt the need to protect "Mr Tayto's" integrity by saying he would never try to harm them by misrepresenting the healthiness of the crisps: "Mr Tayto would never lie to us" (Ireland, 1st/2nd class).

Most children were confident they could correctly identify digital food marketing, yet they rarely characterised the marketing content shown as "ads". They relied on clear formal indicators to identify ads, such as a declaration of "ad" or "paid promotion"; ad formats such as pop-ups that interrupted content; the obvious display of a product or brand; or direct exhortations to buy.

In contrast, marketing that is stylistically similar to regular social media content was defined as "not an ad". It became evident that children and researchers were working with different concepts of what constituted an "ad". For example, despite primary school-aged children knowing a company made a video "to advertise", they still argued this was not an "ad", as they classified it as a "YouTube Short".

These primary participants (including younger ones) generally had a good understanding of persuasive intent. They explained clearly why brands would want to leverage content creators' popularity or disguise ads as content – to advertise items and spread the word:

> "Like making it known I guess is what I'm trying to say. Like they're basically still advertising it, it's just not like your typical ads. Like because there's no price or anything. But technically they're spreading the word, so technically it's an ad" (Ireland, 5th class).

Some therefore displayed a sophisticated understanding of how marketing intended to create awareness rather than directly achieve sales. Many were unimpressed when they realised all the videos shown were marketing. They believed it was deceitful to disguise advertising on social media:

> Participant: "Like I didn't know that was an ad."
> Researcher: "And does it matter that you didn't know?"
> Participant: "Yeah, I think it does sort of. Cause when you think about it, that's just someone like dancing in with the Tayto. But when it says ad, you're like, 'Ohh so *that's* why he's dancing with the Tayto'" (girl, Ireland, 5th class).

Secondary school participants

As with the primary school participants, many of the participating teens initially said they did not notice much food marketing. However, in discussion they named 28 brands, spanning carbonated beverages, energy drinks and milk-based drinks; restaurant and fast-food chains; chocolates and ice cream; curry sauce; food delivery services; a recipe box delivery service; and supermarkets.

They responded positively to food marketing examples, reacting to the ads by mentioning hunger, thirst, interest, positive evaluations, intent to buy, saving content online and intending to cook a recipe. They also identified features that appealed to young people: the characteristics of the product itself (its taste or convenience); and humour, fun, "vibe", colour, style or aesthetic features, music, dance, celebrity and youth culture.

Overall, secondary school participants characterised marketing in terms of a relatable-cringe dichotomy. Relatable content was familiar, echoed their own interests, was Irish or local (and hence often funny), easy-going and appeared not to try too hard. Occasionally content with the appeal of the unknown was intriguing (not necessarily relatable but not cringe). Cringe content was “ad-like”, and included polished marketing posts, where influencers or others were deemed to be trying too hard, “fake”, lying or referencing an out-of-date trend. Influencer marketing and paid-for ads could, however, escape being classified as cringe by being relatable.

Threaded through all these reflections was a fluctuating question of trust. Trust was fundamental to young people and often derived from relatability. Relatability was a key characteristic of parasocial relationships with content creators. The young people assumed they shared interests with these influencers; and trusted them. This was particularly the case for smaller-scale, more local content creators, who they inferred were motivated by generosity to their followers. Participants felt they were alert to influencers who were just trying to extract money, although many had also bought things they recommended.

Notably, there were examples among children of all ages of both understanding persuasive intent in social media (as with the primary school-aged child above) and of finding the blurred lines confusing. The very fact that food marketing content blended into their feed was the basis of its appeal, because it “wasn’t advertising”.

> “It engages you more rather than just being all commercial and for like the brand that, well, that did show the brand but It's not like – the whole thing wasn't advertising. It was more like a normal TikTok” (girl, NI, Y13).

Discussing an influencer ad, 2 older teens reflected together:

> “You wouldn’t have known at the start” (boy, NI, Y14).
> “I think it's kind of obvious that it’s an ad whenever she pulled out the food and showed the label and the name of the food. But besides that, if you didn’t notice that, then you probably wouldn’t know” (girl, NI, Y13).

The blurred lines in the social media marketing examples discussed in the groups were evident – despite the good advertising literacy they showed in recognising

advertisers' intent to persuade. Participants assumed that platforms and advertisers targeted them with marketing specifically for less healthy items, as this was what their age group preferred. A few participants were also aware of the more technical elements of how marketing might reach them in social media, such as through geolocation and other data sources.

Finally, some participants indicated that they also received marketing beyond social media on their devices, such as from fast food apps.:

> *Participant 1* "I get texts from McDonald's, like every single day."
> *Participant 2* "Me too, and Subway."
> *Participant 1* "I have the app to get deals so sometimes you'll get like a few euro off and they text you every day like" (girls, Ireland, transition year).

Parents

Many parents believed that their children were not very exposed to digital food marketing, but they assumed that when they were exposed, they bypassed "ads" and had little interest in them. However, some parents were aware that their children were exposed to digital food marketing. Among the products most cited were carbonated or energy drinks (for example, Prime or Coca-Cola) and fast-food restaurants and delivery brands such as McDonald's and Domino's. One mother, preparing for the focus group, had asked her 3 daughters (aged 9, 11 and 13), about ads on YouTube: they named ice cream, chocolate, fast food, drinks, energy drinks and beer brands.

Parents' knowledge of digital marketing varied but was quite limited. Some assumed online marketing encompassed the algorithmic interest-based targeting they themselves experienced. However, most believed children were generally exposed to traditional-style ads and "pop-ups" on YouTube. Their knowledge of techniques employed by marketers online was limited. Their assumptions were largely anchored in their own experience or ideas about TV advertising. They often stated that children could recognise ads, found them disruptive and annoying and thus tended to "skip" them. Only one mentioned viral marketing.

Several parents who were sceptical that their children were exposed to digital food marketing went on to cite purchase requests for products largely or exclusively marketed online. Parents in 10 of the 14 groups spontaneously mentioned the energy/electrolyte carbonated drink Prime and were baffled by the phenomenon, their children's fascination with it and its peer power. Most of the 49 parents said their children had asked them to buy Prime, other food and drink products and non-food products for them. Most, though not all, said they did eventually give in to children's pestering for influencer-promoted items. As one mother explained: "I listened to him, I didn't give in to it. I mean, I did, once or twice, you know" (mother, FG10).

Requests were not limited to items advertised only digitally. Children also pestered for fast-food items themed to the time of year. Yet many parents resisted the idea that their children's desire for these products was attributable to the influence of digital marketing. A common theme was parents believing that it was peer pressure that influenced their children instead, or that it was "social media" but not "advertising".

When example videos were shown, parents were divided on whether their children would be capable of recognising these as marketing. Indeed, many parents at first believed these were not ads, but rather content from social media content creators, despite the strong focus on a branded product. A few thought that older children and teenagers would easily recognise these videos as advertising and were shocked to hear that many had not.

Reacting to the marketing examples, parents expressed unease, characterising these as "subtle", "sinister", "insidious", "sophisticated" and "manipulative". The terms "clever" and "subliminal" were frequently used. Parents believed that the marketing examples were ambiguous and blurred the lines between general social media content and marketing.

All parents identified features they thought would appeal to children and young people in general, including humour, fun, colour, music, dance, celebrity, "relatability" and youth culture references (for example, Love Island, pop music). They also identified product characteristics such as sweet, tasty or convenient. They

believed this unhealthy food marketing would appeal to children and young people, and observed that it made use of their interests, such as popular culture, healthy eating and fitness. Parents believed children might not identify commercial content or persuasive intent and, even if they did, would not resist because they felt they needed to fit in with their peers. Even where parents felt their child would “definitely” know this was an ad, some still expected purchase requests.

Some parents remained sceptical about the persuasive effects of marketing. Many others expressed concerns about the cumulative impact of such marketing over time. They felt that simple labelling these adverts as “Ad” would not be enough to counter the marketing impact. Many expressed concern, and sometimes anger or outrage, about how marketing – for food and more broadly – targets children and young people with insidious content:

> “What upsets me is that, like with most of the influencers, those ads are peppered in amongst things that are just there to make people laugh. So it's almost like it's more sinister to me that like, it's not as obvious” (mother, FG3).

They felt these ambiguous ads would be psychologically effective:

> “It's an ad under the banner of, kind of, like a mini sketch, it's way more manipulative, there's psychology in there, at a few different points” (mother, FG12).

> “My daughter would be hooked on that, absolutely. Hook, line and sinker. She wouldn't probably see that it was an ad. Her focus would be on the strawberries or the breaking of the ice cream and not on the packaging. So subliminally, it will have got through to her. Very clever ad, seduces you all the way along” (father, FG14).

They felt these ads were even deliberately exploiting their children’s healthy interests:

> “It looks like a healthy kind of engagement, and again, my kids would be, they would do a bit of cooking with me and my wife and stuff, and they'll be quite excited about cooking, so that to get in there, get chopping strawberries, you

> know, putting a bit of fresh cream … they would love all of that, to wallop in a Magnum in the middle of it would be my 6-year-old's absolute delight, he would be ecstatic to get a chunk of sugar like that, so yeah, my 3 would definitely go for that all day and night, but it's deceptive what they've done there, it's very deceptive" (father, FG9).

