CENTER FOR DIGITAL DEMOCRACY

Big Food, Big Tech, and the Global Childhood Obesity Pandemic

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Acknowledgments

INTRODUCTION

The coronavirus pandemic triggered a dramatic increase in online use. With tens of millions of families remaining in their homes, people turned to the internet to order food, stay up with the fast-breaking news, and engage with family and friends. Children and teens whose schools have closed relied on YouTube for educational videos, attended virtual classes on Zoom and Google Classroom, and flocked to TikTok, Snapchat, and Instagram for entertainment and social interaction.[1] Industry analysts also reported a sharp rise in video gaming.[2]

Roblox, a popular 3D user-generated gaming environment for children, reported a jump of 35 percent in active players since February 2020, "reaching 164 million by July, with around three quarters of American children ages 9 to 12 on the platform who collectively spent 3 billion hours on the site."[3] "There are no movies to go to, no sports to watch, and no playdates to be had," observed one trade publication. "Watching and playing video games provides them a safe entertainment alternative."[4]

But this constant immersion in digital culture has exposed children and teens to a steady flow of marketing for fast foods, soft drinks, and other unhealthy products, much of it beneath the visibility of parents and teachers.[5] Food and beverage companies have made digital media ground zero for their youth promotion efforts, employing a growing spectrum of new strategies and high-tech tools to reach into every aspect of young peoples' lives. Brands are partnering with "influencers" on YouTube, Instagram, and other social media platforms, weaving their logos into the storylines of popular videogames, and targeting children with powerful, immersive video ads that pop up on their mobile devices.[6] These trends have contributed to another critical pandemic. Though it is unfolding at a slower pace, its progression is relentless, and its impact on young people's health is devastating. For decades, there has been a steady and disturbing rise in obesity among children and youth. For example, obesity rates among teens ages 12 to 19 have quadrupled since the 1980s. According to the most recent public health data, 19.3 percent of all youth between the ages of 2 and 19 are obese. For Hispanic, Black, and Native American youth, the rates are significantly higher. Children growing up in low-income households have disproportionately greater levels of obesity.[7] This is not only a U.S. problem, but increasingly a global problem as well. Worldwide, over 340 million children and adolescents (aged 5 to 19 years) were overweight or obese in 2016, according to the World Health Organization.[8] These children are at much greater risk for serious illness, including Type 2 diabetes, high blood pressure, heart disease, and depression.[9] Overweight and obesity are directly linked to changes in the diets of children and youth, which are increasingly dominated by foods that are high in saturated fats, salt and/or free sugars, so-called "HFSS" foods, as well as soda and other sugary drinks. It is widely known that the overwhelming majority of food and beverage marketing targeted to children and teens promotes these unhealthy products. Research has repeatedly documented that marketing directly influences

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young peoples' food and beverage preferences, purchase requests, and consumption. All of these trends have created what public health researchers call a global "obesogenic environment."[10]

In the U.S., we can already see how young people who have come of age in the midst of this obesity crisis are showing signs of its negative impact on their health. In 2019, Blue Cross Blue Shield issued a report on the health of the millennial generation, those born between 1981 and 1996, "the largest, most educated, and most connected generation the world has ever seen." As the researchers explained, "Millennials are seeing their health decline faster than the previous generation as they age," with greater levels of hypertension, high cholesterol, and other chronic physical illnesses, along with a rise in behavioral conditions like depression and hyperactivity. "How their health plays out in the years ahead will determine not only the overall health of the country,

but also its potential economic trajectory," with mortality rates rising by "more than 40% compared to Gen-Xers at the same age."[11] In many ways, these youth are the "canary in the coal mine" for the future of the nation's health. Rather than reaching adulthood as the most vital and healthy members of society, they are burdened by a host of chronic diseases, increasingly compromised immune systems, and shorter expected lifespans than earlier generations. Researchers at the Harvard School of Public Health are already projecting that by 2030, unless current trends change dramatically, "nearly one in two adults will be obese, and nearly one in four will be severely obese," warning that "obesity will be the new normal in this country."[12]

Obesity has already been identified as a key underlying condition that makes individuals more vulnerable to contracting COVID-19, even among young people.[13] Numerous studies have revealed strong links

between obesity and COVID, particularly among children and youth.[14] "The evidence is clear," explained a scientific study published in November 2020, "childhood obesity and COVID-19 are international pandemics. The clashing of the two diseases and the subsequent changes in the bioecological environment have placed children and adolescents at increased risk to develop obesity and exacerbate obesity disease severity."[15]

Youth of color have been disproportionately affected by serious illness, hospitalizations, and death from COVID.[16] "The Coronavirus is killing Hispanic, Black and American Indian children at much higher numbers than their White peers," according to a CDC report. "Of those killed by covid-19, the illness caused by the coronavirus, more than 75 percent have been Hispanic, Black and American Indian children even though they represent 41 percent of the U.S. population." One of the key factors identified by the agency is the "underlying health disparities among minority children and young adults. About 75 percent of those who died had at least one underlying condition, and the most frequent were asthma and obesity."[17]

According to the Rudd Center for Food Policy and Obesity, food and beverage companies aggressively target African Americans, Latinos, Native Americans and Asian-Pacific Islanders with marketing for foods and drinks (such as sugary drinks and foods low in nutrition and high in sugars, salt, and fats) that contribute to these diseases and harm health.[18] Almost no marketing

is for foods and beverages that families *should* eat more of, like fruits, vegetables or whole grains. Youth of color get what researchers call a "double dose" of unhealthy food and sugary beverage marketing, because they are exposed both to mainstream advertising campaigns and to targeted efforts specifically aimed at them through digital media, which they use more often and more intensely than do their white counterparts.[19]

The COVID-19 pandemic underscores the urgent need to address the childhood obesity crisis, and particularly to reduce young people's exposure to unhealthy food promotion. This report focuses on the role of both the food industry and the technology industry in the current global childhood obesity crisis. It documents how Big Food and Big Tech are working together to enhance and expand the promotion of unhealthy food brands and products to young

people. These efforts have created a powerful, pervasive, and immersive *digital obesogenic environment* that is harming children's health, furthering health inequities, and contributing to increasingly higher levels of disease in the population.

We have been tracking the growth of the digital marketplace for more than 25 years, beginning with the earliest commercial enterprises on the World Wide Web in the 90s, when food and beverage companies were among the first marketers to establish kid-friendly branded websites on the internet. Using "product spokescharacters" such as Chester Cheetah and Snap, Crackle, and Pop, major brands sought to forge "one-to-one" relationships with members of "the lucrative cyber-tot" category, engaging in continuous data collection from children who visited their websites. Because of our concerns over these practices, we spearheaded a national campaign that led to the 1998 passage

of the federal Children's Online Privacy Protection Act (COPPA).[20] Over the years, we have closely followed the incredible expansion of the technology industry and its increasingly sophisticated advertising, data collection, and marketing apparatus. We have documented the increasingly complex and highly technical nature of digital food marketing, underscoring how different it is from more traditional forms of advertising, and identifying the threats it poses to children's health and wellbeing.[21]

In this report, we explain how global giants in the food and beverage industry are working together with leading tech companies to ensure that unhealthy brands and products are woven into the media and cultural experiences that dominate the lives of young people. These industries are now part of a large, integrated, data-driven digital marketing system, fueled by Big Data, artificial intelligence, and machine

learning. Our goal is to pull back the curtain on this complex system and explain how it works, what it means for young people's health, and what should be done about it. In Part 1, we describe the changing nature of the youth media marketplace, the rise of sophisticated new advertising technologies, and the many ways that Big Data is continuing to transform both the technology and the food and beverage industries. Part 2 focuses on three digital advertising markets that attract large numbers of young people, where food and beverage companies are deploying a variety of new and emerging techniques to reach and engage them. Part 3 considers the implications of contemporary food and beverage marketing on young people's health, particularly for Black and Brown youth. In Part 4, we provide an overview of major regulatory and policy developments in the U.S. and abroad. Part 5 offers a set of principles and recommendations to guide U.S. policy making and develop corporate responsibility initiatives in order to build a healthier digital environment for youth.

Scholars around the world have begun to examine digital food marketing and its effects on young people.[22] A growing body of academic research has documented the increasing presence of unhealthy food promotion, clear patterns of youth engagement with major brands, and influences on health behaviors.[23] Public health authorities in Europe, the UK, Latin America, and many other regions have adopted policies to curb food marketing to children and youth, with increasing attention on the role of digital technologies.[24] These developments are part of a broad, growing international movement, grounded in children's fundamental rights to health.[25] Yet, in the U.S., both the tech and food industries have managed to circumvent, undermine, and coopt policy efforts to reduce the relentless, aggressive promotion of unhealthy products.[26] Childhood obesity has largely fallen off the national policy agenda. We argue that it is time to refocus public attention on these two industries, to develop policies for restricting marketing of unhealthy foods to children, and to begin building a healthier digital environment for young people.

<div style="background-color:green;color:white;padding:4px;">**Big Food and the Obesity Crisis**</div>

In 1969, when the White House held a conference on "Food, Nutrition, and Health," its primary concerns were hunger and malnutrition, which were then causing "tremendous suffering" among American families and children around the country. Participants offered a comprehensive set of policy recommendations—encompassing nutrition guidelines, nutrition education, consumer issues, and food distribution—to address the problems. These, in turn, eventually led to "major expansions of the Food Stamp Program and School Lunch Program, authorization of the Supplemental Feeding Program for Women Infants and Children, and improvements to nutrition labeling and ingredient labeling."[27]

But in 2019, when health and nutrition experts held a 50-year anniversary event celebrating the initial conference, the nation faced a far different nutrition problem. "While calorie malnutrition in America has been largely eradicated, changes to our food system, accompanied by persistent poverty and increasing economic inequality have created a crisis of diet-related obesity, diabetes, and other chronic diseases, and widened other disparities in the accessibility and affordability of nutritious foods," the 50th-anniversary report noted. "Poor diet is now the leading cause of poor health in the U.S., causing more than half a million deaths per year."[28] In addition to documenting the sharp rise in childhood obesity, the report noted disturbing changes in the media and advertising environment for children. "Despite repeated efforts to limit the marketing of unhealthy foods and beverages," the authors noted, "children and adolescents continue to be subjected to an onslaught of targeted advertising for the unhealthiest products across all media platforms."[29]

The aggressive marketing of unhealthy food and beverage products is one of a number of trends over the past several decades that have contributed to high obesity rates among young people. Other contributing trends include cutbacks in physical education programs; the relative decline in the cost of food; the rise in fast food, convenience food, and eating outside of the home; and the increasing availability of snacks and sodas in public schools.[30] But one of the most fundamental changes is the disturbing shift in the overall nutritional patterns among all children and adolescents, who now consume high levels of saturated fat, sugars, and salt, and low levels of fruit and vegetables.[31] These patterns are a direct outcome of changes in the food industry's production, distribution, and marketing systems. A number of researchers have documented the rising power and influence of the global food and beverage industry and its role in shaping the food environment.[32] Multinational food and beverage companies, often referred to as "Big Food," have established "huge and concentrated market power," explain David Stuckler and Marion Nestle. "Three-fourths of world food sales involve processed foods, for which the largest manufacturers hold over a third of the global market."[33] Observes Charlotte Elliott, "The food industry promotes a diet of highly processed, junk food and/or fast food," and has "indisputably transformed what we eat, how we eat it, and what we think of food."[34]

Beginning in the early 90s, food manufacturers launched new product categories designed to take advantage of children's increased spending power and independence.[35] According to the Institute of Medicine, between 1994 and 2004 there were "3,936 new food products and 511 new beverage products targeted to children and youth." Most of these child-oriented food and beverage products were "high in total calories, sugar, or fat and low in nutrients."[36] During that same decade, as children began flocking to the internet, major brands such as Kellogg, Nabisco, Oscar Mayer, McDonald's, and Frito-Lay were among the first to launch "advergames," "branded environments," and other online venues to foster brand loyalty and promote a full range of fast foods, sugar-sweetened cereals, soft drinks, and snacks.[37] These early forays into cyberspace quickly grew into a massive digital marketing enterprise, as food brands moved swiftly onto websites, social media platforms, interactive games, and mobile devices.[38]

PART 1: THE DATA-DRIVEN MEDIA & MARKETING COMPLEX

Today's youth are at the epicenter of an exploding digital media and marketing landscape. Their deep connection to technology and their influence on purchasing are fueling the growth of new platforms, programs, and services, and generating a multiplicity of marketing opportunities. Google has created a global business offering videos and channels that target children and other young people who are attracted by its entertainment and educational content.[39]

YouTube is now widely considered the "number-one kids entertainment brand," a position it has held since 2016. As one leading youth marketing specialist noted, "the omnipresent platform plays a central role in shaping the evolving behavior of kids."[40] Though Facebook has seen some declines in teen users, the larger array of social media platforms—with dozens of players such as Tumblr, Snapchat, YouTube, and Instagram (owned by Facebook)—continues to attract and engage young people, many of whom are accessing these services on their mobile devices.[41] The children's mobile app market is also becoming an increasingly profitable medium for advertisers, according to industry sources, with mobile usage among children "soaring," making these devices the "#1 screen for kids."[42] TikTok has quickly captured the interest of children, adolescents,

and young adults in 150 countries around the world.[43] The popular video app is credited with helping to drive growth in children's social app use by 100 percent in 2019 and 200 percent in 2020.[44] There is a frenzy of venture capital investment in the youth media sector, fueled by predictions that the generation growing up in today's digital media environment will consume even more video content, much of it commercially driven, on TV, mobile phones, and other devices.[45]

Gaming and esports platforms are among the digital sectors experiencing a dramatic uptick in users since the coronavirus pandemic began.[46] Twitch, for example, "has experienced a 10%

year-over-year increase in audience volume, and data from market researcher Statista shows the eSports category as a whole is likely to reach US$1.79 billion in revenue by 2022."[47] As theaters closed and U.S. box-office receipts plummeted to almost zero, gaming industry revenue overall has risen dramatically, by more than 50 percent, and was expected to reach $160 billion by the end of 2020, which is "more than books, music, or movies," observed the New York Times.[48] Viewership for video streaming has also risen. According to research from Nielsen, the cumulative weekly time viewers spent with streaming video during the second quarter of 2020 was 142.5 billion minutes, which amounted to an almost 75 percent rise from the year before.[49]

The pandemic has also accelerated the growth of digital advertising, which witnessed "a historic shift in market share," according to reporting in *The Financial Times,* which predicted that digital advertising was poised to overtake ad spending on traditional media for the first time. "The digital revolution in marketing under way since the millennium, when the internet accounted for under 2 per cent of spending, has transformed the ad market at a pace and scale that far outstrips the advent of television in the 20th century."[50]

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AI, Machine Learning, and Virtual Reality: the New Frontier of Digital Marketing