They believed these videos had the power to appeal to children and young people by linking to their interests, for example in popular culture, healthy eating and fitness, and would do so to their detriment with low cost and ease:

> “The lines are so blurred now. I mean everybody, everybody can just be on TikTok and be that girl on the sofa. Anyone can do it with a phone” (mother, FG2).

Many parents also drew attention to a range of further environmental drivers such as in-store marketing, promotion and retail offerings. They identified digital marketing as part of a wider food and marketing system in which unhealthy dietary choices were presented as the easier, cheaper, more attractive option for young people and children.

5c. Children’s and parents’ views of food marketing and regulation as a child rights issue

Primary school children’s views

Primary school children felt sure they had rights but were unsure about what these were. They all concluded that responsibility for being healthy lay with their parents, family, teachers, doctors and themselves. This seemed to reflect a realism about their lives and environments.

On the question of whether companies that make or advertise less healthy food are concerned about children’s health, children all agreed that companies did not care and were trying to sell their products as they simply wanted the money. They said the companies made ads about less healthy foods deliberately to target children as they were “easy to lure in”. They told cautionary tales with relish, of teeth going black

and falling out, or people who would “die by fatness” – reflecting public health communications about dental health and obesity.

The idea that companies’ actions affect their own health was one they appeared not to have considered before, yet easily engaged with. When asked about the role of government in regulating marketing, there was a range of views. Children placed a high value on honesty and authenticity and often felt they had been duped by the videos. Many spontaneously took an ethical standpoint, believing that omitting ad labels constituted lying, which was wrong, or framing it as “false advertising”. Some said governments should tell advertisers to “stop doing it” if marketing was making people unwell. As one girl summed it up, this was a complicated issue that depended on one’s perspective:

> “It depends on which side you’re looking at it. For the company, more views is better, but for the viewer, maybe less ads is better.”

Secondary school children’s views

Teen participants were only somewhat familiar with child rights. Across groups they listed rights to life, to safety, to an adequate standard of living, education, participation and health – though prompting was often needed. Linking marketing to rights also required prompting. Most had some understanding of the right to privacy. However, sometimes they related this more to physical privacy, or privacy violations they experienced when their parents shared images or information about them online, rather than data-related privacy violations by the platform and marketing systems. A few were able to recognise the (more abstract) idea of how being *marketed to* could amount to an ethical violation, and that being sent frequent digital marketing violated their right to privacy.

The concept of freedom from exploitation often proved elusive, although earlier discussions had implicitly touched on related ideas. A few mentioned child labour, noting that children were used to market items in social media and that they themselves had been approached by brands on TikTok.

Some participants were able to admit that marketing influenced them and that it promoted unhealthy, excessive eating with no regard for children’s health. For some,

there was a sense that younger children were now more vulnerable than they themselves had been at that age.

Many groups linked marketing influence to buy unhealthy items to the right to health, yet placed primary responsibility with parents, guardians, children themselves, family and teachers – and only lastly “the people who make the ads”. These same participants were then asked whether food corporations had responsibility for what they produced, and after hesitation, concluded that corporations did not care. Overall, however, across the groups, participants felt they could understand regulation more clearly when considering examples of restricting marketing for alcohol, drugs and vapes. They found more difficulty in considering unhealthy food marketing as a similar category.

Parents’ views

Some parents were able to cite children’s rights that might be affected by exposure to digital marketing. The right to privacy was the one most frequently mentioned. Rights generally were conceived of in terms of basic needs, rather than more complex constructs, and many parents struggled initially to apply the concept of rights to the marketing of food. Yet once they were discussing rights as such, parents could easily see how they applied in food marketing.

They firmly linked the marketing of food online with risks to health, and worried about the way exposure to marketing affected consumption of high sugar, fat or salty foods, with knock-on risk to health. Freedom from exploitation was alluded to, albeit implicitly, in groups where parents noted deceptive and manipulative marketing tactics in the videos they had viewed.

Finally, most parents believed they themselves were responsible for protecting children from digital and other marketing that might affect health and wellbeing. They felt they needed education for themselves on the topic.

It is important to note that parents were not aware how much marketing their children were exposed to. They hoped that recognising an ad as an ad would suffice to deter children from poor eating habits. Yet parents also felt their limited time and

knowledge of the digital world left their children at risk of exploitation by marketers and social media companies.

In half of the discussion groups, parents believed there was a societal responsibility to protect children from marketing and to shape healthier dietary practices. They believed those responsible included wider extended family, peers and other parents; that schools and teachers were well placed to teach; and that health policy-makers and decision-makers should act. Most parents believed their influence as individuals was limited against the upstream influence of corporate power, particularly in the absence of regulation and legal enforcement. Many were largely dismissive of the notion of corporate responsibility and believed profit to be the primary motivation of corporations.

Parents largely agreed that aspects of unhealthy marketing to children should be regulated, although the range of interventions they proposed varied greatly. Some cited clear ad labelling; one suggested product placement labelling. Some were uncertain whether regulating native and influencer-type marketing strategies was practically or technically feasible. Others proposed marketing restrictions on apps widely used by children. Some parents believed that marketing to children online (and elsewhere) should be banned altogether. They said this would make parents' lives easier.

Parents were sceptical that there was political will for stricter, legally binding measures, given the power of corporations and a perceived culture of light-touch regulation. Yet they mostly supported the concept of governmental intervention and believed the government had a responsibility to make and enforce laws to more explicitly safeguard children from harmful marketing.

6. Children's actual exposure to social media food marketing: Screen capture

This mixed-method element of the study measured and described island of Ireland adolescents' actual exposure to food marketing in their preferred social media. It was carried out to fulfil the *Capture on screen* stage of the WHO CLICK framework:

> "Use real-time screen capture software … to assess what a representative sample of children actually sees online on their devices, in order to better understand wider marketing techniques, including user-generated content and product placement" (WHO, 2019, p. xi).

All participating children chose their smartphone as their most used device: 29 were iOS (iPhone) and 9 Android-operated. Two-thirds (n=24) of screen recordings and post-interviews took place online and the rest in person. The online participants first spoke with the researcher on camera to re-affirm their consent before switching to screen share so they could be recorded while viewing their social media.

Time and platforms recorded

Each participant's screen was recorded for 30 minutes while they viewed their preferred social media platforms, with time equally divided if they had more than one preferred platform.

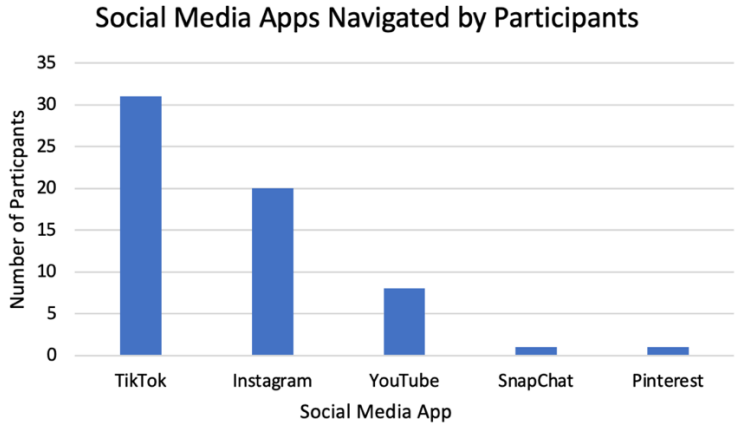

Figure 3 Social media apps navigated by study participants (12–17 years) during screen recordings

All participated for the planned 30 minutes, and recordings totalled 19 hours. Almost all (82%, n=31) engaged with TikTok and just over half (53%, n=20) scrolled through Instagram (Figure 3). Other platforms viewed were YouTube (n=8), Snapchat (n=1) and Pinterest (n=1).

The social media marketing and food environment

The social media marketing environment

In 19 hours of video (1,140 minutes), we identified 2,193 social media posts that featured food or marketing or both, including food marketing. Some featured multiple food items or brands (yielding 2,360 entries in total). Of the 2,193 marketing or food posts, 1,066 contained non-food products or brands, including paid-for, owned, and influencer ads for diverse products. The total of paid-for food and non-food posts was 1,129. The range was very wide: 0–218 paid ads per hour of content, representing an average of 59 paid ads per hour of social media across the 38 participants.

- As an average, participants were exposed to paid-for marketing, for food or non-food, every minute on social media.

The social media food environment

Food content of any type (branded or unbranded) featured in 1,126 posts across 19 hours of social media content. As with the overall marketing content, the frequency of food appearance in participants' social media content was very varied: 2–220 per hour.

- As an average, the 38 participants were exposed to a post with food content (branded or unbranded) every minute on social media: 59 post 12s featuring food per hour.

Social media food environment – unbranded and branded food content

Participants' social media food content was grouped into themes. The major theme was "recipe", representing nearly half of all unbranded food posts. Other popular themes were #WIEIAD ("What I Eat in a Day"); challenges (finding items or timed food-related activities); humour; nostalgia; travel content; local content; information; and popular culture.

Further popular formats were "behind the scenes" videos; reviewing /or ranking foods; and "tag friends", where a letter was drizzled on to a pizza or pancake and participants watched to see which letter would emerge. They would then choose a friend whose name began with that letter to send the post to.

“Mukbang” posts were also quite common – a social media trend in which people video themselves eating food, often branded, often in excessive quantities, and commenting on it. The term derives from the South Korean words “eating” (“meokneun”) and “broadcast” (“bangsong”). The practice became popular in South Korea in the early 2010s and has since become a global trend (Kircaburun *et al*., 2021). Dieting content or “mukbangs” did not both appear within the same account. Each consistently appeared within certain individuals’ social media, likely resulting from algorithms determining interest based on their active engagement with the content.

Also common were posts featuring US food brands not available on the island of Ireland. These were usually fast-food outlets such as Raising Canes, Chick-fil-A and Chipotle, some posted by American users, but also by Irish or British creators and users.

Social media food environment – sources of posts (unbranded and branded)
The most frequent sources of all food posts, unbranded and branded, were, in order of frequency, social media influencers (38%), a food brand (26%) and other social media users (21%). See Table 5.

Table 5 Sources of all food posts (unbranded and branded)

Source	n	%
Social media influencer	432	38.4
Food brand	292	25.9
Social media user	236	21.0
Food-related page	69	6.1
Non-food-related page	46	4.1
Other celebrity (not digital media influencer)	9	0.8
Non-food brand	6	0.5
Other food brand	5	0.4
Friend/contact of participant	4	0.4
Other	11	1.0
NA	16	1.4
Total – all unbranded and branded posts	1,126	

Social media food environment – food categories (unbranded and branded)

The most frequently featured food category in participants' social media content was ready/convenience foods and composite dishes, such as meals from restaurants or recipes (Table 6).

Table 6 WHO-Euro NPM Food category of all foods (branded and unbranded) in social media posts

WHO-Euro NPM Food category code	Unbranded n (%)	Branded n (%)	Total n (%)
Ready/convenience/composite foods	266 (46.8)	208 (29.3)	474 (37.1)
Cakes, biscuits, pastries, sweet bakes	129 (22.7)	86 (12.1)	215 (16.8)
Chocolate, sweets, energy bars, etc.	24 (4.2)	106 (14.9)	130 (10.2)
Soft drinks, bottled waters, others	23 (4)	72 (10.1)	95 (7.4)
Edible ices	21 (3.7)	40 (5.6)	61 (4.8)
Fresh/frozen fruit, vegetables, legumes	40 (7)	4 (0.6)	44 (3.4)
Energy drinks	1 (0.2)	30 (4.2)	31 (2.4)
Savoury snacks	7 (1.2)	24 (3.4)	31 (2.4)
Sauces, dips and dressings	3 (0.5)	28 (3.9)	31 (2.4)
Dairy milk drinks	3 (0.5)	17 (2.4)	20 (1.6)
Breakfast cereals	3 (0.5)	14 (2)	17 (1.3)
Processed meat, poultry, fish etc.	4 (0.7)	9 (1.3)	13 (1)
Juices	6 (1.1)	7 (1)	13 (1)
Cheese	0 (0)	10 (1.4)	10 (0.8)
Fresh and frozen meat, poultry, etc.	9 (1.6)	0 (0)	9 (0.7)
Breads, crisp breads, etc.	4 (0.7)	3 (0.4)	7 (0.5)
Processed fruit and vegetables	1 (0.2)	6 (0.8)	7 (0.5)
Plant-based milks	0 (0)	6 (0.8)	6 (0.5)
Fresh or dried pasta, rice and grains	2 (0.4)	4 (0.6)	6 (0.5)
Yogurt, sour milk, cream, etc.	0 (0)	5 (0.7)	5 (0.4)
Butter, other fats and oils	0 (0)	1 (0.1)	1 (0.1)
Savoury plant-based foods	0 (0)	1 (0.1)	1 (0.1)
Other (not listed)	2 (0.4)	6 (0.8)	8 (0.6)
Unclassified	20 (3.5)	24 (3.4)	44 (3.4)

Social media food environment – engagement and interaction with posts (unbranded and branded)

We calculated the average (mean) time participants viewed unbranded and branded food posts. They spent the longest time viewing influencer marketing posts: an

average of 15 seconds. This compared to just 3 seconds viewing paid food ads that had a clear disclosure. On average, participants spent between 7 and 10 seconds per post viewing other food content, including non-marketing food posts.

Next, we calculated the percentage of posts participants engaged with. The most common engagement with the post was “liking” it, with 20% of food posts receiving a like. Other forms of engagement were clicking on the post (8%), watching the full video (6%) and others (5%). Only 0.6% of posts were shared and 0.2% commented on.

The posts that participants most frequently engaged with were user-generated branded content (47%) and influencer marketing (43%). In contrast, participants engaged with only 26% of owned marketing posts and 8% of paid ads.

The social media branded food environment

Of the 1,126 food posts, 52% (582) featured branded food content.

- Participants varied widely in how frequently they saw branded foods. The rates varied between 2 and 108 branded food posts per hour.
- As an average across the 38 participants, there were 31 posts with food brands per hour of social media content. This means that, on average, participants saw a post with branded food content every 2 minutes.

The 582 branded food posts were classified according to post source and type (Table 7). To do this, we created a typology of food brand exposure sources (see the Methods section for the process).

- *Paid-for ads*: Declared marketing where “Ad” was displayed on a brand’s social media content.
- *Owned marketing*: No “Ad” disclosure displayed; the content came from a brand account.
- *Influencer marketing*: The post included a sustained, overt focus on a branded food item, and the user had 10,000 followers or more. #Ad or similar disclosure may or may not have been shown.
- *Branded food in other content*: Branded food was shown in a post by an influencer or another source, but food was not the main focus of the post.

- *User-generated content*: Branded food appeared in posts of users with fewer than 10,000 followers, or from users we could not identify on social media.

The following data therefore represent a conservative measure of branded food exposures experienced by the study participants. Three-quarters (74%) were clearly marketing: 28% were *paid-for ads*, 24% *influencer marketing* and 22% "*owned" media*. The remaining branded posts (n=151) were less clear-cut: 15% *user-generated content* and 11% *branded food in other content*. Finally, 3% were *other* posts with brand exposure where the source could not be classified, such as the Instagram Explore feed panel.

Table 7 Sources of all branded food posts

Source	n	%
Paid-for ads	161	27.6
Influencer marketing	140	24.1
Owned media marketing	130	22.3
User-generated content	89	15.3
Food brand in other content	62	10.7
Other	16	2.7
Total	**528**	

*Clear-cut marketing **

For subsequent analyses, posts with clear marketing intent (*paid-for*, *influencer* and *owned* marketing) were combined to form a variable: "clear-cut marketing" (n=431). These were posts that overtly showcased a product or brand. Other posts, featuring *branded food in other content*, or *user-generated content*, may also have been paid promotions, or have been encouraged by brands, but they were excluded from these analyses as their origins were less clear.

- Across the participant group, we found a very wide range of clear-cut food marketing exposure: 2–104 posts per hour of social media content.
- This translates to an average of 23 posts per hour of social media: one clear-cut food marketing post every 2½ minutes.

Food brands in social media content

The food brand that appeared most frequently in participants' social media content (for any branded food content) was McDonald's fast-food chain (featuring in 51 posts), followed by a US fast-food chain Wingstop (in 26 posts), Cadbury's chocolate (in 18 posts) and Oreo biscuits (in 18 posts). In clear-cut food marketing only (meaning paid-for, influencer, or brand-account posts), the most frequently featured brands were McDonald's with 26 posts and Lidl supermarket with 16 posts, followed by Lucozade energy drink, Cadbury chocolate and Oreo biscuits, all with 14 posts.

Participants' exposure to marketing "not permitted" for children

As described in the Methods section, 3 nutrient profile models (NPMs) were applied to the clear-cut food marketing posts for this island of Ireland study, to provide comparability with other research studies. These were the NPM for Ireland, the NPM for the UK, and the WHO regional NPM.

The Appendix lists all frequencies, percentages and "posts per hour" for all sources of branded post exposures (n=582), for each of the 3 NPMs.

In the findings that follow, we report posts per hour of social media content across the sample for clear-cut marketing (n=431 posts): paid-for, influencer and owned (brand account) marketing.

Missing nutrient information

All 3 NPM systems require nutrient data per 100g/ml to assess eligibility to market to children. Nutrient data, particularly for some fast-food chain items, was not always available as values per 100g. Of the 431 clear-cut marketing posts, 92 (21%) could not be sufficiently nutrient profiled with the WHO-Euro NPM and 154 (36%) could not be sufficiently nutrient profiled with the UK or Ireland NPMs.

Unclassified data – WHO-Euro NPM

Using the WHO-Euro NPM, 92 items could not be classified due to missing nutrient information – mostly restaurant composite meals such as fried chicken, pizza and chips, and also drinks such as coffees and milkshakes. Over half were owned

marketing, from brands' own social media accounts; the rest were influencer marketing and paid-for ads. Many were from US brands such as Bangin Buns, Baba's Chicken, The Red Chickz, or from small local businesses. Nutrient profiling of the coded dataset showed that most composite meals (76%) and dairy drinks (93%) were unhealthy. Missing data was estimated using these proportions, leading to an imputed total of 68 unhealthy exposures and 4 healthy ones. Six ads remained unclassified due as they did not fit into the WHO-Euro categories.