Artificial intelligence (AI), machine learning (ML), and virtual reality (VR) are among the technological innovations that are transforming the nature and power of digital marketing. AI and machine learning are driving the growth of *personalization* and *predictive targeting*. Specialized software can analyze large amounts of consumer behavioral and demographic data to create and serve an advertising message tailored to a specific individual.[51] Major tech platforms offer their own personalization tools. For example, Facebook's "dynamic creative" application enables advertisers to generate multiple versions of various elements instantaneously—including video, images, and ad copy—which can be tested in order to determine the correct combination that delivers the desired result.[52] A key goal of this practice is "to inspire positive emotional resonance and reaction" about the product brand. Kellogg's, Pepsi and McDonald's have each taken advantage of Google's "Director's Mix," which "allows brands to dynamically embed text, audio or images within their videos to generate unlimited variations of one video…. [B]rands can customize their videos to target specific audiences and adopt hyper-targeting strategies in their video media plans," Google explained to advertisers. The tool facilitates "mass customization" by taking "one base video and overlay[ing] different visuals and copy, creating thousands of iterations automatically." This is then connected to what a person may be doing or has done—such as searching for something or watching a video. By working with YouTube, says Google, marketers can use the online video platform to "create hundreds or thousands of versions to match your audience segments." Kellogg's used the tool to promote both Rice Krispies Treats and Pringles, reporting a positive impact on sales.[53] Market research has shown that these new forms of "personalization" are effective at driving increased sales and brand loyalty.[54]

Food and beverage companies are incorporating AI strategies into their campaigns in a variety of ways, with some earning prestigious awards in the industry. For example, Snickers developed an AI-based algorithm—called "Hungerithm"—to monitor the "online mood" of social media users in Australia. When consumers were judged "hungry," the price of the

> **AI and machine learning are driving the growth of personalization and predictive targeting.**

Snickers bar was temporarily reduced at 7-Eleven stores to help drive purchases.[55] This effort, which involved Google and MIT, won multiple Cannes Lion Gold awards. KFC used AI to create a virtual "Col. Sanders," who helped videogame players in China receive "real-time predictions" about e-sports. Fans went "crazy" about the information it provided and KFC was able to achieve one of its key marketing goals—making its brand "an integral part of the game." To receive the predictions, users had to "log into the KFC app," and during the game, the virtual Col. Sanders also distributed coupons and invited "the audience to order KFC online." The Colonel KI (KCF-AI) campaign won international marketing awards.[56]

Chatbots are another tool that relies on artificial intelligence to simulate conversations with users. For example, Ruffles potato chips won a social media marketing award in 2019 for an effort based in Mexico, which was described as the "first-ever promotional campaign launched within the WhatsApp platform." By sending a unique code found on the Ruffles package directly to the company's branded chatbot ("Ruffilio"), one could enter a major sports-themed contest to win various prizes. In order to build a stronger connection between the brand and people entering the contest, Ruffles created "Small Talk," its own "neural network that identifies intents from the consumers' messages such as hobbies, favorite sports, favorite movies, relationships…." Four-and-a-half million messages were sent over a month, and the "average user spent 19 minutes per session registering codes and talking with our bot," according to the company.[57] McDonald's has also used a chatbot connected to Facebook's Messenger application to create interactive experiences.[58]

The latest versions of immersive marketing technology take advantage of recent developments in augmented and virtual reality, which deliberately blur the lines between the real world and virtual worlds, making the experience even more intense and realistic. Augmented reality (AR) is defined by the Interactive Advertising Bureau (IAB) as "an experience that utilizes a camera to change or enhance something in the user's real world." Virtual reality (VR) "allows a user to be completely immersed in an environment of the marketer's choice."[59] A number of the standardized ad formats developed by the IAB are designed to foster these kinds of immersive experiences, such as 360-degree video and "fully branded 3-D scenes."[60] New

measurement systems can document various impacts of AR and VR ads on individuals, identifying such behaviors as "Gaze-Through" ("when a user views a VR advertisement and accepts a call to action") and "VR Session Time" ("the amount of time a user spent in the VR experience").[61] Other recent campaigns illustrate how major food and beverage brands have embraced AR and VR:

- Kellogg's worked with the AR developer Blippar to produce millions of cereal boxes that transformed the packaging into a gaming experience, an "interactive jungle island, filled with different mini games to be unlocked."[62]

- McDonald's created a tray liner that interacted with mobile phones, integrated with Facebook Messenger, and offered various digital board games.[63]

- Mountain Dew developed an AR app tied to the *Walking Dead* TV series that overlaid "digital images of zombies on the real world using a smartphone camera," letting "fans see zombies in real-world environments and share the interactions on social media."[64]

- Pepsi partnered with Facebook's Instagram in the summer of 2019 to produce 230 million bottles of soda imprinted with mobile phone codes that triggered "full screen immersion" AR effects, with a goal of influencing "medium to heavy Cola drinkers," including Hispanics, to purchase 20-oz. sizes of Pepsi.[65]

Food and beverage companies are also among the venture capitalists investing in the next generation of smart devices and services. Soft-drink companies have already installed "intelligent" vending machines that personalize a consumer's drink choices, process "contactless" payments, and gather valuable data in the process.[66] Homes are being automated through an array of personal digital assistants and "smart speakers," such as Amazon's Alexa or Google's Nest, that monitor our activities and can prompt someone to order more soda or chips, for example. In the last few years, a new generation of internet-connected toys has come to market, designed to react to a child's behavior in real time and "grow" with them as they become older, using software to retool a device's functionality in order to correspond to a child's developmental stage.[67] Consumer groups have already raised concerns about how these "intelligent" playthings might be used to promote products to a child. With this "ongoing digitization of childhood," observes Professor Eva Lievens, "it can only be expected that such connected or smart toys and devices will continue to be developed and marketed in coming years."[68]

ADTECH, KIDTECH, AND THE CHANGING DIGITAL ADVERTISING SYSTEM

Big Data has transformed the nature and power of contemporary marketing. Digital marketers are able to access, analyze and act upon a wealth of data on individual consumers and their families gathered online and off, including purchasing behaviors, social media communications, online interests, location and geographic movements, financial status, health concerns, emotional states and much more. This data pipeline fuels a myriad of marketing and advertising techniques that are honed to deliver results—from brand awareness to direct sales.[69]

The technology industry—led principally by Google, Facebook, and Amazon—has established a complex, far-reaching, global media, marketing, and sales apparatus. Google and Facebook alone account for the majority (nearly 60 percent) of digital ad spending worldwide.[70] While the most influential, they are part of an integrated chain of relationships, which includes ad agencies, data brokers, marketing clouds, data-management platforms, ecommerce applications, artificial intelligence ad specialists, media companies, measurement providers, and many other specialized services.[71] Many of these firms are part of the burgeoning advertising and marketing technology sector—known as "AdTech" or "MarTech"—that offers a growing spectrum of automated ad software and tools, powered by the next

generation of AI and machine learning, "customer-engagement suites" and other forms of "business intelligence" software that can deliver highly personalized and optimized interactions with millions of consumers simultaneously.[72]

Paralleling these developments is a growing "KidTech" enterprise, which uses many of these same advertising technologies, including Big Data analytics, artificial intelligence and computer-driven ad-buying strategies. KidTech services and other child-directed content providers have experienced a digital "gold rush" worldwide, with eager investors and advertisers flocking to support new start-ups as well as already established youth media brands. A number of these services have made adjustments to how they market to young people, in response to children's privacy laws and online

(See sidebar, "Redefining Contextual Advertising in the Big Data Era.") As a consequence, many of the "kid-friendly" marketing operations do not differ substantially from those that are aimed at adults.[74]

Marketing and advertising are also driving the design and functionality of young people's media experiences. Far from being neutral spaces for social interaction, entertainment, and expression, digital platforms are structured to optimize engagement, foster habitual behaviors, and maximize the impact of marketing messages on brand loyalty and product sales. The concept of *engagement* has become a linchpin of tech industry Big Data strategy. Its purpose is to ensure that users are continuously and seamlessly interacting with digital media platforms, responding to brands and marketing, and generating data

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safety concerns.[73] They claim they are complying with privacy and data regulations by using so-called "contextual" marketing techniques that place ads related to the content being viewed, instead of the more intrusive data-driven behavioral or programmatic practices that target the viewers themselves and trigger privacy issues. However, contextual advertising has been transformed through machine learning, natural language processing and other advanced techniques, all of which use data to identify and target users.

points. With children's content—and attention—increasingly distributed across tablets, smartphones, streaming devices, and other platforms, programmers and advertisers are embracing new interactive storytelling technologies, including games, virtual reality and augmented reality experiences, and creating advertising formats that can be integrated directly into these powerful, immersive environments, and designed to trigger impulsive actions.[75]

Over the last ten years or so, there has been an explosion of research focused on *implicit persuasion* techniques, which tap into deep emotional and subconscious responses.[76] For example, Nielsen, which is a leader in the field of *neuromarketing*, uses a variety of neuroscience techniques to maximize the impact of digital advertising on human behavior, including electroencephalography (EEG) to monitor brainwaves in order to identify "three key measures of engagement: attention, emotion, and memory"; "facial coding" to capture a variety of emotions; and eye-tracking technologies to measure how individuals engage with visual content on screens.[77] Using these and other methods, marketers can design and refine advertising messages so they can trigger "attention processing" and embed themselves solidly into an individual's memory.[78] Through *emotion analytics,* marketers can determine how well a campaign leverages unconscious processes in consumers.[79] "Neuromarketing

services are available throughout the world, and are used by many companies to test ad techniques for products marketed to both adults and young people alike.[80] Digital marketers are also drawing on behavioral science to build features into online experiences aimed at directing user behaviors and influencing decision making. The tech industry uses the somewhat benign term of "persuasive design" to describe these practices.[81] However, many of these design interfaces fall into the category of *dark patterns,* especially when they are intended to "benefit an online service by coercing, steering, or deceiving users into making unintended and potentially harmful decisions."[82]

Measurement and analytics systems have also evolved considerably, and are now altering the overall operation of digital marketing, with increasing focus on children. Simple, one-dimensional measures such as "clicks," "likes," views, and

impressions are now only a tiny part of a highly complex system that includes detailed analytics covering the full range of a consumer's digital media interactions.[83] New metrics can monitor not only how a viewer responds to an ad, but also whether that same user purchased the product featured in the ad.[84] The media and advertising industries are exploring the creation of a new measurement standard designed to provide a "comprehensive view of cross-platform, digital and mobile measurement of content and ads among children and teens aged two to 17."[85] This information is used to develop effective models for targeting other young people. Measurement can follow users' movements, communications, and activities from moment to moment, measuring their reactions to various advertising and sales appeals so the ads can be adjusted seamlessly in real time. As a result, marketing techniques can be tested, refined, and tailored for maximum effect.

Redefining Contextual Advertising in the Big Data Era

When it was originally developed many years ago, *contextual advertising* in the online environment was a simple proposition. An ad would appear on a page that was connected to its content, often triggered by identifying keywords. For example, a news report that discussed dining out would have an ad for restaurants or a sugar-sweetened beverage. However, since contextual marketing did not facilitate the deep "engagement" and personalization possible with behavioral targeting and other data profiling techniques, contextual advertising soon fell out of favor in the digital marketing industry.

More recently, thanks to sophisticated algorithms and analysis, contextual advertising has become a much stronger—and potentially more intrusive—ad practice. It has been reshaped by artificial intelligence and machine-learning technologies so that marketers can "now discern web page sentiment, understand the nuance of language, ascertain the content and tone of images and video, and even automatically configure ad creative to complement context." A person can be targeted based on what the industry calls "sentiment"—where an ad appears along with content "whose mood or emotion resonates with a product or brand's values or ethos." Such targeting can be driven through an analysis of the emotions "expressed in images and videos," as well as understanding the "meaning" of what is written, which makes it very effective with today's online video and visually driven social networks.[86]

Google is adopting such an approach, explaining in the Fall of 2020 that "[a]dvanced contextual is the next generation of contextual targeting on YouTube. It uses Google's machine learning to better understand each channel on YouTube, including analysis of video imagery, sound, speech and text."[87] Google plans to use contextual ad applications to reach children, since under its recent settlement with the Federal Trade Commission for violating the Children's Online Privacy Protection Act, it announced it would no longer permit data-driven marketing on YouTube channels or content that target children 12 and under. SuperAwesome, now a division of EPIC Games (*Fortnite*), is just one of the companies that use contextual marketing to target kids.[88]

Digital marketers and tech companies claim that because contextual advertising is not personalized or data-driven, it is appropriate for targeting children, and an acceptable way of "monetizing" content. However, the role that sophisticated AI technologies play, including when they are potentially combined with such data-dependent approaches as behavioral targeting, suggests that regulators, scholars, and public health experts need to examine this practice closely to determine how it is being used, whether it functions as targeted or personalized marketing, and what its potential harms may be.

RESEARCHING DIGITAL NATIVES

The food and tech industries conduct detailed market research on so-called "digital natives," including monitoring young people's behavior on social media, mobile and other platforms, and employing ethnographers, psychologists, and neuroscientists to probe the inner workings of children's psyches and brain processes.[89] Marketing research firms are also creating private online communities where they are able to observe the digital behaviors of young participants.[90] Reports are routinely released that reveal the "Most Beloved Brands" and that incorporate dozens of elements to determine a "Kidfinity Score," a "proprietary measure of brand awareness, appeal and popularity among six-to-12-year-olds."[91] In its "Brand Love" study in 2020, youth market researchers Smarty Pants found that for children 6-8, their number-one favorite brand was McDonald's, followed by YouTube, Oreo, M&Ms and many other snack and candy products. For tweens 9-12 and teens 13-17, YouTube was in first place, with Oreo, Hershey's, Cheetos and Doritos among the top ten.[92] Google and Facebook have extensive research divisions, where they analyze young people's interactions with marketing.[93] Facebook IQ, the social network's market research arm, reported the results of a study it conducted with global parents to better understand "pester power," also known as the "nag factor."[94] The study found that children have greater impact today on family

purchasing decisions, including "38% of parents' decisions about quick service restaurants (QSR), 25% of decisions about non-alcoholic beverages, and 17% of decisions about packaged foods."[95]

TARGET MARKETING TO MULTICULTURAL YOUTH

Minority youth—particularly African Americans and Hispanics—are one of the fastest growing demographic sectors in the U.S.[96] As a consequence, the United States is becoming a "majority minority" country, where Black and Brown populations will be a numeric majority in just 25 years. How well brands engage with these young people could determine success or failure. Communities of color already have "buying power" of $3.9 trillion, and given their youth and life expectancy, these consumers have a higher "lifetime value" than "White Non-Hispanics," according to industry studies. Nearly half of Generation Z is made up of Black and Brown youth.[97] Marketers conduct intensive research to identify behaviors, values, popular celebrities, music genres, and other attributes of these "multicultural" youth, who are in the forefront of all the key digital behaviors—early and leading adopters of mobile device use, social media, online video, and gaming applications. As

McDonald's U.S. chief marketing officer explained, they "set trends" and "set the tone for how [companies] enter the marketplace."[98] As a 2018 report entitled "Descubrimiento Digital: The Online Lives of Latinx Consumers" observed, "In a period of population shifts, fragmentation, and intense competition for attention, Hispanics are using technology and social media to rewrite the rulebook. Their combination of relative youth, demand for cultural connectivity and nuanced content has placed Hispanics at the center of trendsetter culture."[99] Another study urged brands to target children in bilingual households as "sherpas," who can "translate the language, interpret brand and product purchases, and demystify new services and technologies" for their families.[100] Food and soft drink companies draw from an ongoing flood of market research to design the most powerful and effective *target marketing* campaigns for engaging with Black and Brown youth.[101] These aggressive marketing efforts can shape the preferences for unhealthy food and beverages, according to researchers, and exacerbate existing health disparities affecting communities of color.[102]

Major food and beverage companies, retailers, online platforms and advertising agencies—including Coca-Cola, General Mills, Kellogg's, McDonald's, Walmart, Google, Xandr