Unclassified data – UK/Ireland NPM

For the UK/Ireland NPM, 154 ads were unclassified because of missing nutritional details. This included similar items to the WHO-Euro list but also cakes, sweets, ice creams and similar treats. Missing data was handled using the same approach (see paragraph above), estimating eligibility based on category proportions found in the coded dataset. Ten posts could not be classified due to being outside category lists or having too few instances, so they were left unclassified.

Clear-cut marketing: proportions permitted for marketing to children

- Applying WHO-Euro NPM, out of 431 clear-cut marketing posts, 297 were for unhealthy foods ("not permitted" for marketing to children) and 42 posts were for healthy foods ("permitted"). A total of 92 posts lacked enough data for classification. After estimating missing data, 89% of posts were for unhealthy foods and 11% were for healthy foods (see Table 11 in the Appendix for a full report of findings). This means that more than 19 posts per hour of social media content were for items not permitted for marketing to children: one every 3 minutes (WHO-Euro NPM). Only 2.2 posts per hour were for permitted or healthy foods, which is equivalent to one every 25 minutes (WHO-Euro NPM).

As the UK and Ireland NPMs are the same, apart from Ireland's cheese exemption, we report these figures together. Out of 431 clear-cut marketing posts that could be classified, 187 (UK) and 178 (Ireland) were for unhealthy foods ("not eligible"); 90 posts (UK) and 99 (Ireland) were for healthy foods ("eligible"). A third of posts (154) lacked enough data for classification. After estimating missing data, 68% (UK) and 66% (Ireland) posts were for unhealthy foods, while 32% (UK) and 34% (Ireland)

were classified as healthy (see Tables 12 and 13 in the Appendix for a full report of findings).

Calculated as an average across the participant group and per hour of their social media data, this translates to 15 clear-cut food marketing posts per hour which were not eligible for marketing to children – one every 4 minutes (UK and Ireland NPMs). Only 7 (UK NPM) or 8 (Ireland NPM) posts per hour were eligible – one every 8½ or 7½ minutes respectively (UK and Ireland NPMs).

The difference in rates of unhealthy food marketing posts between the NPMs (WHO in comparison to UK/Ireland NPMs) is largely accounted for by carbonated drinks with artificial sweeteners. These are not permitted in WHO-Euro NPM (v1) but are permitted by UK and Ireland NPMs.

Associations between unhealthy clear-cut marketing (WHO-Euro NPM) and participant or marketing characteristics

We calculated whether there was a significant[9] statistical link between characteristics of marketing, gender or age and whether or not a product or brand was permitted for marketing to children (due to its nutrient profile category under the WHO NPM).

The source of food brand posts

Almost all clear-cut marketing, no matter what its source, was significantly more likely to be not permitted, whether it was a paid-for ad (75% not permitted), influencer marketing (96%) or owned marketing on a brand account (96%).

Brand marketing posts

Brand posts (those that feature a brand rather than a product) were significantly less likely to be not permitted than ads featuring specific food items (51% compared to 89%). Note that this finding was largely driven by the fact that on the day of coding, the McDonald's website featured a Chicken Big Mac, which is identified by WHO-Euro NPM as permitted for marketing to children.

Participant gender

Girls saw substantially more food items overall (unbranded and branded) in their

social media than boys did. They saw an average of 18 unhealthy food ads an hour whereas boys saw an average of 8 unhealthy food ads an hour. However, they did not differ significantly statistically, probably due to the predominance of girls in this sample.

Comparing age groups: over-15s and under-15s

The Advertising Standards Authority (Ireland) self-regulatory Code of Standards for Advertising and Marketing Communications in Ireland states that marketing communications for HFSS food should not be directed or targeted at children under 15 through the selection of media or the context in which they appear (ASA, n.d.).

We therefore analysed food marketing content for participants aged 12–14 (n=16) compared to those aged 15–17 (n=22). See Tables 8 and 9 in the Appendix for a full report of findings.

It is important to note that the data reported here refer to (a) participants' 30 minutes of social media use and (b) the nutrient profiled data *without* imputed (estimated) data. We did not impute data for subgroups, as this would involve making further inferences. Therefore, the numbers reported here are for the purpose of statistical comparisons by age only – they are lower than participants' actual exposure.

We found that under-15s were still exposed to frequent clear-cut unhealthy food marketing. For 30 minutes of social media exposure, this was 4 posts per participant; that is, 8 posts per hour of social media data on posts that could be nutrient profiled. Note that the true exposure for under-15s will therefore likely be 20%-30% higher, based on the imputed rates applied elsewhere.

The adolescents aged 15–17, compared to those aged 12–14, saw significantly more food marketing overall (a median of 9 posts compared to 4) and significantly more "not permitted" food marketing according to WHO-Euro NPM (median of 7 posts compared to 4 posts). See Table 8 in the Appendix. Note, however, that the likelihood of ads being for unhealthy food was not significantly different, depending on whether participants were under 15 years (85%) or 15 years and over (88%) (see Table 9 in the Appendix). The older participants saw more unhealthy ads because they saw more food ads overall.

"Social media age" and NPM status

As children often give their age on social media as older than their actual age (and most participants in this study reported having done so), we repeated the analysis of rates of exposure per hour for those participants who reported their social media age to us. Note that this involved 26 of the 38 participants, as a third, n=12 32%, were unsure.

Over a third had a declared social media age of 18 or over (37%, n=14). 61%, n=23, had a social media age of over 15 years, and only 3 participants (8%) were sure they had a declared social media age of under 15 years (whereas in fact 16 participants (42%) were actually under 15 years).

As only 3 of these participants reported a definite under-15 social media age, which was too small a number for inferential statistics i.e. statistical methods that draw broader conclusions or test hypotheses from sample data about a population. We therefore report the raw rates here to consider indicative findings.

Interestingly, the raw data do not indicate a difference for unhealthy food marketing exposure according to social media age compared to actual age. Participants aged under 15 years saw 9 unhealthy food ads an hour (one every 6 minutes), whereas those 3 participants with a social media age of under 15 saw 11 unhealthy ads an hour (one every 5.5 minutes). However, this finding is indicative only. Note also that these rates do not include those ads where nutrient information is missing, so they are for comparison only. For all raw calculations for over-15s and under-15s and WHO-Euro, UK and Ireland NPMs, see Table 10 in the Appendix.

Participant recall of food brand exposures

Even immediately after viewing, the participants in this study did not consciously recall over two-thirds of all ads they were exposed to in social media, although they recalled unhealthy foods at a slightly higher rate. Unprompted, participants recalled 8% of all the branded food posts they had been exposed to (9% of clear-cut marketing). After prompts, this rose to 24% of branded food posts (28% for clear-cut marketing). For unhealthy branded food content only, 10% were recalled unprompted (12% of unhealthy clear-cut marketing) and 27% after prompting (33% of unhealthy clear-cut marketing).

The power of marketing posts

Finally, this analysis of branded food content on social media for participants on the island of Ireland analysed the creative strategies of marketers and content creators. Nearly two-thirds of food marketing posts (59%, n=256) contained an image of the product. Nearly half (46%) contained an image of packaging. Over a third (36%) featured characteristic music or a jingle; and one in 5 (19%) had brand logos other than in the profile picture or packaging. The most common persuasive appeal was to the taste of the product –over a third (34%, n=148). This was followed by celebrity endorsements, recipes and references to friendship – each in over one in 8 posts. Further popular themes were enjoyment and satisfaction, humour and the use of a hashtag.

Appeal in marketing posts "not permitted" to be marketed to children

We also looked at power features of posts not permitted to be marketed to children according to WHO-Euro NPM. The themes and frequencies were broadly similar to the overall themes described above. The image of a product was present in over half of unhealthy food ads (55%), packaging in half (51%), brand logo in one in 5 (19%) and a musical jingle or characteristic melody in over a third (38%). Similarly to the total sample, taste was the most common theme in unhealthy food ads, seen in a third (32%), followed by recipes and celebrity endorsement.

Finally, we also compared the power strategies used in the posts featuring foods not permitted to those permitted to be marketed to children. The appeals largely overlapped: taste, celebrity endorsement, humour and recipe were the most popular appeals in healthy food marketing.

7. Consultations with stakeholders

The "K" component of the WHO CLICK framework refers to "***K****nowledge sharing*". It recommends that researchers "create user-friendly materials from the research data and develop partnerships with young people, parents, policymakers and civil society, who together can advocate change, raise awareness and influence policy" (WHO, 2019, p. xi).

As a final step, in the research study's consultation with 15 stakeholders, we sought advice from policymakers and NGOs. We shared the draft study findings, particularly those on exposure to unhealthy social media marketing in Ireland, and asked for their responses and recommendations.

The stakeholders represented the Departments of Health in Ireland and NI; the Food Standards Agency of Ireland and of NI; the Health Service Executive, Ireland; the Public Health Agency, NI; and NGOs and advocates active in the areas of child health, youth, food marketing and digital media [represented as S1-S15 in the quotes below].

We also shared recommendations from advisory groups of parents and young people on how to disseminate and promote our findings. We set the following themes for discussion, based on the topics stakeholders addressed:

- time for action
- audiences in Ireland and the EU
- messaging
- policy in the UK
- monitoring and enforcement
- beware awareness campaigns: they should be the last thing in the mix

The 15 stakeholders consulted believed that our study's striking findings presented clear evidence that the current self-regulatory approach is not effective. They believed that these findings should inform policy development immediately, particularly in Ireland. For the UK, the matter was considered less urgent, as the "total" online HFSS ban in the UK Health and Care Act 2022 is expected to come into force in January 2026. However, stakeholders noted that the ultimate impact of the UK ban was unclear, as owned media and brand marketing were not in scope (Harris, Boyland, *et al*., in press).

Time for action

The 15 stakeholders all agreed our screen capture findings have come at a critical time – in Ireland, the UK, the EU and beyond – and that policy action is urgently needed: "The time for action is now, right away" [S13]. Several noted that protecting

children from online marketing goes beyond food to include other algorithmically based harms, such as gambling, all of which derive from the personalised advertising-based business model of social media.

Stakeholders concurred that 2025 represented “a convergence of opportunity” [S3] in Ireland, with the early days of Coimisiún na Meán (the media regulator), the Online Health Task Force set up by the Minister of Health and a post-election new Programme for Government. The same is true for the UK where, at the time of the consultation, the new government was expected to implement the (so-called) “total” online ban from the 2022 Health and Care Act in October 2025 (subsequently pushed back to January 2026).

Audiences in Ireland and the EU

Stakeholders believed that policymakers are the primary audience. They asserted strongly that “recommendations need to be stronger than just kicking back to .parental responsibility – you have to highlight the horse has bolted, education isn’t going to fix this issue” [S3]. The power of government, they argued, lies in upstream measures such as legislation, restrictions, taxation and watersheds:

> “We need to convene policymakers to develop a set of policies to regulate food and beverage marketing to young people in Ireland that takes into account the changing nature of advertising and develops a set of safeguards” [S14].

Stakeholders also argued that Ireland needs to lead on this issue in the EU. They recommended calling on the European Parliament, the European Commission and Member States to enact rules and regulations, hold parliamentary hearings, and immediately replicate the study in their own countries [S14]. There was concern that Ireland’s Online Health Taskforce, which had just been convened at the time of the stakeholder consultations in late 2024, might only have the power to recommend awareness campaigns [S3, S10]. Health advocates insisted strongly that the ASA Ireland should not have a role in regulation [S1].

Stakeholders noted it is important to explain that “parents cannot control this. It’s purposely designed that way” [S13]. They felt a key element was getting parents

angry – and, importantly, “not to talk about childhood obesity”, which they felt would be off-putting for parents [S1]. Instead, communication should stress:

> “The bombardment of junk food marketing is making your child unhealthy in ways that aren’t evident now, regardless of their weight. And it will put them at greater risk of cancer, heart disease, stroke etc. as they get older” [S1].

Messaging

The message needs focus. As one key stakeholder put it:

> “I would use the number of unhealthy food ads an hour primarily; the annual figure based on whatever the stats are for younger teens, maybe that is the 11,000 for 2 hours; and I would never talk to anyone without mentioning the kid who sees a junk food ad every 40 seconds” [S1].

The key message, this stakeholder felt, should be:

> “We can now prove children are being exposed to saturation levels of junk food marketing. This is compromising the future health of every child in Ireland and is condemning many to a life dominated by chronic disease and earlier death. Only a complete ban on online junk food marketing can protect our children” [S1].

A core feature of messaging would be to include vivid examples of digital marketing and advertising:

> “Find ways of sharing this – with examples of advertising – it’s hard for people to get what it is these kids are experiencing, the more that can be made compelling and visual and concrete, from industry materials” [S14].

When communicating, it is important to:

> “Share visually the experience that children are having in the online environment – parents [and policymakers] don’t quite get what it’s like to inhabit that world as a child” [S13].

Another highlighted the importance of emphasising the impact of digital food marketing and that it was a long-established harm [S7].

Another took the view that:

> "What's still missing is a really powerful metaphor… Safefood should get a public relations group to come in and say, 'OK, these are the metaphors, say to the PR group, this is what we're looking for and let them do the work on that' [S10].

In the Parent Advisory Group discussions, parents said other parents would be surprised at the extent and power of digital food marketing to children. They suggested helping parents understand how their child spent their time online. They might then be able to protect them from corporate exploitation. They saw our research as a tool to use against big corporate actors and as an opportunity for political change.

Our Youth Advisory Group proposed using infographics and accessible and easy-to-understand videos to disseminate our findings online, through social media and email, and within communities (for example, in schools, bookshops and libraries). This would increase access and reach a broader audience. It was also suggested that the Commissioner for Northern Ireland should be involved in dissemination, as it had promoted other research and could urge policymakers to act on the findings.

Policy in the UK

The 15 stakeholders discussed the benefit of the provisions in the UK's Health and Care Act 2022 (to be implemented). This blanket ban has the benefit of not requiring age verification and the related complications around identifying children. However, the fact that brand marketing and owned marketing were out of scope was, they argued, a serious weakness [S1, S2, S3, S5, S7, S10, S13, S14].

Monitoring and enforcement

Several stakeholders stated that robust monitoring and ongoing research were required. For Ireland specifically, they argued that regulation should be mandatory; policed by a state agency (such as Coimisiún na Meán) that is adequately staffed

with relevant technical experts; and enforced using high penalties in a similar way to GDPR breaches [S3].

Beware awareness campaigns: they should be the last thing in the mix

Stakeholders frequently discussed their concerns about awareness campaigns that place the burden of action on parents or young people themselves, rather than on policies. Policies should support children and young people by regulating the food systems and media systems that create unhealthy eating norms. Stakeholders were concerned about consequences (even unintended ones) such as blaming parents or oversimplifying solutions.

One stated:

> "Don't make this end up with the easy answer – an awareness campaign. If you have an awareness campaign, you're not taking away those harms" [S10].

Another noted the prevailing discourse on the question of regulating unhealthy food marketing in Ireland was problematic, as it focused on "media literacy" rather than restricting food marketing:

> "The current mantra is that we need some regulation in Ireland on junk food marketing, but that media literacy is the stronger route for empowering young people" [S2].

They argued that it was essential that stakeholders push back against the argument, that the focus should be on "media literacy" and challenge the assumption that education alone is sufficient – an assumption not supported by the literature.

Another noted that education was of value, but that it needed to be a final step in creating a healthy food environment:

> "We're not talking about educating kids how to respond better to this stuff – that doesn't work. It needs to be made clear, because often funders and other people will just jump to, 'Oh, we need to educate kids about what this is like and that'll fix everything' – and it won't. It clearly won't. So, awareness raising, of course, is part of it, but it has to be the last thing in the in the mix" [S3].

Summary

This transdisciplinary, multi-stakeholder, mixed-methods study has generated insights that illuminate and reveal the experiences and rights of children and adolescents in relation to the complex digital system of food marketing. In this summary, we briefly draw together key findings from across the study and consider these in light of existing research.

Actual exposure to digital food marketing on the island of Ireland

On their preferred social media, on average, the 38 adolescent participants in this study saw a wide range of marketing, food content and branded food content. This included:

- a *marketing* post every minute (up to 218 posts per hour)
- a post with *any food content* every minute (up to 220 posts per hour)

Half the food on participants' social media was branded, and they saw:

- a post with *at least one food brand exposure* every 2 minutes (up to 108 posts per hour)
- a *clear-cut food marketing post* every 2½ minutes (up to 104 posts per hour)

Nutrient profiles of food marketing

The study classified "clear-cut" marketing posts using the nutrient profile model (NPM) for the WHO Regional Office for Europe (WHO 2015) as well as the models used in the UK and Ireland. It aimed to assess the marketing for both jurisdictions on the island of Ireland and provide regional comparability with the WHO NPM.

While using social media, participants saw on average:

- a post every 3 minutes for unhealthy items "not permitted" for marketing to children (over 19 posts containing unhealthy food marketing per hour) (WHO-Euro NPM)
- a post every 25 minutes for healthier, permitted items (2.4 per hour) (WHO-Euro NPM)

- a post every 4 minutes for unhealthy items “not eligible” for marketing to children (about 15 per hour) (UK/Ireland NPMs)
- a post every 8–9 minutes for healthier, eligible items (7 posts in the UK and 8 in Ireland per hour) (UK/Ireland NPMs)

The 150 participating children aged 7–17 estimated their social media daily use across the week as averaging between 2 hours and 4.5 hours. Primary school-aged children reported less use and secondary school-aged children reported more, with a few secondary school-aged children reporting near-constant social media use. Reports were confirmed by phone and app use data.

Unhealthy food marketing identified in this study would translate to average annual exposure to clear-cut unhealthy food marketing as follows.

Using the WHO-nutrient profile model:

- 13,870 posts per year (with 2 hours daily social media)
- 31,208 posts per year (with 4.5 hours daily social media)

Using the UK/Ireland nutrient profile model:

- 10,950 posts per year (with 2 hours daily social media)
- 24,638 posts per year (with 4.5 hours daily social media)

These exposure rates are striking.