(AT&T), Omnicom and Publicis— have recently launched a new initiative to "elevate multicultural marketing effectiveness" through the Alliance for Inclusive and Multicultural Marketing (AIMM).[103] The alliance has developed a new metric—known as a "cultural insights impact measure," or "CIIM"—to assess how effective advertisers are with Asian Americans, Blacks, Hispanics, and LGBTQ communities. The CIIM score evaluates the "impact and effectiveness of cultural insights in ads and programming and how these have the potential to affect sales lift." Variables include "inclusion and acknowledgement, respect for culture, creates cultural pride and reflects cultural values, uses positive role models and provides for authentic cultural depictions." According to AIMM, those brands or products with a suitable CIIM score experience significant increases in two key marketing industry metrics—brand perception and ad effectiveness. AIMM's initial CIIM research assessed key segments of consumer buying from these groups, including foods and beverages (such as "regular Cola drinks, [but] not diet," and energy drinks). Among the brands that had their ads reviewed to see whether they achieved the objectives proposed by CIIM were Pepsi, General Mills, Kellogg's, McDonald's and Burger King.[104]

> *Marketing efforts can shape the preferences for unhealthy food and beverages, according to researchers, and exacerbate existing health disparities affecting communities of color.*

Food Insecurity, Racial Justice, and Industry Accountability

In a 2020 article in the journal Obesity, health researchers reported on the food industry's work to support international relief efforts, noting that many major companies—including PepsiCo, Coca-Cola, Burger King, and KFC—have contributed money, donated medical supplies, and distributed free food. While these corporations "have been applauded for their actions and have garnered massive public support," the authors also point out that the same companies "aggressively market ultra-processed foods and beverages" that are associated with obesity and other related diseases. Moreover, the food industry has repeatedly opposed attempts by the health sector to regulate marketing. "If large-scale preventive measures to reduce obesity and chronic diseases had been taken earlier, COVID-19 complications would not be as severe among people with these conditions, and health disparities would not continue to be widened," the authors argue. "If we wish to treat obesity seriously by promoting healthier environments and societies that can better respond to health challenges, such as the current COVID-19 pandemic, then there is no doubt that the food industry's strategies are working against this goal and should be effectively regulated."[105]

These concerns were echoed by a group of faith-based investors who sent letters in December 2020 to 21 companies, including Coca-Cola, Kraft, Unilever, Pepsi, Amazon, Dollar Tree and other food, beverage, restaurant and retail brands, as part of an initiative "meant to force a reckoning with how corporate policies and practices may reinforce systemic racism through the development and marketing of food and beverage products." One of the investors working with the Interfaith Center on Corporate Responsibility (ICCR), which led the effort, explained that "the economic and health distress caused by the pandemic only makes corporate responsibility around themes of nutrition and race more real and urgent." The investors asked "companies to examine how their business models, operations, and value chains may directly or indirectly contribute" to health inequities, and urged them to commit to developing accessible and affordable nutritious foods. ICCR and its allies, which represent more than $2 trillion in assets under management, urged the companies to curtail "manipulative and unfair marketing and promotion practices," including through the use of data and digital marketing.[106]

FOOD CORPORATIONS BECOME BIG DATA COMPANIES

Some of the largest food and beverage corporations—including Coca-Cola, McDonald's, and Pepsi—have, in effect, transformed themselves into Big Data businesses, acquiring specialist firms, establishing large in-house operations, and hiring teams of data scientists and technology experts to direct these systems. With these enhanced capabilities, they can more effectively engage in ad targeting— whether on the leading platforms or through their own mobile apps. For example, Coca-Cola North America has established its own Decision Science and Data Strategy Center of Excellence, which "analyzes all data captured across Coke's digital ecosystem."[107] As the senior vice president of strategy, planning, and decision science explained, the company, through its extensive data operations, is "embracing a full rethinking of how beverages are sold and delivered at every step of the supply chain."[108] Working with Google, the beverage giant is deploying artificial intelligence to help drive its digital marketing and loyalty programs.[109] Coke also operates over 40 interconnected social media monitoring facilities worldwide, which use AI to follow customers, analyze their online conversations, and track their behaviors.[110] All of this information flows continuously into Coca-Cola's data center, where it is mined for insights. "We have more data now than we have ever had in the past," explained the company's decision science VP, noting that "the key is figuring out what data you need and how to wrangle that data. This is where the real magic happens, and where we see so much potential growth."[111]

PepsiCo has made major investments in its in-house consumer data operations for North America, which analyzes information on consumers for its targeted marketing and media buying. A Pepsi executive explained that the company is

making a "significant change in how we really market to our consumers by building this direct, dynamic and intimate one-to-one relationships with billions of people globally."[112] It has developed a "fully addressable consumer database" (called "Consumer DNA") that enables it to "see a full 360 degree view of our consumers." With multiple data points on 110 million households in the U.S., Pepsi is able to develop personalized messages to reach people on all their devices and apps, such as when they are viewing streaming video or watching online games. It has invested in machine learning, AI and other technologies designed to measure audience behaviors more effectively, such as a new "ROI (return on investment) Engine." One of PepsiCo's Big Data platforms, called "Pep Worx," is a "cloud-based data and analytics solution that identifies valuable shoppers by location and develops insights to help retailers make decisions on things like product

assortment, merchandising, marketing and other needs at the point-of-sale." Pepsi has also developed a "cutting edge insights platform," known as CLEVr.[113]

McDonald's data operations have grown dramatically in the short time since they were established, "laying the human capital foundation for the data-driven future," according to the company.[114] Through its Silicon Valley-based "McD Tech Labs," the fast-food giant is working on data-science projects involving AI and machine-learning algorithms, natural language processing, and Big Data analytics to "transform the customer experience."[115] Its purchase of AI-based technology company Dynamic Yield expanded the fast-food giant's data portfolio to include a real-time "personalization engine" that can identify individual customers "across any channel, including web, mobile web, email, advertising channels, and apps," utilizing a spectrum of powerful tools, including data

tracking, predictive analytics and modeling, algorithm-based targeting, and measurement.[116] Powered by all these Big Data capabilities, McDonald's global mobile app is able to establish a direct link to each of its customers, anticipating their menu requests based on past selections and behaviors, targeting them with personalized offers, encouraging instant responses through mobile payment systems, and conducting in-store surveillance to document the impact of the marketing on actual sales.[117] In 2019, McDonald's made a significant investment in Plexure, a "mobile engagement" company specializing in giving QSRs the ability "to build rich consumer profiles" and leverage the data "to provide deeply personalized offers and content that increase average transaction value" and help generate other revenues. One of its specialties is designing personalized messaging that triggers the release of the brain chemical, dopamine.[118] (See sidebar, "Tapping the Plexure Principle.")

PART 2: TARGETING YOUTH ACROSS THE DIGITAL MEDIA AND MARKETING LANDSCAPE

The food and beverage industry is drawing from a growing arsenal of powerful tools in this vast digital marketing and Big Data system to reach and engage young people across the entire media landscape. In the following pages, we focus on three major arenas of digital culture that are having particularly powerful impacts on youth, commanding more of their attention, altering their behaviors, and attracting huge amounts of advertising dollars. Some of the largest purveyors of unhealthy beverages, fast foods, and snacks have moved aggressively into all three of these areas.

First, we investigate the lucrative "influencer economy," which has become a highly profitable sector of online marketing, with a growing number of entertainment celebrities, sports figures, and social media "stars" promoting junk food brands to their followers. Secondly, we explore the rapidly expanding online gaming and esports sector, which has, in many ways, subsumed and eclipsed other digital media platforms and services, and is quickly becoming an important forum for teen and youth culture. Finally, we examine the digital transformation of television, which now encompasses not only conventional broadcast and cable, but also streaming (known as "OTT," for "Over the Top"), as well as an expanding array of online video services. For clarity of explanation, we have written about each of these sectors of the industry separately, but, in fact, they work together as a system, where the lines between them are often blurred or nonexistent. This is especially true for young people, who see all media as part of their fluid 24/7 digital world. As we will show, the food and beverage industry is inserting its brands across this expanding, integrated system, seizing the powerful symbols of youth culture. Marketers are developing strategies and techniques designed to harness the unique capabilities of each platform and to tailor their efforts—and sometimes the products themselves—to the demographic characteristics and behavioral patterns of their young targets.[119]

THE INFLUENCER ECONOMY

In the fall of 2020, as many restaurants continued to struggle with financial hardships resulting from the coronavirus pandemic, McDonald's partnered with a popular rapper to launch a meal in his name and promote it to teens. The "Travis Scott Meal" combined "all" of the music artist's favorites —"a Quarter Pounder with cheese, bacon, onions and lettuce; medium fries with BBQ sauce; and a Sprite." The campaign was so successful that within a week, there was a shortage of ingredients for the meal at some of the fast-food chain's locations. McDonald's immediately followed the celebrity-endorsed meal promotion with another one on a similar theme, this time naming it after J. Balvin, the popular Reggaeton musician. The Big Mac, fries and Oreo McFlurry combo was offered at a special discounted price to make it more attractive to young people, who were also promised the McFlurry free of charge if they ordered through the McDonald's mobile app. Both campaigns included T-shirts and other branded merchandise featuring the musicians.[120] The marketing strategy paid off for McDonald's, not only increasing fast-food sales, but also helping to boost the company's stock price, generating a trove of valuable consumer data, and sparking major press coverage and social media publicity, including on Facebook's Instagram and the TikTok app. Some observers noted that the partnerships with the Black

pop culture icons may have been a PR strategy to detract attention away from two civil rights lawsuits filed against McDonald's for allegedly engaging in racial discrimination.[121]

Food and beverage companies have been using celebrities for decades to promote their brands. With the advent of digital media, the practice quickly migrated online, where the use of "brand ambassadors" for "viral marketing" became a core strategy for targeting young people. In recent years, the enterprise has grown exponentially, becoming a burgeoning "influencer economy."[122] According to the Association of National Advertisers (ANA), influencer marketing plays a fundamental role in "brand activation," which has become a $600 billion (U.S.) practice, where

marketers identify individuals to "act as drivers for brand preference and brand loyalty." Marketers spent around $9.7 billion (U.S.) for their worldwide influencer efforts in 2020, and are expected to spend up to $15 billion by 2022.[123]

The industry has developed a variety of ways for cultivating, categorizing, and analyzing influencers across the vast digital media ecosystem, enabling advertisers to gain easy access to just the right individuals in order to reach their target audiences.[124] In addition to paying pop culture celebrities to endorse a brand or product, marketers also tap into the growing army of social media "stars" who have built up large followings on Instagram, YouTube, TikTok and other platforms. The industry labels these individuals

"macro-influencers." As "digital celebrities," they are widely known within youth culture and are highly valued for their ability to "speak authentically to their communities," pitching a range of products, including cosmetics, clothing, soft drinks, fast-food, and snacks, sometimes even creating their own branded lines of merchandise.[125] According to the Business Insider website, Emma Chamberlain is among the top ten influencers that teenagers like to follow, and "one of the most talked-about Generation Z-aged influencers," who managed to amass over 100 million subscribers on YouTube in only two years. She hosts her own "vlog," where she posts commentaries on her daily life "that teen girls can relate to." Another on the list is Kylie Jenner. Part of the popular "Kardashian-Jenner clan,"

Granular Tracking of Influencers and Influenced

As the influencer economy continues to grow, it has amassed a huge global infrastructure comprising boutique and well-established agencies, buying platforms, and specialized measurement applications that provide a range of influencer-marketing services.[126] Advertising technologies now make it possible to document the actual impact of an influencer's commercial promotion efforts on their followers' brand loyalty, purchases, and other desirable behaviors.[127] These include granular measures of user reactions to determine the exact number of "engaged minutes" and levels of "passion points" in a user's interaction with an influencer. "In 2018, influencer content generated 72% of all total actions (post-level Likes, Reactions, Shares, Comments, Retweets) taken by consumers across brand content on Facebook, Twitter and Instagram in the US," reported Admap, an advertising research publication.[128] Engagement measures have become particularly important in the Covid-19 pandemic,

as more and more consumer interactions have shifted online, where their responses to brand promotions can be tracked even more closely than before.[129] Linqia is an "influencer platform" whose clients include McDonald's, Unilever and Walmart. It offers them an "Intelligence Suite" that measures a wide spectrum of specific actions by consumers that can be attributed to their engagement with influencers. These include the use of artificial intelligence to analyze "how consumers interact with every post," what products they buy, what programs they watch on streaming TV, and what stores they visit.[130] The marketing industry has also invested in neuroscience technologies to assess brain activity from test subjects viewing TV, watching YouTube or interacting with their Facebook and Instagram feeds. One study found that influencer ads overperformed TV ads for "emotional intensity" and impression on memory, which "correlates to future action and decision making."[131]

she first came to fame when she was 10 years old. Now in her early twenties, she has become "one of the most popular stars on Instagram." Her make-up brand, Kylie Cosmetics, is reportedly worth $900 million.[132]

YouTube has attracted a growing enterprise of so-called "kidfluencers," young children who have their own (though often parent-run) YouTube channels on which they promote a variety of products—from toys to movies to junk food—to their followers, which can be in the millions.[133] So-called "unboxing" videos, which feature young influencers simply opening a package to reveal a toy,

development. Bloggers and digital cultural celebrities serve as powerful role models for youth as they explore their own identities.[137] Marketing researchers explain that influencers and their publics are connected by "parasocial" relationships, where an individual viewer (or social media user) becomes attached or emotionally involved with a media personality. Researchers have found that even though these mediated relationships are one-sided, they can be "intense" and long-term for the fans of celebrities.[138] Young people (Gen Z) prefer to learn about products and services from their "relatable peers," who "bring real, earned credibility to brand

sponsorship opportunities…. Share branded content and earn money based on the performance of your post."[140] These "rising star creators" aspire to join the lucrative ranks of the "macro-influencer" class, where they may also enjoy the glamour-filled group lifestyle of so-called "collab houses."[141]

Marketers also routinely seek out what they call "micro-influencers," social media users who have not earned celebrity status, but have established enough followers, often in a niche content area, to make them attractive to brands. Micro-influencers "dominate Instagram influencer marketing."[142] "Social Media Command Centers" are key tools for identifying the right micro-influencers in order to trigger "brand activation" among a broad swath of users.[143] These automated systems conduct "social listening" to analyze and influence online discussions, flagging expressions of positive or negative "sentiment" as well as a range of emotions, such as "anger, fear, disgust, joy, surprise, sadness," and analyzing the images that users incorporate into their discussions, including "logos, objects, actions, scenes, facial characteristics."[144] Through this detailed surveillance process, brands are able to build "buzz" for products, reward online supporters, and assess the effectiveness of their ad campaigns in order to change them in real time (called "in-flight").[145]

> **Children and teens are particularly susceptible to influencer marketing, which taps into their psycho-social development.**

game, or other child-oriented item, have attracted huge numbers of children who watch to share in the excitement.[134] EvanTube HD, considered a "macro-influencer" in the business, hosts his own show demonstrating and consuming various products.[135] Another highly successful YouTube influencer is 8-year-old Ryan Kaji, whose "Ryan's World" channel reportedly earns more than $20 million per year in advertising revenue, and generates more than $200 million in retail sales of branded merchandise.[136] (See sidebar: "The Kidfluencer Platform.")

Children and teens are particularly susceptible to influencer marketing, which taps into their psycho-social

endorsements."[139] Using influencers also enables marketers to bypass ad-blocking technologies and thus overcome anti-advertising attitudes of young people. Influencers help ensure that the branded material is considered "authentic" content that can be "woven seamlessly into the daily narratives" shared on social media. Many youth, especially those who are "content creators," seek to become influencers themselves, lured by offers from the burgeoning influencer marketing agency business, with promises to "Monetize your content, creativity, and influence in the industry's largest social media influencer marketplace. Connect with brands, advertisers, and publishers for

Leading food and beverage companies have long been in the forefront of influencer and other social-media marketing strategies. Their campaigns draw from a

growing arsenal of sophisticated techniques and advertising technologies, often working with specialized companies that identify and enlist key influencers to promote brands.[146] PepsiCo is pouring "more and more dollars into the digital influencer space," which it views as an essential investment, explained one of its executives in 2019. This includes not only partnering with well-known influencers and celebrities to promote the company's soft drink and snack food brands, but also recruiting users and turning them into "brand advocates."[147] By methodically scouring social media, the company can see "how their brands show up in the lives of everyday consumers.… When

we find organic traits we celebrate them," said one Pepsi executive, "we leverage them, and we encourage them.…"[148]

Some of these influencer campaigns are designed to enlist armies of social media users to serve as viral spreaders for the brand. For example, PepsiCo drew from its close monitoring of social media users to launch an "experiential campaign" promoting its crinkly corn snack, Cheetos. As a PepsiCo executive explained, the idea stemmed from fans sending the company "thousands of images" of individual Cheetos that resembled a variety of discernible objects—"animals, people, even American presidents." Social media users were already sharing these images with their friends and

acquaintances, and even creating Instagram pages devoted to them. The company tapped into these user-generated activities to amplify them further, "inspiring people to find shapes in their Cheetos," and then taking them "from the social media space into the real-world by creating a physical museum of Cheetos shapes," according to an industry account of the campaign. This "activation" turned the organic image sharing into a "trending topic," and generated 23 million video views. The branded museum attracted 10,000 visitors who viewed the 127,000 shapes that had been submitted for display. The company took this "brand experience" even deeper. Asserting that customers wanted to "look like a Cheeto"

Tapping the *Plexure* Principle

Quick service restaurant chains (QSRs) and other fast-food outlets, including McDonald's, White Castle, and 7-Eleven, are partnering with mobile technology specialist Plexure, which uses artificial intelligence and machine learning to "enable the delivery of deeply personalized compelling offers," that drive "desirable behaviors" and create what it calls "magical moments between brands and consumers." By using Plexure's personalization software, QSRs can "pinpoint exactly what your customers want, resulting in deeply tailored engagement," automating the ordering, payment and even the delivery process. Plexure claims that its ability to generate personalized marketing delivers a dose of the brain chemical dopamine to customers. As it explains in promotional materials, "the more personalized the marketing content, the more meaningful it is to the individual and therefore the more likely it is to trigger a dopamine release and bring pleasure.… That's where Plexure comes in, helping brands pinpoint consumer desire." To generate "predictive profiles," Plexure's tools enable fast-food restaurants and convenience stores to

conduct "transaction analytics," using data from in-store sales, mobile payments and e-commerce. Its "segmentation analytics" can produce a wealth of data, including "expected lifetime value, loyalty, buying behaviors, [and] location," as well as details on customer engagement behaviors like "app activity, tray and basket value, loyalty status and device interaction." The process Plexure uses incorporates loyalty programs and gamification elements to shape the psychology of the individual so they want to engage and "play" with the interactive elements available in the app, encouraging repeat purchases and "keeping the customer's heart and mind firmly committed to the brand." A QSR mobile app can leverage Plexure's insights to deliver offers and recommendations that are "personalized for each individual person, and timed to perfection." Plexure says its system helps consumers "imagine their life with the particular product featured in the offer or recommendation… and triggers dopamine, which instigates the purchase process."[149]

and "be a Cheeto," it deployed AI technology to create a special app, called Cheeto Vision, that enabled the product's fans to "transform their world" into a branded environment.[150]

Instagram has assumed a central place in the influencer economy. "Almost all (93%) influencer campaigns use Facebook-owned Instagram," reported one industry study, "about twice the share of Google's YouTube and Facebook's main social network."[151] "Every social platform attracts influencers to some degree," explains Business Insider, "but Instagram is the gold standard for the group," noting that "nearly four in five (79%) brands predominantly tap Instagram for influencer campaigns."[152] According to the most recent figures tracked by industry, global marketers spend about $7 billion on Instagram influencer campaigns, and the figure was expected to reach more than $8 billion by the end of 2020. For users, this translates to more than 5 million

"brand-sponsored influencer posts."[153] And the investment appears to be paying off: "92% of all Instagram users say they've followed a brand, clicked on their website, or made a purchase after seeing a product/service on Instagram," according to one industry survey.[154]

Teenagers are particularly avid users of the popular photo and video-sharing platform.[155] Globally, 72 percent of teens use Instagram, and 57 percent of U.S. teens report that it is their preferred social media platform, with 73 percent of them saying that Instagram is "the best way for brands to reach them about new products or promotions."[156] While many of the published industry studies of Instagram marketing are careful not to mention teens as the actual target market (preferring to use the term "millennials"), there is little doubt that their campaigns have been carefully designed to appeal to youth under 18 as well as to young adults.

Along with many other youth marketers, food and beverage brands have flocked to Instagram, developing innovative influencer campaigns, and working with the tech giant to take advantage of the platform's many unique features.[157] One Facebook report, "Quenching Today's Thirsts: How Consumers Find and Choose Drinks," found that "64% of people who drink carbonated beverages use Instagram for drinks-related activities, such as sharing or liking posts and commenting on drinks content," and more than a third of them report following or "liking" soft drink "brands, hashtags, or influencer posts."[158] Facebook's internal "creative shop" has helped Coca-Cola, PepsiCo, Unilever, Nestle and hundreds of other brands develop global marketing initiatives to promote their products across its platform. The division specializes in "building data-driven advertising campaigns, branded content, branded entertainment, content creation, brand management, social design," and similar efforts.[159] Facebook promises "precise targeting" and access to extensive and granular information on its millions of Instagram users. This includes a full menu of dimensions, such as behaviors ("Define your audience by activities they do on and off of Instagram and Facebook"), interests ("Reach people based on interests like apps they use, ads they click and accounts they follow"), and through the use of "automated targeting" (based on "a variety of signals including location, demographics and interests").[160]

PepsiCo's FritoLay division turned to both Facebook and Instagram

for a U.S. Super Bowl influencer campaign. The goal was to "run an Instagram ad campaign to reach more snackers, boost brand awareness and increase sales of its Doritos Cool Ranch tortilla chips before, during and after the Super

> Facebook has been working closely with food marketers to perfect the use of Stories, enabling them to insert their marketing messages into Instagram's visual narratives.

Bowl." The campaign partnered with singer/songwriter Bebe Rexha to promote several new "time-limited" flavors "inspired" by Pop, Hip Hop and Rock, and commissioned her to "sync the flavors up with original music" she was asked to write. The effort incorporated extensive data collection through a contest and an online "digital companion series" to the TV program The Voice, available on Facebook, YouTube and other channels.[161]

One particularly popular format for marketers is Instagram Stories. The feature, which launched in 2016, allows users to upload and share video or photo collections, along with drawings, stickers, emojis, and other content.[162] Facebook has been working closely with food marketers to perfect the use of Stories, enabling them to insert their marketing messages into Instagram's visual narratives. The company's market-research division, Facebook IQ, commissioned MetrixLab to "learn how people in the US responded to 30 Instagram Stories ads from CPG brands." Its research showed

that brands like "…Kettle Chips and KFC are already seeing brand lift from using Facebook Stories ads." The Stories feature also lends itself to what the industry calls "native advertising," which involves incorporating brands seamlessly

into digital content. For example, Chester Cheetah—the animated icon for Cheetos, whose antics have entertained young people for decades—has now been transformed into an "Instagram creator," telling his own "stories" along with millions of other users on the platform.[163] Coca-Cola promoted a series of "fidget toys" that mirrored Instagram Stories so consumers could "play" with the brand, including a "Tap to Drink" feature that runs a "video of Coke disappearing and allows you to do a Coke-drinking play."[164]

One of the latest innovations on Instagram is *shoppable* content, a service also offered by Pinterest, YouTube, and a growing number of social media platforms. It takes advantage of what marketers are calling "visual shoppers," and is becoming a core strategy for influencer marketing. When a photo or other image of a brand is promoted by a celebrity, "macro-influencer," or "micro-influencer," social media users can make an instantaneous purchase without having to go to another site.

Known as "Social Commerce," the integration of the shopping and buying experience is part of a long tradition of marketing techniques designed to spark impulsive purchases. This includes "direct-response" advertising on television, where viewers are urged to "call now" to order the product. The digital version of the practice is rapidly expanding across the social media ecosystem. Facebook's new "Facebook Shops" feature is designed to "connect customers to brands," including on Instagram, enabling marketers to use its promotional tools, such as Stories, posts, and "calls to action." Google's "shoppable ad units are served up based on a user's browsing and search words," with product images available for the YouTube homepage, the Gmail promotion inbox and other properties. According to the tech giant, "50 percent of online shoppers said images of the product inspired them" to make a purchase.[165]

THE EXPANDING ONLINE GAMING UNIVERSE

In 2018, PepsiCo's Mountain Dew brand launched a new energy drink specifically "designed with gamers in mind." Each 16 oz can of MTN DEW Amp Game Fuel delivers a powerful "vitamin-charged and caffeine-boosted" formula, whose ingredients of high fructose corn syrup, grape juice concentrate, caffeine, and assorted herbs "have been shown to improve accuracy and alertness." The can itself features a "no-slip grip that mirrors the sensory design of accessories and hardware in gaming." It is also "easier to open

and allows for more uninterrupted game play."[166] Mountain Dew spent 40 percent of its marketing budget that year targeting games, including "sponsoring eSports entities such as the *Call of Duty* World League." The soft-drink giant launched a special live event that paired six popular young influencers from the online gaming world—including Hector Rodriquez, known as "H3CZ," Michael Grzesiek, pen-named "Shroud," and Seth Abner, called "Scump"—with celebrities from sports, entertainment and music (such as Karl Anthony Towns, T-Pain and Blake Anderson) to compete for a charity prize pool in games of *Modern Warfare* over a five-hour broadcast streamed live on the Twitch gaming platform. "By leveraging such a wide range of talent, we were able to bridge the worlds of gaming and traditional entertainment to reach a massive mainstream audience," explained Paul Mascali, PepsiCo's head of Esports and Gaming.[167] In addition to *Call of Duty*, the brand partnered with other popular online gaming enterprises, including Team SoloMid and Counter Logic Gaming, as well as major esports competitions.[168] To attract influencers, it was featured on Twitch's "Bounty Board," a one-stop-shopping tool for "streamers," enabling them to accept paid sponsorship (or "bounties") from brands that want to reach the millions of gamers and their followers.[169] Amp Game Fuel was also named "the official energy drink of Twitch Rivals, an esports tournament series featuring streamers and pro players."[170] The launch of the new energy drink through its powerful alliance with the gaming world "helped the entire Mountain Dew soda brand regain its market share," according to one industry trade publication. PepsiCo CFO Hugh Johnston claimed that the product was in such high demand that the company was unable to keep the brand's specialty caps in stock.[171]

The Kidfluencer Platform

Marketers have labeled the youngest generation of children—those born between 2015 and yet to be born in 2025—as "generation Alpha." As a recent industry report explained, "Mostly the progeny of tech-savvy millennials, they live in a digital second skin and take for granted a connected world in which they have 24-7 access to a constant flow of information. Equally important—even though they're barely old enough to cross the street unaccompanied—they have an adult-sized influence on their household's purchasing behavior." While many of them are attracted to Instagram, the best way to engage with the youngest children, according to marketing experts, is through YouTube. "And the key to winning Alphas' attention on that site," noted one executive, "is through a variety of 'kidfluencers,' or video stars as young as 3 years old, who have millions of loyal viewers. Alphas love to watch as their favorite YouTubers take them through different experiences, often accompanied by sampling different products." Influencer marketing on YouTube is part of Google's revenue strategies.[172]

A recent study published in the journal *Pediatrics* examined the content of YouTube kid-influencer channels, finding that food and beverage products were featured prominently in them, with 90% of videos that featured food and/or drinks promoting unhealthy branded products. They were viewed as many as 1 billion times, generating 2.6 million likes on the platform.[173] There is also emerging academic evidence that influencer promotion of unhealthy food and beverages affects the eating behaviors of children. In one study, for example, researchers randomly assigned children between the ages of 9 and 11 to mock Instagram influencer profiles by two popular YouTube celebrities, with one group exposed to promotion of healthy snacks, another to promotion of unhealthy snacks, and another to promotion of nonfood items. When subjects' food intakes were measured, the impact was clear: "Children who viewed influencers with unhealthy snacks had significantly increased overall intake, and significantly increased intake of unhealthy snacks specifically, compared with children who viewed influencers with nonfood products. Viewing influencers with healthy snacks did not significantly affect intake."[174]

Online gaming has become a hugely successful and growing industry that has attracted a youthful global audience.[175] According to a 2020 report by marketing research firm Kantar, 64 percent of Americans play video games, which have "evolved from a niche pastime to one that includes a broad swath of the American population…." Kantar defines gamers for its U.S. research as "Americans 12+ who play video games" and consider gaming to be a "favorite activity."[176] Gaming generates more revenue than TV, film or music, attracting viewers and players who are "highly engaged for a considerable length of time." Revenues from the total gaming industry were slightly more than $120 billion worldwide in 2019.[177] YouTube currently has "more than 200 million gamers a day watching more than 50 billion hours of gaming content per year."[178] More than three-quarters of 10-12-year-olds also view online gaming content on YouTube and other popular sites.[179] According to one report, "the preteen gamers of today will turn into a significant part of the larger gaming audience,

and their preferences now will impact the games market for years to come."[180]

The gaming ecosystem encompasses a wide range of formats, platforms, and genres. Players can still access videogames on standalone consoles like Sony PlayStation and Microsoft Xbox, but mobile games are now considered "by far the most popular form of gaming," according to industry reports, with 2.4 billion people playing them in 2019, mainly on smartphones, and

generating revenues of $68.5 billion globally.[181] While mobile games are played mostly by amateurs, esports are "multiplayer video games played competitively for spectators by professionals."[182] Comscore estimated that in 2020, brand sponsors and advertisers were expected to spend $1.5 billion on esports, noting that 65 percent of U.S. households own a device on which games can be played, and that there has been significant growth in the amount of time spent with gaming since 2017.[183]

Never Stop Gaming but Keep Eating

In December 2020, Wendy's partnered with "five of the biggest Twitch streamers," as well as food delivery app Uber Eats, to launch its "Never Stop Gaming" menu, promising "five days of non-stop gaming, delicious meal combos and exclusive prizes." Branded meals were created for each of the five streamers, who offered their fans the opportunity to order directly through their Twitch channels and have the food delivered to their doors. For

example, "Hafu," a young Chinese-American streamer whose real name is Rumay Wang, and who has a million followers on her channel, promoted the "itsHafu Meal," which included a "Baconator, small fries and a Sprite." In addition to "epic giveaways," such as gift cards, gaming hoodies, and a "next-gen gaming console," the five-day promotion also featured "the ultimate gamer, Wendy," participating in the "Twitch action."[184]