It is important to note that, given study design and analysis features, these rates likely represent a substantial *under*estimate of adolescents’ total digital exposure to unhealthy food marketing, for the following reasons.

- This research examined *social media exposure only*. Both the literature we reviewed and advertisers we interviewed specified diverse other forms of digital marketing exposure, including online gaming (which many children described as playing), mobile game apps, food delivery apps and branded food apps.
- We analysed exposures *per social media post and* thus did not count every instance of food brand exposure.

- We reported *clear-cut marketing* exposures – but further brand logo exposures were identified in user-generated content and other influencer marketing.
- Many *foods and beverages high in fat, sugars and/or salt* scored above the WHO-Euro NPM and UK/Ireland NPMs definitions and thresholds.

There are few other studies of actual food marketing exposure, and none have been published to date in the EU or UK, to the best of our knowledge. However, existing studies show comparable rates of exposure to unhealthy food marketing or branded content in digital and social media. In Canada, Potvin Kent and colleagues (2019) found 15.6 ads per hour for those aged 12–16 years (note that they included user-generated branded content). Of this, 77% was identified as unhealthy using the UK NPM. In Australia, Kelly and colleagues (2021), for teenagers aged 13–17, found an average rate of exposure to all branded posts or ads at 17.4 per hour (with paid, owned and earned together at 14.2 ads per hour). Of all branded items, using the WHO-Euro NPM, 10 per hour were "not permitted".

Van der Bend *et al*. (2022), also in Australia, looked at the marketing of 72 unbranded and branded food posts per hour. They found 32 branded posts per hour, of which 20 per hour were posts with less healthy "non-core" foods. In Mexico, Nieto and colleagues (2023) found less food marketing to adolescents: a rate of 3.1 posts per hour. Most of this was paid (62%), followed by organic (30%) and influencer marketing (9%). According to the WHO-Pan American Health Organization NPM, 93.3% of the promoted products had one or more nutrient of concern and were therefore not permitted for marketing to children. Therefore, with the exception of the Mexico study, global screen capture studies found unhealthy or "not permitted" digital food marketing at rates of 10–20 per hour, comparable to the present study.

A key finding of this research is therefore that children on the island of Ireland are exposed to very large amounts of unhealthy food marketing online, and that this is consistent with the few existing findings from other parts of the world. On the scale of exposure, we noted the following.

- The sheer volume of exposure identified in this study is striking, given that the data were recorded from children in settings (Ireland/EU and Northern

Ireland/UK) where advertisers and regulators claim that self-regulation and co-regulation is satisfactory as it has not generated complaints (see, for example, ASAI 2022) and that children are not targeted with unhealthy food marketing.

- The 38 participants in the screen capture portion of this research largely viewed TikTok and Instagram. These app preferences mean the findings can be generalised, as they reflect the preferences identified in the Irish Heart Foundation's internal 2022 survey of 500 young people in Ireland and in Ofcom data on preferences in the UK.
- Consistent evidence for the impact of food marketing on children's preferences, eating, overall diet and health indicates that this volume of exposure could cause severe harm to children's health over time.

In our coding and analyses, we made conservative assumptions throughout so as not to inflate exposure numbers. Marketing rates reported are for social media *posts*, not individual brand exposure counts. Rates of individual brand exposures would be substantially higher, as many social media posts contain multiple brand exposures.

We also determined that *paid-for ads*, *influencer marketing* and *owned marketing* constituted clear-cut marketing, whereas *branded food in other content*, or *user-generated content* (from influencers or users with followings under 10,000) did not constitute clear-cut marketing. Note, however, that all the advertisers we interviewed remarked on how brands were currently pursuing micro-influencers and nano-influencers in a search for more authentic and relatable content. Note also that we came across many blurred lines in social media content regarding what constituted marketing.

Overall, food posts on social media (branded and unbranded) were very diverse, but a major theme was "recipe". This featured in nearly half of all unbranded food posts and in many branded food posts. Recipes or posts about fast food, takeaways or food delivery constituted 37% of all food content. Many other items featured were #WIEIAD ("What I Eat in a Day"); challenges (for example, "find the creme egg"); "Behind the scenes of a food brand/outlet"; "mukbangs" in which large quantities of food are eaten; and some dieting content.

Over a third of all food posts (branded and unbranded) originated from social media influencers, with a quarter coming from food brands. The food brand most often identified was McDonald's, followed by Wingstop, Cadbury, Oreo, Lidl, Coca-Cola, Lucozade, Raising Cane's, Nestle and Nutella. Again, this reflects findings from other projects within this research, as further evidence of the general relevance of our results.

The marketing landscape and attitudes to it on the island of Ireland

In addition to identifying the actual extent of food-related content on children's social media and their very extensive exposure to food marketing, we examined the marketing landscape on the island of Ireland. We also considered attitudes and awareness among children aged 4–17 years, as well as among parents and advertisers. Drawing together these findings, we make the following observations.

1. TikTok use on the island of Ireland is growing and is expected to grow further. It dominates among adolescents, and is closely followed by Instagram. YouTube is more popular among younger children; many teens consider it something to grow out of.

2. Marketing in the social media landscape was viewed by some advertisers as "murky", "creepy", "sinister", a "grey area", "worrying", and more. Parents viewed the social media marketing landscape as "subtle", "sinister", "insidious", "subliminal", "sophisticated", "clever' and "manipulative".

3. Defining marketing in social media is challenging, as it is not always immediately evident where posts have come from and whether they have been paid for. In addition, it is difficult to specify who qualifies as an "influencer". Some definitions use the number of followers. However, this may not be a good indicator, due to the rise of nano-influencers and the way advertisers increasingly rely on them to generate relatable content. The lack of clear disclosure about whether a post is an ad is reflected in children's and parents' confusion about the nature of marketing.

4. Influencer marketing was the foremost area of concern for advertisers. They remarked on its effectiveness and considered it exciting from a marketing point of view. At the same time, they considered it to be a grey area, difficult to define due to

lack of clear disclosures and blurry definitions of what constitutes an influencer. They found this form of marketing uncomfortable, remarking on its scale and the way it is infiltrating the marketing landscape. They considered it “scary” from a personal perspective – as parents, aunts and uncles. Given the prevalence of influencer marketing in our screen capture data – where it comprised at least half of all the unhealthy food marketing children saw – advertisers felt that influencer marketing must be a concern.

5. Parents are largely unaware of the scale of the problem or the type of marketing children see and the influencers they follow. Parents generally believe instead that their children’s friends are more influential than marketing in their requests to buy products. In contrast, advertisers are sure that marketing affects everyone – children and adults alike.

6. Children throughout primary and secondary school have positive attitudes towards many social media influencers (although the term “influencer” seems to have negative associations and “content creator” appears to be preferred). This reflects the CCPC (2022) finding for adults in Ireland, who felt that only “other people” follow influencers. Although celebrity influencers still commonly take part in food campaigns, there is a shift towards more relatable nano-influencers.

7. Children of all ages in this study preferred “native”, less obvious forms of marketing that was presented to them by people they felt were “easy-going, and appeared not to try too hard”. (Native marketing blends its message into the content and style of the post, instead of disrupting it with banner or pop-up ads). They found influencer- and celebrity-endorsed content appealing. They identified references to humour, fun or “vibe”, colour, style and aesthetic features, music, dance, celebrity, youth culture, local or Irish culture and the taste and convenience of products as appealing to them and people of their age.

8. Themes that children find appealing frequently feature in the campaigns of major brands as well as in our landscape analysis and screen capture findings. This confirms that the content children see on their screens is highly appealing and targeted to their interests and likes.

9.The advertisers who were interviewed noted that everything on social media is targeted. Although children cannot be targeted explicitly by age group, targeting in various ways using their interests is what makes marketing in social media so powerful.

10. Children often do not consciously recall much of the food marketing they are exposed to, but they do easily recall many brands they see online when prompted in conversation and with sample ads. Importantly, consistent evidence over many decades shows that even without conscious ad recall, ads still affect preferences and eating.

11. Children's affinity to native and less obvious forms of marketing is reflected in their actual interactions with marketing content. While they say they tend to skip and ignore the ads, in fact we found they spent on average 3 seconds viewing each paid-for food ad, rather than scrolling straight past it – which is more than a cursory glance.

Newer marketing formats are even more engaging: participants spent an average of 10 seconds viewing other food content in social media, including user-generated content, and 15 seconds viewing influencer posts featuring food. Similarly, they actively interacted with influencer posts much more often than with paid ads, liking or otherwise engaging with 44% of influencer food marketing posts and only 7.5% of paid ads. Overall, these findings show the power of influencer marketing in general, and influencer food marketing in particular, to engage young people on the island of Ireland.

12. Although regulation of unhealthy food marketing in digital media is due to happen in the UK, several forms of social media marketing will (on current guidance) be out of scope. These include brand marketing (marketing without a visible specific product); "owned" marketing (posts presented on a brand's social media account that they did not pay to boost); and user-generated marketing (content that features brands but is not paid for; it may or may not be prompted by the brand).