Fans have been flocking to Twitch, where an increasing number of live esports events are featured."[185] Originally launched in 2011, and acquired by Amazon in 2014, Twitch has become a highly successful sports and gaming

platform.[186] According to Business Insider, "Twitch has partnered with gaming companies like Blizzard Entertainment and Overwatch League to host worldwide gaming and esports events exclusive to the platform."[187] Twitch is also home to a booming enterprise of amateur online gamers who see themselves as "entertainers," "creating content for an audience who enjoys watching," which is one of the latest and most consequential trends in the industry. While not professional, these gamers—also known as "streamers"— are good at what they do, and they can attract tens of thousands of fans who like to see them play.[188] They broadcast their "feeds" on

personal channels available to them on Twitch, where "fans watch and interact through chat windows and other platform features that allow them to have 1:1 communication with the personality they follow, as well as with fellow fans."[189] As of February 2020, Twitch was reported to have a total of 3.8 million unique streamers.[190] According to the World Advertising Research Center (WARC), streaming is the "new prime time" for young audiences.[191]

The ability to attract large numbers of young people is only one of the many features of today's videogames that have made them so attractive to advertisers. "Contrary to the traditional stereotype that gaming is solitary and antisocial," explained one marketing study, "multiplayer games… are highly social environments that encourage collaboration, conversation and real-life connections."[192] Many teens and young adults report that they

are building friendships through their online involvement as gamers or spectators.[193] "Advertising inside games offers all the same advantages as social media— targeting, measurement and increased brand awareness—but with greater creative freedom and a more immersive environment that garners focus and attention."[194] Video games employ state-of-the-art animation, high-definition video, virtual reality, and other immersive multi-media applications to create three-dimensional experiences that can have powerful effects, including fostering "intense focus, loss of self, distorted time sense, [and] effortless action."[195] The rapid-paced, highly competitive nature of games can produce an ongoing adrenaline-infused, continuing state of engagement, keeping both gamers and spectators tethered to them for long periods of time. The American Psychiatric Association has created a special category for "Internet Gaming" in its *Diagnostic and Statistical Manual of Mental Disorders (DSM-5),* listing it along with other "addictive disorders, such as alcohol, tobacco, stimulants, marijuana and opioids."[196] But as mental health professionals worry about the addictive nature of videogames, marketers see it as a particularly powerful attribute. A recent report on the future of gaming by Omnicom Media Group noted that "addictive games dominate the gaming sphere," driven by "addictive mobile apps." The report predicted that gaming will further grow in importance as a powerful medium, and will "swallow" other media, such as film and music. As it evolves,

"it will cease to be about gaming or computerized competition. Instead we will see the rise of Immersive Culture."[197]

Today's online videogame environment is part of a growing Big Data advertising technology system for tracking and targeting individuals.[198] Multiplayer online battle arena (MOBA) and first-person shooter games are considered one of the best marketing environments, offering a wide range of techniques for "monetization," including in-game advertising, sponsorship, product placement, use of influencers, and even "branded games" created by advertisers.[199] Digital advertising in games can be purchased using programmatic data-targeting services, reaching specific individuals across their various

devices; ads can also be bought to target gamers throughout a particular gaming event ("pre/mid/post roll"). Additional revenues are generated through "in-app purchases," sales of other products, and also through "reward-based" games, where players receive some form of compensation for viewing an ad.[200] For the period between July and September 2020, Activision Blizzard earned $1.2 billion from these various forms of in-game "microtransactions."[201] Through its mobile game division, the company offers "rewarded videos," where a player agrees to see an ad "in exchange for a power-up or life—handy if stuck on a difficult level."[202] In the parlance of gaming, a "power up" is "an object in a video game which instantly adds to the life, armor, strength or score of a player."[203] A "life" is basically

another chance for your character to remain in the game instead of "dying."[204] Both can be highly attractive incentives to gamers in the heat of action, triggering instantaneous decisions.

Influencers are also a prominent feature in the online gaming world.[205] Gaming and esports provide marketers with the ability to work directly with "streamers," who are regularly playing games on Twitch and other platforms, as well as with esports players and teams that have scheduled competitions. In the esports marketplace, for example, brands can work with "game publishers, leagues, competitions, platforms, teams and players/influencers.... [E]ach league and each game can have its own fan demographics." Many esports

Twitch—The Ultimate Influencer Platform

Twitch promotes itself as "the ultimate influencer marketing based platform." According to its market research, 64 percent of its users "purchase products recommended" by Twitch gamers. It has become a powerful tool for advertisers who want to reach teens and young adults. "More than half of all Twitch users are between the ages 18 to 34," explains its online media kit, "and 14% are ages 13-17."[206] In a presentation made available to *Advertising Age*, the company explained that "at any given time there are over 1.6 million people watching live on Twitch," and that its "massive reach" in the U.S. brings 45 million unique visitors each month, watching "380 million hours."[207] Twitch has built a strong advertising infrastructure, including a 60,000-plus panel of its users that, in exchange for game currency, provide

their insights related to such metrics as "intent to purchase, use or recommend." Its Bounty Board offers an automated self-service tool for matching influencers with brands. As the platform explains, "Twitch handles the relationship with the brand and finds sponsorship opportunities for you. Twitch will also handle your payments, so you can concentrate on streaming and growing your community."[208] The platform offers advertisers a full complement of tools for reaching and engaging users, including "unskippable" ads across a variety of platforms and devices.[209] The food industry has become the "most active category of Twitch sponsorship," with brands such as KFC, Hershey, Burger King and PepsiCo's Mountain Dew partnering with video game companies and influential streamers to cross-promote products.[210]

organizations have entire rosters of key influencers who regularly stream on Twitch and/or post their videos to YouTube. Some have an audiences in the millions.[211] Popular gamers are now part of the influencer economy, packaged and pitched by the same companies that create TV shows, movies and commercials. *Ad Age* reports that "Hollywood

named the "official non-alcoholic beverage" of the Overwatch League in 2019, enabling the company to promote itself in the league's 20 franchises.[215] Coca-Cola has described gaming as a "priority" for implementing what it terms its "passion-point strategy" designed to leverage different varieties of entertainment for its brands. As

Logic Gaming (CLG) announced a partnership with Pepsi in 2018.[218] "In conjunction with its annual convention, TwitchCon, the platform hosted Doritos Bowl—an event where top Twitch streamers competed in the new Battle Royale mode of Call of Duty: Black Ops 4 - Blackout. While the event physically happened on-site at TwitchCon, its larger footprint—and hence the majority of sponsorship value for Doritos—came via the network of streamers who broadcast the event live, reaching across the vast Twitch audience base."[219]

> **Coca-Cola was named the "official non-alcoholic beverage" of the Overwatch League in 2019, enabling the company to promote itself in the league's 20 franchises.**

talent agencies are wooing gaming stars like never before, betting they can lead a new generation of celebrity endorsers for mainstream brands." The largest agencies in the entertainment industry—which include Creative Artists Agency (CAA), WME, United Talent Agency and ICM Partners—"have been building up their gaming divisions for years, aiming to sign competitive esports athletes and streamers who play on major platforms like Amazon's Twitch or Google's YouTube." As David Freeman, co-head of digital at CAA told the trade publication, "Gaming already rivals professional sports and music in terms of the power of its stars."[212]

Food and beverage companies have rushed to enter the online gaming space.[213] Both Coca-Cola and Pepsi, for example, have partnered with gaming outlets, promoting events, holding "viewing parties," and developing drinks and packaging targeted to its fans.[214] Coca-Cola was

a Coca-Cola executive explained at the 2019 Consumer Electronics Show (CES), the company wants to "talk to the next generation of drinkers. This is where they are." It's not just shooter games open to brand support. "Brand Coca-Cola was integrated into *Cooking Fever*, a culinary game that has been downloaded more than 200 million times... [and judged] especially useful... to boost meal-time consumption." Coca-Cola has also sent "influencer boxes" to key gamers that included "games, Coke products and 'great swag.'"[216] Dr. Pepper featured the faces of players of the popular *Fortnite* game on its bottles, with an announcement on Twitter that this campaign resulted in "the most engaged tweet" the soft-drink company had ever experienced. When one of the leading game streamers did an "in-stream shout out" about the bottles, the message went "viral."[217] The North American esports organization Counter

Online gamers and esports fans are prime targets for snack, soft drink, and fast food brands, all products that lend themselves to uninterrupted game play and spectatorship. For example, Snickers, which is owned by Mars, recently "ramped up" its promotional efforts "to reach the esports audience that largely consist of Generation Zers, 74% of whom say they often snack between meals, per a study by the Institute of Food Technologies."[220] The candy brand became the "presenting sponsor of the Madden NFL 20 Club Championship, an esports tournament hosted by video game maker Electronic Arts," and was "featured in highlight packages and branded studio segments during the tournament on Twitch, YouTube and the ESPN mobile app...."[221] Snickers also sponsored a "player's lounge where 32 competitors, each representing a real NFL team," could ready themselves for the tournament, about which ESPN 2 aired a one-hour special in December 2019.[222] Hershey's KitKat, similarly, was "the official candy sponsor of Immortals

Gaming Club's (IGC) *Overwatch* League franchise, The Los Angeles Valiant," which worked together to create "original digital and social content" as part of its 2019 deal.[223]

Fast-food restaurant chains have eagerly embraced gaming, offering rewards to Twitch aficionados who engage with a "live streamer's event" and seamlessly integrating their brands into virtual gaming worlds.[224] In 2018, KFC created a separate division called KFC Gaming, which offers opportunities to engage with the brand via games, as well as through promotions on Twitter, Instagram and YouTube. The company has integrated the KFC name into a number of online gaming products, including *Minecraft*,

where gamers are encouraged to make KFC "builds" and share them with others. It also released its own branded "I Love You Colonel Sanders Dating Simulator Game."[225]

Of all the food and beverage products heavily marketed through online gaming, the one category that is most directly tailored to the lifestyles and behaviors of young players is energy drinks. Even the product formulations themselves are designed to facilitate and enhance game playing, with marketers promoting them as "gaming fuel." The long list of brands includes GFUEL, Red Bull, Monster, Mountain Dew's Game Fuel, Coca-Cola's Coke Energy, along with a number of less-well-known products.

A key ingredient is caffeine, which it said to help release dopamine and adrenaline, among other effects.[226] According to the National Institutes of Health (NIH), nearly a third of teens between the ages of 12 and 17 consume energy drinks regularly. "About 25 percent of college students consume alcohol with energy drinks, and they binge-drink significantly more often than students who don't mix them." While these popular beverages are "promoted as products that increase energy and enhance mental alertness and physical performance," their dangers have been well-documented by scientific studies. The NIH reports that a growing body of scientific research has established a number of harmful

Blurring the Lines Between the Game and the Real World

The nature of the online gaming environment offers a variety of opportunities for what digital marketers call "blurring the lines between the game and the real world." This is particularly important for reaching and engaging gamers, who are considered particularly averse to more traditional forms of advertising, especially if it interrupts the gaming experience. There is a growing infrastructure of companies that specializes in delivering "in-game" ads directly to gamers, with cutting-edge methods to ensure the marketing blends in seamlessly with the play experience. For example, ad agency giant WPP provided venture funding to Anzu.io, a programmatic ad gaming company, whose partners include PepsiCo. Anzu.io's advertising technology system enables brands to engage gamers with immersive programmatic ads, inserting "blended banners or videos on any object in the game," and creating "interactive in-game experiences that are highly personalized and user-initiated."[227] What this means in lay person's language is that an advertiser can use the technology to find and follow a specific individual in the midst of playing a game, or as he or she moves

from game to game. That person can then be "targeted" with a branded logo or compelling video that has been integrated directly into the game itself. The practice is the twenty-first-century version of product placement, with all the bells and whistles of data-driven advertising technology. So, for example, a vending machine might appear amidst the action, inviting the player's avatar to partake of his favorite soft-drink brand. According to Anzu. io, these "creatives can be dynamically updated during the game session," which means that the ad content can be altered instantaneously based on a player's response, in order to maximize effectiveness, a practice known as "dynamic in-game advertising."[228] The intense popularity of mobile games has opened up a wealth of opportunities for marketers, enabling them to target players based on their actual location, the time of day they are playing, and a host of other granular variables. For example, "GPS-based mobile game Pokémon Go lets small businesses pay to feature their real-world locations in the game (giving players extra opportunities and items), helping drive real-world traffic to physical locations."[229]

effects produced by the popular drinks, especially for children, teens, and young adults. These include heart rhythm disturbances, increased blood pressure, anxiety, sleep problems, and dehydration.[230]

Despite these health concerns, energy drinks are aggressively marketed in the online gaming and esports industry. One of the most popular brands is Red Bull, which scored significantly high recognition from gamers, according to a recent survey, in part due to its "League of Legends World Championship and sponsorships of the eSport teams G2 and Cloud9." Red Bull's website features extensive esports-related content, including connections to its own Twitch and YouTube gaming streams. The brand has worked with the gaming industry since 2006, investing $578 million in 2018 alone.[231] Expanding far beyond the beverage business, the company now operates its own

media production and distribution enterprise, the Red Bull Media House. "Red Bull has been able to blur the boundaries between entertainment and marketing," explains digital marketing company Econsultancy, noting that it "focuses on sports, culture and lifestyle content across TV, digital, audio, and print and produces and licenses a broad selection of global live events, compelling and inspirational local storytelling with original short and long-form programming—in addition to feature films...." Red Bull's YouTube channel, which has more than 8.5 million subscribers, "generates millions of impressions," and has focused on community-management strategies for social media that help it "immerse in conversation with their audience."[232] Red Bull has also turned its attention to TikTok, the highly popular video-sharing app that has attracted huge numbers of teens

and youth. Its TikTok "Dance Your Style" competition is a "a virtual replacement to live events that Red Bull typically hosts in dozens of cities worldwide," according to industry trade reporting. "TikTok users can enter for a chance to win by uploading a 30-second video of their street dance moves and selecting the song 'Get Loose Now' by the Black Eyed Peas as the soundtrack."[233]

Red Bull recently partnered with Tyler "Ninja" Blevins, who is recognized as "the most popular gaming influencer in the world with over 13 million followers on Twitch, over 21 million YouTube subscribers, and another 13 million followers on Instagram."[234] The campaign included creation of a special "limited edition" Red Bull Energy Drink Ninja that is sold in four-packs and 12-packs. The high-profile effort is designed to boost consumption even further for Red Bull, which sold more than 7.5 billion cans worldwide in 2019, including 356 million in the U.S.[235]

Coca-Cola entered the energy drink business in 2019 with its "Coke Energy" series of flavors. The drink contains caffeine, B-vitamins and, in its sweetened versions, high fructose corn syrup. It quickly signed on as a sponsor of the Pittsburgh Knights esports team, which agreed to promote the products with a variety of content. Coca-Cola also created a sweepstakes for its energy drink and a special bottle tied to the esports *Overwatch* League, which give the brand "exclusivity" to its 20 teams, its annual "BlizzCon" event and a guarantee that "Coke

> *Food and beverage companies are developing campaigns that are designed to create a seamless experience of viewing, ordering, and consuming their products.*

products will be served" at events controlled by the games developer—Activision Blizzard.[236]

PepsiCo has a very long track record of highly sophisticated digital media and marketing campaigns targeting young people.[237] For years, the company has partnered with gaming platforms and well-known games, such as *Halo*. Its "E-Sports and Gaming" division has developed a multi-pronged strategy to leverage the power and influence of the gaming environment to promote its portfolio of soft drinks, snack foods, and other products.[238] Notably, its "Amp Game Fuel" drink is specifically designed for the gaming community. In 2019, MTN Dew, and its Pepsi-owned Doritos chips, offered *Call of Duty* fans the ability to "unlock in-game rewards" inside the latest edition of *Modern Warfare*. Game fans were urged to purchase MTN Dew and Doritos products that contained unique codes on their packaging, which could then be used to access the game features. A major component of the campaign was the "MTN DEW AMP Game Fuel Celebrity PRO-AM," which featured "gaming professionals with celebrities in an adrenaline-inducing experience that highlights the new 2v2 game mode in Call of Duty: Modern Warfare."[239]

MTN Dew Game Fuel's unique easy-open product design is emblematic of one of the core strategies of food

and beverage marketing on gaming platforms, which is to ensure that the advertising (and in this case the product consumption as well) do not interrupt the game play. Gamers who stock up on multi-packs of their favorite beverages and snacks can be assured of a steady supply as they play. With the growth of ecommerce, food and beverage companies are developing campaigns that are designed to create a seamless experience of viewing, ordering, and consuming their products. Among MTN Dew's key targets are "core gamers"—defined in part as those who "rely heavily on the Internet," including ordering food and groceries online.[240] Mountain Dew, which has had its own branded store since 2015 on Amazon.com, has already integrated this strategy into much of its own marketing efforts. In a campaign that won the mobile marketing "Smarties" award, the company combined a number of elements in order to trigger gamers to add the products to their Amazon baskets. These included "content and activations" using team sponsorship, a tie-in with a "high-profile" event, "product integration within live broadcasts" on Twitch, YouTube, Twitter and other social media, along with a blitz of activity across media platforms, including "TV commercials, live streams, video series, social posts from teams and leagues, a showcase at one of the biggest esports events in the

world." The effort also incorporated data-targeted ads in order to "reach gamers on mobile, desktop, and connected TV/Xbox," using "triggers" based on gamers' online behaviors to encourage them to make instantaneous purchases.[241]

Amazon-owned Twitch is in a particularly advantageous position to take advantage of these new ecommerce marketing strategies to reach and influence gamers. And food companies have been quick to join the effort. In September 2020, Amazon announced that its Twitch subsidiary was now integrated into its powerful ad platform: "we are combining Twitch's hard-to-reach and highly-engaged audiences with Amazon Advertising's integrated full-funnel advertising offering.... Advertising on Twitch will now have the added benefit of Amazon Advertising's unique audience insights and measurement for their campaigns."[242] *Ad Age* reported that brands "like Chipotle, Hershey and General Mills see the potential of working with Twitch to reach its audience of hardcore gaming fanatics, and now there is this new channel emerging that could tie major brand campaigns on Twitch to direct sales through the traditional online ad marketplace run by Amazon.... Brands can tap Twitch for more custom ad campaigns that leverage its audiences and video stars (the influencers), and they can run traditional digital media through Amazon."[243] Twitch is also working with chicken-wing chain Wingstop to make it easy for "fans to choose their meal directly within the platform, all without leaving their couch—or favorite live stream."[244]

Wendy Fights the Freezers in *Fortnite*

A recent campaign by the restaurant chain Wendy's is a good example of how important the gaming world is to the food industry's efforts to reach and engage young people. As explained in a published case study, "it's no wonder the national brands all want into the realm of gaming—where millions of prime customers mingle, play, and influence each other." Wendy's decided to incorporate its brand into the popular game *Fortnite* because it has "become a veritable hive for 12-24-year-olds." A key goal was to garner the attention of gaming influencers, "who post to some of the biggest fan followings in the world." *Fortnite's* "interactive 'Battle Royale' format allows players around the world to team up for search and destroy missions," and its latest "Limited Time Mode (LTM) game" was conveniently called "Food Fight." The campaign was built around Wendy's "rallying cry" that its hamburgers were made with "fresh, never frozen, beef." The "star" of

the game was the brand's highly familiar animated brand spokesperson, "a kickass character who happened to have red hair and pigtails... ignored all the rules, and pursued a mission aligned with Wendy's mantra." Instead of "taking out other contestants," her goal was to unleash her "fury" on virtual freezers found in the game: "For nine hours we streamed our destruction of any and all beef-laden freezers." The gimmick quickly went viral. "When gamers, Twitch streamers, and top gaming influencers realized what Wendy's was doing, they spread the word...." This effort generated significant attention—with more than "1.5 million minutes" watched on *Fortnite*, and with a Twitch stream viewed 250,000 times; "mentions of Wendy's increased by 1189% across social platforms," achieving 23 million media impressions involving TV and newspapers, as well as gaming publications.[245]

GENERATION STREAM

Coca-Cola announced in 2019 that it was putting renewed effort into its target marketing of Fanta. The fruit-flavored, sugar-sweetened soft drink had fallen out of favor in the U.S. in recent years, while remaining popular with Hispanic consumers outside of the country. "Now Coke thinks the brand can be a hit with the burgeoning Hispanic population in America," reported a retail trade publication.[246] Fanta's marketing is also focused intensely on teenagers. Concerned that teens "are drinking less soda," the company developed a comprehensive media campaign aimed at fostering "an ongoing conversation with teen consumers through digital platforms."[247] While tapping into a wide range of social media, including Instagram, Facebook, Snapchat, and Twitter, the

soda company placed a laser focus on how teens are consuming video. The company made a clear decision to shift its marketing budget "away from linear TV," explained one of its executives, "to target Gen-Z teens where they are today."[248] And that included YouTube as well as a growing array of streaming television systems, such as Hulu, Roku, and Crackle.[249]

The centerpiece of Fanta's "It's a Thing" campaign, which launched in July 2020 across five major urban U.S. cities, was a set of four online videos. Each video was focused on one of the brand's most popular flavors— Orange, Pineapple, Strawberry and Grape—and each of the flavors drew from extensive market research on the target teen demographic. As the Coca-Cola website explained, "'It's An Orange Thing' is inspired by teens' enthusiasm and passion seen

on social media; 'It's A Pineapple Thing' embraces teens' bold confidence and love of retro gaming; 'It's A Strawberry Thing' is powered by teens' love for music discovery; and 'It's A Grape Thing' is all about self-expression." The videos featured compelling imagery and sound. "From a convenience store dripping with orange flavor and its own DJ cat, to an 8-bit videogame-ified pizza parlor, the digital films transport fans to parallel universes of their favorite hangout spots, made more extraordinary and fantastic once a Fanta is opened." The campaign also involved Snapchat's augmented-reality technology. "Fanta is leaning into the world of augmented reality in an incredibly original way," explained a Snapchat executive, "bridging the gap between [a] user's physical and digital worlds by providing immersive AR experiences

that empower users to be creators themselves."[250] To trigger word-of-mouth and activate potential teen influencers—named "subcultures" by Coca-Cola—the campaign created a "Finsta" on Instagram for

each flavor. In the teen Instagram universe, "Finsta"—a combination of the words "fake" and "Instagram"—is used to describe a "fake Instagram," a secondary account to a user's "real" Instagram account (which is known as a "Rinsta"). Young people often set them up to create alternative online spaces to their more public profiles. As one online marketing blog explained it, "a Finsta is a chance to share a goofier, less-edited version of yourself with a trustworthy group of friends—and for those friends to see less 'perfect' posts, and more real ones."[251] Fanta tapped into this digital culture phenomenon to create special branded Instagram accounts, which were "populated with hidden

content and experiences that can only be discovered via Easter eggs hidden in posts on Fanta's official Instagram profile." The campaign also used photos created by the fans of the various flavors, added

"zany illustrations," and posted them "on the Fanta Instagram tagging that fan." As of November 2020, Fanta's Instagram account had 524,000 followers.[252]

The Fanta campaign illustrates how contemporary marketers are harnessing the immersive powers of streaming television and online video to engage young people across a variety of digital platforms. Streaming is now the dominant way that young people consume video, comfortable with the anytime and nearly endless options available that can quickly be accessed on their mobile devices, gaming consoles, personal computers, and online

connections to their TV sets. (The industry uses a number of terms to describe the various types of streaming video in today's media marketplace. For example, OTT, which means "over-the-top," refers to television programming that comes to viewers through their TV sets, but relies on the internet instead of broadcast airwaves, coaxial cable, or satellite receivers for distribution. (See sidebar, "The Alphabet Soup of Streaming Video.") According to the most recent industry figures, 45.7 million Gen Z viewers regularly watch streaming television.[253] Hulu, which launched in 2008 and is now owned by the Walt Disney Company, calls these viewers "Generation Stream." The company has started a new research initiative aimed at "deeply understanding the power and impact of the streaming movement and the generation of TV viewers reshaping how we watch TV."[254] Its website features an ongoing flow of research and insights on the psychological and social meanings that members of the streaming generation derive from their viewing experiences, along with commentary from leading advertising industry specialists to help marketers tap into this lucrative demographic. "Streaming is a self-exploration process for Gen Zs," it explains, "who use content to help define who they are and what they stand for. Zs see themselves in the complexities of characters' identities, push for cultural connectedness, and seek content that deepens their niche interests." They also like to binge watch, and create their own customized television "networks"—

Mobile Ordering: The New Normal

Mobile ordering of food and beverage products was already growing prior to the health crisis. Fast-food restaurants have invested in developing branded apps that help trigger increased sales, while also enabling greater data collection, personalization, loyalty programs other promotions. Among the brands that offer mobile ordering are McDonald's, Dominos, Burger King and Wendy's.

The pandemic has spurred the growth of mobile ordering, including through food-delivery companies such as DoorDash, Grubhub, Postmates and Uber Eats. Sales levels predicted for 2023 for these services—what the food industry calls "third party marketplaces"—were achieved in 2020, as a significant number of Americans placed orders from home. The result, according to Business Insider, was "skyrocketing volume."[255]

Fast-food companies have begun investing in and partnering with these food delivery ventures to ensure their brands and products are prominently promoted. For example, McDonald's "McDelivery" service offers easy access to food delivery by both Uber Eats and DoorDash. To launch its partnership in 2019 with DoorDash, McDonald's made one million Big Macs available for only 1 cent, along with a mobile app sweepstakes with a top prize of $1 million. According to its recent IPO filing in November 2020, DoorDash has "partnerships with over 175 of the 200 largest national restaurant brands," including Wendy's, Chick-Fil-A, Chipotle, Wingstop and McDonald's.[256]

Yum Brands, which owns KFC, Pizza Hut, Taco Bell and the Habit hamburger chain, made a nearly $200 million investment in Grubhub in 2018, which it sold in 2020. Its financial relationship with Grubhub is aimed at ensuring that Yum Brands gets preferential treatment for customer ordering, delivery, and the ability to "engage in joint marketing initiatives that will generate new diners and drive order frequency for existing diners." In 2020, Yum

> *Fast-food restaurants have invested in developing branded apps that help trigger increased sales, while also enabling greater data collection, personalization, loyalty programs other promotions.*

announced a deal with DoorDash, which offered its customers a limited period to receive delivery of KFC bucket meals for free.[257]

Restaurants are also expanding to Internet-of-Things devices, such as Amazon's Alexa and Google Home, to enable seamless voice-command requests to trigger fast-food purchases. Amazon technology now enables the voice of "Col. Sanders" of KFC to speak via Alexa to take additional orders. Google has also added food-ordering capabilities into its Search, Maps and Assistant applications. Coca-Cola's "Vending Pass" is a digital loyalty card that one can add to online payment services, such as the Apple Wallet or Google Pay. It enables seamless buying at special vending machines and includes a reward program to earn free drinks.[258]

Coca-Cola North America is expanding the availability of its products, as well as its financial and technological relationships, through a new "Digital Marketplace" for food service companies. Coca-Cola is providing restaurants technology solutions for their entire operations, developed by a company called Omnivore, in which it had invested in 2018. This initiative, Coca-Cola explains, is to provide a set of solutions so restaurants don't have to "research, test, integrate and deploy the right technologies" to ensure they can affordably adopt online functionalities, including third-party delivery, loyalty programs, drive-thru operations, and digital menus. Customers of Coca-Cola will be able to access the new marketplace for free, and get preferred treatment when purchasing various technologies. Through the Omnivore system, all of a restaurant's data are integrated. Coca-Cola envisions this service as a 21st century version of its branded cash registers and Coke signs seen at restaurants. The company will potentially be able to brand itself throughout the many digital touchpoints with restaurants that have become increasingly visible in consumers' lives.[259]

"constellations of fandom that reflect personalities and tap into a deep need for human bonding."[260]

Streaming video and its various related digital platforms have become a gold mine for marketers. The coronavirus has helped boost the trends that were already underway in the industry. In early 2020, as American families turned away from pay TV channels to cheaper options, they found themselves stuck at home and spending many more hours viewing television. As a consequence, despite the recession, the industry has seen its fortunes grow. According to e-Marketer, "ad spending will still witness a 27.1% year-over-year (YoY) increase in 2020... a much greater increase than seen in other digital channels."[261] In the U.S., OTT use has grown from nearly half of the population to more than 67 percent, some

225 million people, according to research conducted by Information Resources Inc. (IRI). Ad-supported video streaming is now outpacing the growth of subscription and other non-advertising-funded OTT services (though non-ad-supported services still have more viewers).

According to the Spanish-language TV network, Univision, Hispanics are leading the rest of the U.S. population when it comes to watching OTT programming—79 percent of Hispanics are streaming, compared with 68 percent of the general market. Hispanics also heavily rely on mobile phones to view video content—spending "71% more time per week"—than non-Hispanics. Univision offers "advanced advertising capabilities across connected television and streaming devices, and can "target consumers based on geography,

demographic and viewing behaviors with access to 90 percent of all of the Spanish-language inventory in the U.S. marketplace."[262]

Video is now considered to be the most effective method for delivering marketing.[263] A host of new advertising formats has been developed for digital video, ranging from the familiar bumper ads or pre-rolls that show prior to viewing video programming, to short, six-seconds-or-less mini-commercials, to "non-skippable" ads that are designed to thwart consumer efforts to avoid commercial messages.[264] Marketers can now find precise demographic and individual targets nearly everywhere they go, 24/7.[265] One leading OTT advertising company informs clients that with streaming video and connected TV, marketers can "zero in on specific audience segments on a home-by-home basis,

The Alphabet Soup of Streaming Video

The expanding video landscape includes a number of different platforms, services, and technologies, each with its own set of terms—such as "OTT" and "streaming"—which are often used interchangeably. All of them are illustrative of the dramatic transformation of television in the Big Data digital era. According to an eMarketer Insider Intelligence report, "connected television," or CTV, refers to a "TV set connected to the internet through built-in capabilities or through another device such as a Blu-ray player, game console, or set-top box (e.g., Apple TV, Google Chromecast, Roku)."[266] SVOD and AVOD stand for subscription video on demand and ad-supported video on demand; the former requires a monthly fee, while the latter is "free," since it is funded by commercials and other marketing.[267] Ad-supported streaming content, which is

free to viewers, is also being driven by the growth of what is called "cord-cutting," as more Americans cancel their paid TV subscriptions. These insider acronyms represent a sea change in how nearly all TV and video programming reaches Americans and others throughout the world. Contemporary television, including much of broadcasting, is now data-driven, highly targeted, and operating "cross-platform," which includes TV sets, PCs, mobile devices, and gaming consoles. It is also fully integrated into today's "Adtech" economy, through the use of high-speed computers, sophisticated data-mining, machine-learning and artificial intelligence applications. Many TV sets sold today come equipped with technology that tracks users' viewing patterns and other behaviors, transmitting this information back to streaming companies and advertisers.