These modes of marketing reach children frequently and can easily be adopted by marketers seeking to do so. Experts have noted that marketers are likely to shift to other marketing approaches as regulation closes some avenues, such as moving to

more brand marketing when product marketing is restricted (Harris, Boyland *et al*., in press). Notably, advertisers themselves echoed this, and strikingly echoed parents' concerns about the nature of social media marketing and its blurred lines – despite having been interviewed by different research teams with no sight of each other's findings.

Attitudes to child rights and regulation in the context of food marketing

When asked about child rights in relation to unhealthy food marketing, in general neither parents nor children could clearly describe what rights children should have. However, when prompted, they could identify some rights and also made connections to food marketing issues. Children felt they had some say in choosing the food they ate, and considered that they and their parents were responsible for keeping themselves healthy.

Parents stated that they themselves were responsible for protecting children and yet, at the same time, felt society had some responsibility to protect them.

Advertisers felt that digital food marketing regulation was a grey area and that the regulation was absent, not complied with or not effective in digital spaces, in comparison to other media formats such as television, radio and print.

Stakeholders, faced with our data on exposure, were of one view: the current self-regulation approach is not effective, and policy development is urgently needed. This is particularly the case in Ireland, but less so for the UK given that the digital food marketing restrictions in the Health and Care Act 2022 are due to take effect (currently scheduled for January 2026). However, stakeholders also noted that the ultimate impact of the UK ban was unclear, as it did not cover owned media and brand marketing, and user-generated marketing is difficult to define.

Public awareness campaigns are media-based information campaigns seeking to change public attitudes and behaviours. Stakeholders from youth, health and digital media NGOs argued strongly that government regulation is required and that the academic evidence demonstrates that public awareness campaigns are ineffective

without relevant action on policy. Campaigns tended to divert resources and attention from such action.

The impact of digital food marketing

When considering the findings of this study, it is essential to bear in mind that the harm to children from unhealthy food marketing has long been evidenced. However, the actual extent of children's exposure in digital media was not known, until this study.

Food marketing has significant effects on children's food preference, choice, purchase requests and eating. The evidence for its impact on children has existed for several decades (WHO, 2010) – sufficient for the WHO Ending Childhood Obesity Commission (WHO, 2016a) to declare the adverse effects of food marketing to be "unequivocal". The findings are further underpinned by a meta-analysis (96 studies of over 19,000 participants: Boyland *et al*., 2022a), conducted to inform the new WHO Guideline (2023). Our systematic rapid review of reviews, carried out in 2022, concluded that digital food marketing affects children's attitudes, awareness and recall of brands; intentions to buy; pester behaviour; and dietary behaviour, including consumption and calorie intake. In social media, young people spend more time looking at unhealthy food marketing posts than posts for healthy food for non-food items, and are more likely to share the unhealthy posts (Murphy *et al*., 2020).

The most recent systematic literature review of digital food marketing (Harris, Reed *et al*., 2024) concluded that food marketing is widespread on digital platforms, nearly all of it for unhealthy foods. It also found that digital marketing in its diverse formats has similar negative effects to those of traditional marketing, including the effects for adolescents. There are *intermediate* effects, which create pathways to changed food behaviours: positive attitudes to ads and the products, and intent to buy or request them. There are also *behavioural* effects: greatly increased calorie intake, purchase requests, unhealthy eating and poorer diet quality overall. Furthermore, as we also found in this study, researchers have concluded that children, including adolescents, often do not recognise digital marketing as advertising.

Importantly, Harris, Reed and colleagues (2024) also concluded from the evidence that the solutions suggested by parents and some advertisers are ineffective. They found food marketing effects are not reduced by ad disclosures or literacy training, and promoting healthy foods does not reduce unhealthy food preferences. In that context, the importance of making and enacting policy to reduce exposure to unhealthy food marketing is evident.

Strengths, limitations and implications of the project

This novel study has both strengths and limitations that should be considered when interpreting its findings and considering their implications.

The study is the first implementation of the overall CLICK framework (WHO, 2019), including screen capture of social media, in Europe. This reflects not only the challenge of realising large-scale, transdisciplinary projects, but also the particular challenge of recording social media content on children's devices in the GDPR region. Consultations across 16 EU Member States as part of the Best ReMaP Joint Action (Muc and Tatlow-Golden, 2023) indicated that the concerns of institutional ethics committees about data protection presented a major barrier to carrying out such studies within the GDPR region. In particular, there was concern about the capture of third-party data from other social media users in participants' recordings. We developed a protocol for securing personal data and minimising its use, proportionate to the aim of better understanding factors affecting children's health. Having undergone legal, data protection and ethical review in 2 jurisdictions, our study has therefore contributed a precedent for future research.

A key finding of the study is the very high average extent of participants' exposure to unhealthy, clear-cut food marketing in social media. As noted earlier, 4 similar screen capture studies have been carried out in Australia, Canada and Mexico. Comparing participant numbers and data volume, previous studies had participant numbers of 35, 95, 101 and 347, yielding total hours of recordings of 16.8, 16.7, 267.8 and 244 hours respectively (see van der Bend *et al*., 2022; Potvin Kent *et al*., 2019; Kelly *et al*., 2021; and Nieto *et al*., 2023). The present sample of 38 participants (with 19 hours of recordings) sits within these ranges, albeit at the lower end. This reflects the timeframe available to the study team, and the known

challenges of recruiting to screen capture studies (see, for example, Kelly *et al*., 2021).

In terms of the sample characteristics, just 2 of the Northern Ireland focus group participants chose to take part in screen capture. The remaining screen capture participants were recruited in the Galway region, reflecting the fact that the data collection team was based there. The present data therefore represent a largely Ireland-based sample. The sample also included more girls than boys. Given the novelty of the study, we cannot infer what the impact of these demographic skews would be on wider exposure data. Note, however, the very wide *ranges* in food marketing exposure recorded across participants. This reflects a diverse user base and suggests that participants had wide-ranging interests not only focused on food, as social media algorithms target content based on users' interests. Overall, the exposure rates found in the present study align with 3 of the 4 previous screen capture studies. This increases our confidence that these exposure rates are not unusual.

A further novel contribution made by this study is the consideration of children's "social media ages" – the first time, to our knowledge, that this question has been explored in a study of digital media food marketing exposure. We note that the WHO Guideline (2023) points to the need to address *actual exposure* of all those under 18 years, no matter the intended audiences. The core research question of screen capture element in this study was therefore: what is the exposure of those aged under 18 on the island of Ireland? The purpose of also examining social media age was to establish whether participants with social media ages of under 15 were receiving unhealthy food marketing – which they were.

In fact, only 3 participants were certain that they had a social media age of under 15 years. The lack of clarity about social media ages reflects common practice among young people – which makes regulation more of a challenge. Indeed, this was a key rationale for the UK's forthcoming "total ban" on the online marketing of unhealthy food (DHSC 2024). The combined findings of the present study support such an approach.

A further contribution of this study are the rich – and often overlapping – insights from advertisers, parents and children themselves, as described above. In relation to exposure rates, we note further that many advertisers were of the view that social media marketing is under-developed in Ireland and expect it to grow. This view is supported by the current year-on-year growth data for digital marketing in Ireland and the rising rates of TikTok use, which are still below international levels.

Finally, a brief reflection on policy monitoring and implementation. Digital food marketing is largely self-regulated and co-regulated across the island of Ireland. Furthermore, co-regulatory partnerships oversee the implementation and monitoring of policy in each jurisdiction. Coimisiún na Meán (Ireland's media regulator) has signed a co-operation agreement with the Advertising Standards Authority of Ireland (Comisiún na Meán, 2024). Ofcom (the UK's communications services regulator) has partnered with the UK Advertising Standards Authority. However, such partnerships contravene a key principle of international good practice: that policy should be monitored by fully independent bodies not affiliated with the industry they oversee.

Our findings clearly show that current regulation is ineffective. This is true for self-regulation by the food industry alone, co-regulation by the government and food industry, and the overseeing of monitoring and implementation by industry-adjacent bodies. The adolescents in our study have similar exposure to the digital marketing of unhealthy food as in Canada and Australia. This shows the ineffectiveness of current regulations – as well as the need for robust, regular, independent monitoring.

Concluding comments

This transdisciplinary, multi-stakeholder study has identified a very high level of exposure among adolescents on the island of Ireland to the digital marketing of unhealthy food. They saw an average 15–19 posts per hour of unhealthy, clear-cut marketing (varying slightly according to the nutrient profile model applied).

This would translate to an average of 10,000–30,000 social media posts a year across the participant group (assuming 2–4.5 hours of daily social media use as

reported by 150 participating children). Some participants saw many more food ads: over 100 an hour.

This research has identified a landscape where digital marketing has grown dramatically in recent years, and where marketing has melded into content, meaning that boundaries between the two are consistently blurred. Although children understand the persuasive intent of advertisers, they do not interpret influencer content (and even some brand content) as marketing. They feel positively about it when it is “relatable” and respond to it by feeling hungry or thirsty, and often with pleasure and enjoyment.