> *An ad for a soft drink or snack, strategically inserted into a "pause" could prompt viewers to pass through the kitchen on the way back to the TV.*

allowing them to cater their message to the right viewer at the right time."[268] Mobile video is one of the most powerful and rapidly growing digital marketing formats. According to research cited on Facebook IQ, social mobile video strategies are particularly effective for promoting consumption of soft drinks, beer, and other beverages.[269] A 2018 report that analyzed 100 campaigns for their effectiveness showed "video—either online or TV—to be the dominant lead medium and key to emotional creative strategies," and particularly effective for "encoding" brand messages into a consumer's memory.[270]

Food and beverage companies are allied with ad agencies, tech companies, and marketing platforms to take full advantage of the multiple opportunities for targeting consumers across the digital video spectrum. For example, the MAGNA agency, the "global media and data arm of Interpublic Group," is working both with Google's YouTube and streaming device and programming company Roku to allow its clients—which have included Coca-Cola, the Hershey Company and Dunkin Donuts—"to reach viewers who have shifted their TV consumption to digital video."[271] Such OTT video "far outpaces" traditional TV in marketing done by food, beverage and quick-service restaurants, among other consumer products.[272] Faced with subscription streaming services that currently do

not allow direct advertisers, food and beverage companies are seeking ways to promote their brands through alliances with Netflix, Hulu, and other OTT outlets—including product placement and the use of branded content. Coca-Cola and KFC were able to insert their products into the popular Netflix series *Stranger Things*, for example. Cereal, fast-food and snack companies are also working with Hollywood intermediaries to place their products into streaming content.[273]

Marketers are devising new techniques tailored to the unique behaviors of streaming viewers. For example, Coca-Cola is partnering with Hulu on a variety of pilot ad efforts, including the use of "pause marketing." As explained in the Interactive Advertising Bureau's

(IAB) guidebook, "OTT Streaming Video Playbook for Advanced Marketers," pausing in the midst of seeing video is a frequent viewer practice, with "more than a billion pauses among viewers" each month on Hulu's ad-supported television stream. "To capitalize on this, Hulu is allowing brands to advertise within the paused environment." The guide illustrates how the technique works with a product like Charmin (toilet paper): "when you hit pause, copy will appear for Charmin that says, 'Need a break? Enjoy the go!' It's contextually relevant."[274] An ad for a soft drink or snack, strategically inserted into a "pause" could prompt viewers to pass through the kitchen on the way back to the TV.

New video ad formats also allow virtual brand images to be inserted into the content and tailored to specific viewers. "Where one customer sees a Coca-Cola on the table," explained a marketing

executive, "the other sees green tea. Where one customer sees a bag of chips, another sees a muesli bar… in the exact same scene."[275] This technique takes advantage of "addressability," which the industry defines as the "ability to target a message to a device, browser, segment, and/or individual… [to] show different ads to different audience segments watching the same TV program."[276] Combined with advanced data targeting and measurement, it is a feature of streaming video and other digital TV formats that advertisers find particularly valuable. PepsiCo is

our audiences."[277] PepsiCo also relies on its own internal data services to determine the best ways to reach its most desired consumers. The "PepsiCo Rating Point system [uses] purchase data layered on with social data, emotional data" to create a "propensity model" identifying "which network and which show" specifically attracts the buyers of its many brands, such as Doritos.[278]

YouTube itself has long featured branded channels operated by all the major food and beverage companies. For example, Coca-Cola's channel has 3.4 million subscribers; Pepsi has

snacks. Its marketing campaign relied on 30-, 15-, and 6-second ads, which were created with Google's "Directors Mix" tool, generating 110 different ads that could be delivered over YouTube. The campaign generated more interest in the product and won a "Gold" award from the Advertising Research Foundation.[280]

Although some marketers say they use child-appropriate digital advertising tools, the systems they employ are very complex and opaque, combining data analytics, machine learning, and other powerful applications, which are capable of targeting individual children.[281] WildBrain, for example, one of the leading providers of ad-supported digital programming aimed at children, offers advertisers its WildBrain Spark, which it describes as "an unparalleled platform for advertisers to drive audience engagement and amplification of brand messages… [using] proprietary analytical tools and the opportunity to create, promote and distribute custom content." The result, it claims, enables "one of the largest kids' AVOD [ad-based video-on-demand] networks with deep engagement and scale—800+ channels, 650 brands on YouTube reaching 240 territories in 30 languages," with a "growing presence" on Roku, Amazon, Apple and others. Another ad-supported children's OTT (and mobile) service is Kidoodle.TV, which works with General Mills and has allied itself with "revenue amplification" specialist Playwire. Playwire enables advertisers on Kidoodle to

> **"Where one customer sees a Coca-Cola on the table,"
> explained a marketing executive, "the other sees
> green tea. Where one customer sees a bag of chips,
> another sees a muesli bar… in the exact same scene."**

among the many food and beverage companies taking advantage of this advanced technology to target youth. With young people flocking to streaming TV services, Pepsi has "sped up shifting marketing investments away from linear media and toward streaming and digital platforms as the coronavirus pandemic wears on." As a Pepsi executive told a Roku-sponsored panel in October 2020, "we're really excited to see how much more addressable we can be in the way that we're targeting our consumers" on Roku and other streaming services, including "how much more we can leverage the data that we have in our arsenal to be more prescriptive with the messaging that we're delivering to

851,000; both McDonald's and KFC have 437,000. There one can stream the latest commercial, music videos and product offerings.[279] Those audience totals do not account for all the sponsored and influencer content that is on the YouTube site. Kellogg's is spending more of its ad budget on YouTube and other digital platforms, including efforts to revive interest in its Rice Krispies Treats snack. The company worked with Google to analyze "trillions" of search results in order to find "a new way to make a strong connection with parents." Discovering "a clear linkage between school snacks and lunchbox notes," Kellogg's redesigned its packaging to allow parents to insert their own hand-written messages into the sweet

"monetize" their content to reach a "massive" audience of children and parents.[282]

Like gaming and other digital platforms, online video and streaming services are converging with media, marketing, and retail sales. Ecommerce companies such as Amazon now share their valuable search, shopping, and ordering data with the food and beverage industry. This has enabled marketers

essentially 'win' search in that category on Amazon and end up as the first result...." Hershey's also made use of "impulse buy" strategies on the Amazon platform, including "cart intercepts," which prompt a customer to "add in snacks as the last step in their online shopping trip, mimicking the way someone might browse for candy during the checkout at a physical store."[283] Amazon's own OTT service, Fire

2,800 Kroger stores" to use with Roku's nearly 40 million customers, and provides food, beverage and other CPG advertisers a "closed loop" to see how exposure to OTT ads are linked to actual sales. "TV streaming brings digital-like precision to the big screen," explained a Kroger Precision Marketing official.[285]

> *Ecommerce companies such as Amazon now share their valuable search, shopping, and ordering data with the food and beverage industry.*

to sell directly to young people and their families as they view video content. For example, Hershey's has been working closely with Amazon to market its candy products via streaming video, as well as through its own ecommerce marketplace. In a case study published online, Amazon explained that "...as viewing consumption began to fragment, the brand [Hershey's] realized it was no longer able to reach its audience with linear TV alone." Amazon gave Hershey's access to its storehouse of data so the candy company could market its products on Amazon's streaming services, such as IMDbTV. Amazon allowed Hershey's to use Amazon's data to ensure the candy brands would "be positioned to

TV, partners with food and beverage brands, enabling them to "share their brand story at scale to over 40MM+ monthly active viewers of ad-supported OTT content." Through the ecommerce giant's ad system, advertisers can "leverage billions of Amazon's first-party insights to go beyond demographics and better understand their potential audience."[284]

Roku, which provides an array of streaming children's programming, recently allied with supermarket and grocery data giant Kroger so that brands can target supermarket shoppers while they watch streaming on its service. The partnership brings "data from 60 million households across nearly

As powerful new forms of video advertising continue to reach and engage young people across the media landscape, and the online and retail sectors merge even further, food and beverage marketers see increased opportunities for directly influencing buying and consumption behaviors. Teens 13-15 are a "distinct and influence audience," according to SuperAwesome, a KidTech company that is now a part of Epic Games (*Fortnite*). They have intense brand loyalty (71 percent more loyal than older teens and adults) for many popular brands, such as Pepsi. And they have "90% influence on what fast food and groceries" are purchased for the home. SuperAwesome urges companies to "adopt an aspirational approach" that lets teens "make their own purchasing decisions," pointing to programs such as "Amazon Teen," which enables teen buying with a parent-controlled account.[286]

PART 3: THREATS TO YOUNG PEOPLE'S HEALTH, PRIVACY, AND AUTONOMY

We have been able to provide only a partial picture of the extensive marketing directed at young people across the expanding digital landscape. From what we have documented, it is clear that the world's largest food and beverage companies, in full cooperation with the global giants of the technology industry, are deploying a vast array of Big Data and AdTech tools to tap into the online cultural spaces inhabited by youth, and to infiltrate these spaces with powerful promotions for some of the most unhealthy products on the market.

Major purveyors of sugar-sweetened beverages, high-calorie snacks, and fat-laden fast foods are forging lucrative financial arrangements with a growing army of "influencers"—from widely recognizable celebrities to popular social media personalities—to tout their brands among their youthful followers. In the midst of a worldwide pandemic, as gaming and streaming platforms have replaced live concerts and sports events to become a central social forum for children, teens, and young adults, the food and beverage industry has developed a panoply of techniques to ensure that its brands remain omnipresent: popping up in virtual narratives, "starring" in their own epic online battles, and beckoning amateur "streamers" with promises of sponsorship

deals. Fast foods are directly incorporated into the storylines of "game play" and made available for order and delivery in the heat of the experience, promising instant gratification and short circuiting conscious decision making. Even the products themselves are being shaped to fit the patterns of digital experience, with energy drinks promoted as "fuel" and containers designed for ease of opening and non-stop consumption. The transformation of television into an expanding universe of digital streaming channels, online video platforms, and mobile devices has created a multitude of new ways for food marketers to reach and engage members of "Generation Z" through compelling, immersive imagery and sound across their

viewing experiences, using artificial intelligence and machine learning to tailor these messages to individual youth.

Based on the industry's own research, the impacts of this pervasive marketing are significant, influencing young people's behaviors, sowing the seeds of life-long "brand loyalty," and ensuring that product logos are distributed across a wide spectrum of social networks and entertainment venues. This ubiquitous promotion of unhealthy foods and beverages in the digital lives of young people could further normalize harmful eating preferences and practices. The growing use of predictive analytics, neuroscience, and dopamine-inducing message testing suggests that food marketers are purposefully designing campaigns to trigger unconscious, impulsive responses.[287] The rise of "shoppable content" and other ordering mechanisms embedded directly into media and social interactions could further exacerbate these impacts, enabling manipulation, and seriously undermining any efforts to encourage conscious health choices.

Food marketing is also part of a massive global commercial surveillance system with unprecedented scope and reach into the center of young people's lives.[288] The food and technology industries engage in continuous monitoring of children and teens, following their every move throughout the digital culture—their interactions with friends and acquaintances, their

engagement with a growing array of digital devices and platforms, and their emotional and behavioral relationships with brands—and amassing enormous amounts of granular data about them. The largest food and beverage corporations have developed their own internal Big Data operations, enabling them to reach directly into young people's lives, interacting with them through branded mobile apps, tracking their geolocation, purchasing, and eating patterns, and rewarding them for consuming unhealthy products.

The effects of all these trends are particularly concerning for youth of color. For decades, they have been disproportionately targeted with marketing of unhealthy food and beverage products on television, billboards, and other media.[289] The growth of digital technologies has intensified these efforts, with marketers pursuing these young people even more aggressively, seeing them as a key to the future success of their brands, as well as important trendsetters among their peers. Food and beverage brands are appropriating some of the most powerful "multicultural" icons of youth pop culture and enlisting these celebrities in marketing campaigns for sodas, "branded" fast-food meals, and caffeine-infused energy drinks. These practices compound health risks for young Blacks and Hispanics, who already suffer from obesity and other nutrition-related diseases at significantly higher rates than others in their age group. Increased exposure to digital marketing of unhealthy foods subjects them to multiple layers of vulnerability, reinforcing existing patterns of health disparity that many of them experience, which include living in under-resourced communities, and lacking access to fresh food and health care services.[290] Big Data

operations also pose significant harms to youth of color. A growing body of academic research has documented how these systems can lead to disparate impacts on communities of color, low-income groups, and other vulnerable members of the population.[291] For example, studies have shown that algorithmic decision making may disproportionately affect members of already disadvantaged groups.[292] Predictive analytics and personalization enable marketers to treat individuals or groups of consumers differently, which can result in various forms of marketplace discrimination.[293] These issues take on even greater significance when examined within the context of historical discrimination and the inequities over time.[294]

Most digital marketing takes place completely under the radar of parents, policy makers, and health professionals. Unlike television, for example, where commercials can be monitored and analyzed, "native advertising," "influencer marketing," machine learning, and many other techniques enable brand promotion and marketing to be woven seamlessly into young peoples' digital ecologies and everyday experiences. Because marketing campaigns are cross-platform in nature, they can be directed to individuals across multiple devices, following users from mobile phone to television to gaming services, and targeting them in real time. With personalization techniques, marketers can tailor their messages to individuals, creating hundreds of variations. Yet, the entire enterprise

remains opaque, highly complex, and inaccessible to outsiders. Neither technology platforms nor food companies provide clear data on their techniques, their exact demographic targets, or the impacts of their efforts. Though some information about industry practices is available through trade publications, case studies, and other white papers, much of the language is arcane and technical. This lack of transparency stands in stark contrast to the industry's highly sophisticated and proprietary measurement systems, which enable food companies, tech platforms, advertising agencies, and retail outlets to track in granular detail the reach and influence of marketing techniques on users, including the impact on their behaviors, attitudes and purchasing patterns.