Some advertisers view the social media marketing landscape as “murky”, “creepy”, “sinister”, a “grey area”, “worrying”, and more. Some parents describe it in similar terms as “subtle”, “sinister”, “insidious”, “subliminal”, “sophisticated”, “clever” and “manipulative”. Children and parents generally believe that what children eat is parents’ responsibility. They are resistant to the idea that children are influenced by advertising, believing they are more likely to be influenced by their peers. In contrast, advertisers believe everyone is influenced by marketing – children and parents alike.

Stakeholders believed strongly that the levels of exposure identified in this study mean that policy action must be the priority. Although policymakers and legislators require education on the issues, stakeholders believed that upstream government-level regulation is required and that public awareness campaigns alone are ineffective without the creation and enforcement of policy.

The video data from participants’ social media indicate that the current self-regulatory and co-regulatory regime is almost entirely ineffective at monitoring and protecting children from exposure to unhealthy food marketing. The policy implications are clear.

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Appendix

Table 8 Clear-cut food marketing post rates for under- and over-15s*

Food marketing posts	Mean	Median	SD	SE	p value
Clear-cut food marketing					
• 15 years or older (n=22)	11.41	9.00	9.36	2.00	
• Under 15 years (n=16)	5.50	4.00	4.37	1.09	0.01
“Not permitted” clear-cut food marketing					
• 15 years or older (n=22)	10.09	7.00	8.84	1.88	
• Under 15 years (n=16)	4.69	4.00	3.55	0.89	0.03

*SD = standard deviation, SE = standard error of mean, p value using a Mann-Whitney U test. “Not permitted” food marketing is according to WHO-Euro NPM. Using a Mann-Whitney U non-parametric test, we found older children saw significantly more food marketing overall (median 9 vs 4 posts), and significantly more “not permitted” food marketing according to WHO-Euro NPM (median 7 vs 4 posts).

Table 9 Participant age and WHO-Euro NPM status

Participants' age group – actual age (n=38)	Not permitted by WHO-Euro NPM n (%)	Permitted by WHO-Euro NPM n (%)	p
15 years or older (n=22)	222 (88.4)	29 (11.6)	0.43
Under 15 years (n=16)	75 (85.2)	13 (14.8)	

Note that the rates in Table 9 do not factor in posts with missing nutrient data (which affected 21% of posts for WHO-Euro NPM and 36% for UK and Ireland NPM), so the frequencies represent underestimates of actual exposure.

Table 10 Unhealthy clear-cut food marketing post rates* by age group and by NPM. Post rates are reported as the number (n) of posts per hour (every n minutes)

	WHO-Euro NPM	UK and Ireland NPM
Participants' age group – actual age (n=38)		
15 years or older (n=22)	20 (3)	12 (5)
Under 15 years (n=16)	9 (6)	6.5 (9)
Participants' age group – "social media age" (n=26)		
15 years or older (n=23)	19 (3)	12 (5)
Under 15 years (n=3)	11 (5.5)	6 (10)

* (excluding posts with missing nutrient data)

Table 11 Digital food marketing in social media posts, classified by WHO-Euro Nutrient Profile Model

	Total - n (per child per hour)	Healthy or "eligible" foods - n (per child per hour)	Unhealthy or "not eligible" foods - n (per child per hour)	Unclassified - n (%)s
Posts				
All paid-for marketing posts	1,129 (59.4)	-	-	-
Food content in posts	1,126 (59.3)	98 (5.2)	593 (31.2)	435 (38.6)
Branded food content in posts	582 (30.6)	60 (3.2)	412 (21.7)	110 (18.9)
Food marketing posts	431 (22.7)	42 (2.2)	297 (15.6)	92 (21.3)
Types of food marketing				
Paid-for ad	161 (8.5)	36 (1.9)	110 (5.8)	15 (9.3)
Influencer marketing posts	140 (7.4)	5 (0.3)	113 (5.9)	22 (15.7)
Owned marketing posts	130 (6.8)	1 (0.1)	74 (3.9)	55 (42.3)
User-generated posts	89 (4.7)	13 (0.7)	65 (3.4)	11 (12.4)
Branded food in other content	62 (3.3)	5 (0.3)	50 (2.6)	7 (11.3)
Other	16 (0.8)	0 (0.0)	13 (0.7)	3 (18.8)
Unbranded food in posts	528 (27.8)	38 (2.0)	168 (8.8)	322 (61.0)

All posts n=2192; all food posts n=1126; participants n=38; total video=19 hours. All frequencies, percentages and "posts per hour" for all sources of branded post exposures (n=528). Note: WHO-Euro NPM v1 (WHO, 2015) categorises foods, and excludes some foods by category (for example, ice creams, chocolates, cakes etc). This permitted the classification of unbranded food according to the WHO categories. As UK and Ireland NPM do not have such categories for classification, the general food content is not classified in the UK and Ireland NPM tables below.

Table 12 **Digital food marketing in social media posts, classified by UK Nutrient Profile Model**

	Total - n (per child per hour)	Healthy or "eligible" foods - n (per child per hour)	Unhealthy or "not eligible" foods - n (per child per hour)	Unclassified - n (%)s
Posts				
All paid-for marketing posts	1,129 (59.4)	-	-	-
Food content in posts	1,126 (59.3)	-	-	-
Branded food content in posts	582 (30.6)	124 (6.5)	277 (14.6)	181 (31.1)
Food marketing posts	431 (22.7)	90 (4.7)	187 (9.8)	154 (35.7)
Types of food marketing				
Paid-for ad	161 (8.5)	66 (3.5)	74 (3.9)	21 (13.0)
Influencer marketing posts	140 (7.4)	17 (0.9)	92 (4.8)	31 (22.1)
Owned marketing posts	130 (6.8)	7 (0.4)	21 (1.1)	102 (78.5)
User-generated posts	89 (4.7)	21 (1.1)	53 (2.8)	15 (16.9)
Branded food in other content	62 (3.3)	13 (0.7)	37 (1.9)	12 (19.4)
Other	16 (0.8)	0 (0.0)	0 (.00)	16 (100.0)
Unbranded food in posts	528 (27.8)	0 (0.0)	0 (0.0)	528 (100.0)

All posts n=2192; all food posts 1126; participants n=38, total video=19 hours.

Table 13 **Digital food marketing in social media posts, classified by Ireland Nutrient Profile Model**

	Total - n (per child per hour)	Healthy or "eligible" foods - n (per child per hour)	Unhealthy or "not eligible" foods - n (per child per hour)	Unclassified n (%)
Posts				
All paid-for marketing posts	1,129 (59.42)	-	-	-
Food content in posts	1,126 (59.26)	-	-	-
Branded food content in posts	582 (30.63)	133 (7.0)	268 (14.1)	181 (31)
Food marketing posts	431 (22.68)	99 (5.2)	178 (9.4)	154 (36)
Types of food marketing				
Paid-for ad	161 (8.47)	74 (3.9)	66 (3.5)	21 (13)
Influencer marketing posts	140 (7.37)	18 (0.9)	91 (4.8)	31 (22)
Owned marketing posts	130 (6.84)	7 (0.4)	21 (1.1)	102 (78)
User-generated	89 (4.68)	21 (1.1)	53 (2.8)	15 (17)
Branded food in other content	62 (3.26)	13 (0.7)	37 (1.9)	12 (19)
Other	16 (0.84)	0 (0.0)	0 (0.0)	16 (100)
Unbranded food in posts	528 (27.79)	0 (0.0)	0 (0.0)	528 (100)

All posts n=2192; all food posts 1126; participants n=38, total video=19 hours

[1] Approval granted for empirical data collection procedures by the University of Galway Research Ethics Committee on 13 September 2023 (reference number: 2023.06.007).
[2] Review by the Human Research Ethics Committee of The Open University received on 5 October 2023 (reference: HREC-4637).
[3] Techniques for the rapid review included systematic structured concept searches in trusted databases, relevant search terms, pre-defined inclusion/exclusion criteria, screening and data extraction.
[4] Scoping reviews are useful to identify the types of evidence available on a particular topic and analyse knowledge gaps (Munn *et al*., 2018). They use structured systematic concept searches in trusted databases, pre-defined inclusion/exclusion criteria, screening, and data extraction. We drew on JBI guidance in drawing up the protocol and conducting the reviews (Peters *et al*., 2015) and uploaded a registered protocol to the Open Science Foundation (OSF Registries, n.d.) (Muc *et al*., 2022).
[5] Inter-rater reliability tests were carried out for 20 selected posts independently coded by 2 researchers who discussed discrepancies, until key variables had strong agreement of 80% or higher (90% for brand ad, 96% for food category). Analysis was performed using IBM SPSS statistics 29.
[6] Transcripts were read in full, coded and cross-coded by 4 Galway and OU researchers.
[7] Strong agreement of 80% was set as the threshold for key variables (number of eligible posts 80%; type of post 94%; form of post/ad 94%; source of content 89%; type of marketing 89%; advertised product category 89%; detailed description of food product 86%; brand ad 91%).
[8] Descriptive and inferential statistical analyses were carried out using IBM SPSS Statistics 29.0.1.0 and MS Excel (Office 16).
[9] Using Chi-squared tests or Mann-Whitney U tests, we ascertained whether participant or marketing characteristics were significantly associated with being permitted/not permitted for marketing to children (WHO-Euro NPM). Significant p-values were set at <0.05.