Geolocation Junk Food Campaigns

Young people are avid and habitual users of mobile phones. According to the latest study by Pew Internet & American Life, "95% of teens now report they have a smartphone or access to one. These mobile connections are in turn fueling more-persistent online activities: 45% of teens now say they are online on a near-constant basis."[295] Digital marketers have determined that some people check their phones 150 times a day, and that 87 percent have such devices with them all day long, even while they sleep.[296] Marketers describe the relationship that consumers, especially young people, have with mobile phones as "addicted."[297] A recent article on Instagram Business, "Raising A Glass To Mobile: How Smart Devices are Redefining the Beverage Industry," reported that "just like the beverage decision itself, mobile is both impulsive and social."[298] The widespread adoption of mobile phones

and apps have given marketers not only the ability to reach someone "on the go," but also to capitalize on their movements throughout the day. Mobile devices send signals that enable advertisers to take advantage of an individual's location data—through the phone's GPS (global positioning system), Wi-Fi and Bluetooth communications, proximity to cell towers, and its Internet Protocol (IP) address. As a result, marketers can now track and target consumers with unprecedented speed and precision, reaching and engaging them while they are shopping in a store, driving a car, and even as they pull into a parking lot.[299] Retailers, grocery, and convenience stores, brands and quick-service restaurants have all adopted new ways to use the data generated by smart phones and other mobile devices.[300]

Neighborhoods and communities have been digitally "sliced and diced" through the use of mapping and database software, creating geo-data-rich profiles.[301] Geolocation targeting involves extensive and detailed analysis of the "places" that people visit, generating new insights to help food and beverage companies reach their customers more precisely.[302] "Place data" can include the characteristics of a neighborhood, such as its ethnic/racial mix, income level, customer information from loyalty programs, and online tracking information.[303] A specific store is mapped through the use of a "complex polygon" or a "circle" that precisely reflects its locational boundaries. As consumers enter these specific areas they can pass through a *geofence*, an invisible online perimeter that triggers ads and coupons to be delivered via mobile devices.[304] Facebook's restaurant guide encourages restaurants to use its "radius-based targeting" and "area targeting" tools to reach an "on-the-go audience at their 'point of hunger'—in the few hours leading up to when they make decisions about where and what to eat" when they are near one of the restaurant's locations.[305] Other types of geolocation techniques are being used to help market food and beverage products. One practice is the use of "digital billboards." Known as "Digital Out of Home (DOOH)," these displays can deliver data-driven messages to individuals within the proximity of a billboard, and the impact of the marketing can be tracked through a new generation of "mobility analytics."[306]

Through branded mobile apps, fast-food companies are transforming their relationships with consumers, offering new tools such as advance ordering and delivery, mobile payments, and highly personalized loyalty programs. As one leading digital marketing trade publication explained, "mobile advance ordering is turning every QSR into a take-out business, while app-based delivery turns every dine-out venue into a QSR competitor for convenience."[307] Facebook has positioned itself as a key marketing resources for QSRs and other restaurants, in the U.S. and globally. It recently published a brief guide called "Digital Commerce for Restaurants," which features how they can work with Facebook to find people to download their ordering apps and also how to use its Messenger app to generate food and beverage sales.[308]

Burger King has made the use of geolocation strategies a core part of its campaigns, especially against rival McDonald's. The QSR's "Whopper Detour" promotion in 2019, which relied on geolocation and mobile marketing, "rocked the burger chain's ordering app to the top of the app download charts within a couple of days of its launch." Burger King geofenced the 14,000 U.S. McDonald stores that triggered an offer to purchase its Whopper for only one cent, available to anyone who had the Burger King app on their device. Not only did this effort generate significant "free media" on TV and in print, but it also led to increased sales, store visits, and millions of app downloads. In Mexico, Burger King analyzed real-time traffic jam data to identify where people were stuck in traffic within a few miles of one of its restaurants. Working with Google's geolocation mapping subsidiary, Waze, as well as data gathered by its own app, Burger King was able to inform its customers how long they would have to deal with serious congestion. They could then order food—using a new "hands-free" order service on the Burger King app—and have it delivered directly to their vehicles. The campaign also used digital billboards that told those customers how long it would take to get their orders. An estimated "one million delivery-prone, hungry, frustrated drivers viewed the Waze banner ads and push notifications" each week during the promotion.[309]

> *Burger King was able to inform its customers how long they would have to deal with serious congestion. They could then order food—using a new "hands-free" order service on the Burger King app—and have it delivered directly to their vehicles.*

PART 4: GROWING MOMENTUM FOR REGULATION

In the midst of an ongoing childhood obesity crisis, the U.S. has instituted only limited safeguards for children, which are highly inadequate in this rapidly expanding, high-tech, Big Data food marketing system. In 2005, the Institute of Medicine (IOM, now known as the National Academy of Medicine) released a groundbreaking report documenting widespread marketing of unhealthy food and beverage products to children on television, summarizing the research on its harmful impacts, and calling on the industry to make changes or face government regulation.

In response, the Council of Better Business Bureaus established a self-regulatory program, the Children's Food and Beverage Advertising Initiative (CFBAI).[310] The program has evolved over the years to include 19 food, beverage and fast-food restaurant chains, who agree either not to advertise their products to children at all, or to limit their advertising only to products that meet CFBAI's "Uniform Nutrition Criteria."[311] While the self-regulatory regime has had some success in reducing children's exposure to food-related advertisements, mainly on TV, its nutrition standards are weak and its scope is narrow, applying only to advertising "primarily *directed* [emphasis added] to children" under 12, not what is *seen* by those children.[312] The guidelines have

recently been updated to encompass various forms of digital advertising—including paid product placement and influencers—but it remains unclear whether they will be able to curtail many of the widespread practices we have documented in this report.[313] And they are not designed to protect any child 12 or older.

Over the years, government attempts to establish stronger food-marketing safeguards for U.S. children have been thwarted by a succession of high-pressure industry lobbying efforts.[314] In the wake of the IOM report, the Federal Trade Commission (FTC) conducted periodic workshops and studies of food marketing to young people, including reviews of food

industry advertising expenditures and self-regulatory programs. Some of these efforts continued during the Obama administration, when First Lady Michelle Obama launched her "Let's Move" campaign, staging a number of high-profile events, and enlisting voluntary efforts from food marketers.[315] However, when the public health community and health and regulatory agencies attempted to establish clear, science-based nutritional guidelines for marketing to children and teens, the food and advertising industries deployed all of their powers of influence and threat to successfully head off any regulations.[316] As a consequence, the pressure from government on the food industry over childhood obesity vanished.[317]

With the primary focus on the food industry, media and technology companies have largely managed to evade public and government scrutiny for their role in promoting an obesogenic digital culture. Over the years, public health groups have made some inroads in getting a few media and technology companies to make changes in their own internal policies voluntarily, but the impact of this effort has been limited.[318] U.S. law provides some digital privacy and marketing safeguards for young children through the Children's Online Privacy Protection Act (COPPA), though these protections do not specifically address advertising of food and beverages. Enacted in 1998, COPPA requires commercial websites and other

digital media to obtain parental permission before collecting any personal information from children under 13, and places obligations on companies for adequate disclosure and protection of data.[319] The FTC is charged with developing regulations for implementing COPPA, investigating and fining companies that violate its provisions, and conducting periodic reviews of the regulations to ensure they remain up to date. The FTC issued

In 2018, a coalition of privacy, consumer-protection, and child-advocacy groups, led by the Center for Digital Democracy (CDD) and the Campaign for Commercial Free Childhood (CCFC), filed a complaint with the FTC, charging that Google had been disingenuously claiming that its YouTube service was intended only for those aged 13 and older, even though it was widely known that the platform had become the number-one online destination

> **In September 2019, the FTC and the New York attorney general reached a landmark settlement with Google that included a $170 million fine, along with an agreement that Google would make a number of changes to YouTube's business practices.**

a revised set of regulations in 2013, adding new protections specifically designed to address a wide range practices on social media, mobile, and other platforms.[320] However, the commission has not been proactive in its enforcement of the statute.[321] Most major technology and social media companies have chosen to respond to COPPA by setting terms of service that officially ban children under the age of 13 from their platforms and, in some cases, by looking the other way when under-aged youth access them.[322] As a consequence, many of the children and all of the adolescents who engage with digital media are subjected to the entire spectrum of sophisticated data techniques and online marketing applications that are currently state of the art in today's powerful commercial digital media system.

for young children. In September 2019, the FTC and the New York attorney general reached a landmark settlement with Google that included a $170 million fine, along with an agreement that Google would make a number of changes to YouTube's business practices, affecting both its U.S. and global operations. Beginning in January 2020, YouTube no longer allows personalized, "behavioral" marketing on programming that targets children. The company also announced that it would apply marketing and other safeguards currently in place on its YouTube Kids app to all child-directed content on its main YouTube platform. In addition to banning ads that feature "sexually suggestive, violent or dangerous content," the policy eliminates all food and beverage advertising.[323] This change has not been widely publicized, and no other major tech platform has instituted similar restrictions.

GLOBAL CALLS FOR MARKETING INTERVENTIONS

Over the last several years, some of the most esteemed international organizations around the world have issued a series of high-profile reports on obesity and related health problems facing today's young people. Together, they underscore the increasingly central role that digital media are playing, calling on governments to adopt regulations that will adequately address the many platforms in the expanding new media landscape. The World Health Organization has led many of these efforts, which have been endorsed and amplified by public health experts, civil society organizations, and children's rights advocates.[324] In 2016, WHO Europe issued a major report based on its comprehensive review of research on digital food marketing, along with an assessment of policies across the European region. "The targeted and personalized nature of digital marketing," the report's authors explained, "makes it potentially a far more powerful influence on children's preferences and dietary behavior" than traditional broadcast food marketing. "Action on digital marketing is therefore clearly required to fully implement the WHO set of recommendations and to reduce the exposure, power and impact of all HFSS marketing to children." The report also urged policymakers to include adolescents in their protections, since they are "developmentally, neurologically and socially likely to be susceptible to HFSS food advertising."[325] UNICEF's 2019 report, *Children, Food and Nutrition: Growing Well in a Changing*

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World, called for a broad regulatory framework for food marketing to children, encompassing not only television but also "games, movies, books and social media for all age groups, as well as businesses and restaurants that give away toys to market unhealthy foods."[326]

Governments in the UK, Europe, Canada, and Latin America issued various policies for regulating food marketing to children and teens.[327] For example, the new EU Audio Visual Media Services Directive's advertising safeguards for children include a prohibition on product placement in children's programs, and call for EU countries to "encourage the use of self- and co-regulation through codes of conduct regarding inappropriate advertising in children's programmes, for foods and beverages high in fat, salt and sugar."[328] In the UK, where government-sanctioned self-regulation of food marketing to children up to age 16 has been in place for a number of years, health and media regulators recently proposed a total ban on online advertising for foods that are high in fat, sugar and salt, as part of a strategy to "future-proof how we tackle childhood obesity."[329] In a preemptive move, Google changed

Flawed International Safeguards

The food and beverage industries, allied with the advertising and technology industries, have launched a variety of international codes of conduct, principles, and other self-regulatory regimes designed to deflect public criticism and preempt government policies.[330] For example, the "Responsible Advertising and Children" (RAC) program, whose members include Coca-Cola, Hershey's, PepsiCo, McDonald's, Mondelez, the Walt Disney Company and Viacom/CBS, has a special focus on "food marketing communications."[331] The International Food and Beverage Alliance (IFBA) created a Global Policy on Marketing Communications to Children, which is intended to provide "minimum criteria for advertising and marketing communications directed to children under 12 years that are paid for, or controlled by, IFBA companies in every country where they market their products."[332] The International Chamber of Commerce (ICC) launched its "Framework for Responsible Food and Beverage Marketing Communications" in 2004.[333]

Like the Children's Food and Beverage Advertising Initiative (CFBAI) in the U.S., A program of the Council of Better Business Bureaus, most of these industry regimes apply safeguards only to advertising targeted at young children—those under 12 or 13. This framework draws from psychologist Jean Piaget's theories of child development, and is based on the notion that cognitive abilities are the key to understanding the persuasive intent of an advertisement and defending against it.[334] However, within the last decade or so, there has been a growing consensus among scholars, health professionals, and regulators that the model is inadequate, oversimplifying the persuasive process and failing to take into account the way advertising and marketing actually work, especially in the digital context.[335]

So far, the International Chamber of Commerce (ICC) is the only self-regulatory body to increase the age of coverage to include adolescents. In 2018, responding to pressure from international health bodies and experts, ICC updated its policy to include adolescents up to age 17, and to apply its revised voluntary code to "all mediums and platforms including social media, mobile, virtual and marketing communications using artificial intelligence."[336] While on the surface these changes may seem significant, on closer examination it is apparent that they do little to change actual practices. The principles are very abstract, and include broad statements stipulating, for example, that "food and beverage marketing communications should not encourage or condone excess consumption," or "create a sense of urgency," admonitions that are routinely violated by marketers. Instead of specifically prohibiting any of the techniques used by ICC members to target young people, its code puts much of the onus on parents and caregivers.[337] The weaknesses in the ICC Code are emblematic of the flaws across self-regulatory regimes, both in the U.S. and internationally.[338] "Industry self-regulation does not work, and the existing global frameworks are not sufficient," concluded a 2020 report, entitled *A Future for the World's Children and* published jointly by WHO, *The Lancet*, and UNICEF.[339]

its own internal advertising policies "to restrict the serving of High Fat Sugar Salt (HFSS) Food and/or Non-Alcoholic Beverages (F&B) advertising for minors in the United Kingdom and European Union," the company explained on its website. Google has also developed its own criteria for determining which foods and beverages are considered HFSS.[340]

This decision, along with Google's 2019 settlement with the FTC, could signal a significant shift for technology companies, which may be forced to take greater responsibility for the content and advertising carried on their platforms, particularly those affecting children.[341] This is the position taken by the UK's data protection regulatory agency, the Information Commissioner's Office (ICO), which has developed a comprehensive code, *Age Appropriate by Design,* intended to offer guidance to tech companies for ensuring that the platforms and services "likely to be accessed by children" are purposefully designed to serve the "best interests of the child." The code was approved by the UK Parliament in August 2020, and will be in full force by late 2021.[342] It is strongly rooted in both the United Nations Convention on the Rights of the Child (UNCRC) and the EU's comprehensive General Data Protection Regulation (GDPR).[343]

THE TECH ACCOUNTABILITY MOVEMENT

The powerful tech giants have found themselves under increasing scrutiny for a growing spectrum of other issues—from enabling widespread distribution of disinformation campaigns and hate speech, to inadequate protections against sexual predation and exploitation, to anti-competitive behaviors in the marketplace.[344] The controversies over how Facebook, Google and other digital media have allowed the spread of misinformation, facilitated voter suppression, and allowed proliferation of hate speech and other harmful content have spurred numerous hearings and legislative initiatives in the U.S. Congress. Anti-trust agencies and Congressional committees are conducting ongoing investigations of Google, Facebook and Amazon for their restraint-of-trade practices in the digital marketplace.[345] Amid calls for "tech accountability" from civil rights organizations and other groups concerned with racial, economic and health justice, technology companies have been forced to make adjustments in their internal content-moderation and advertising policies.[346] For example, Facebook has faced intense criticism from a broad coalition of civil rights and consumer groups over its automated ad practices, which have enabled racial discrimination in housing and employment, forcing the company to agree to ongoing independent audits of its operations. After widespread protests broke out—led by the Black Lives Matter movement—over the police killings of George Floyd and Breonna Taylor, the social network was the target of a large-scale boycott for failure to censor hate speech by right-wing groups. Among those engaged in the "#stophateforprofit" campaign were some of Facebook's major advertisers—including Unilever and Coca-Cola.[347]

The global technology and advertising industries are also experiencing pressures from within their own ranks, as leading advertisers have mobilized to institute new codes of conduct and

other related "brand-safety" regimes, designed to ensure that their ads do not appear alongside hate speech, fake news or other inappropriate content.[348] In response to these pressures, the industry established extensive new systems that enable advertisers to have greater control over where their ads are placed and who sees them. This includes a new Global Alliance for Responsible Media (GARM), created by the World Federation of Advertisers (WFA), and the Association of National Advertisers (ANA) in the U.S. Focused on "digital safety," the system is designed to help the industry "eliminate harmful online content and ensure that bad actors have no access to advertiser funding."[349] In September 2020, GARM announced an agreement with Facebook, YouTube and Twitter promising that they would all "adopt a common framework for defining harmful content that is inappropriate for advertising, and ... collaborate with a view to monitoring industry efforts...."[350] Other recent ad industry initiatives reflect growing global concerns by leading food, beverage and other major brands that they are politically vulnerable to the rising public discontent with commercial surveillance.[351] For example, the WFA has created a "Data Ethics Board" to address what it calls a "surveillance culture," in an effort to enable brands to "take a lead in making data and technology work for people and society."[352]

Despite the high-minded language of these various corporate and

industry-wide initiatives, they say little or nothing about marketing and advertising to children, or responsibility to young people's health. For example, while the WFA's white paper discusses unfair and discriminatory practices, as well as the need to be vigilant about marketing to "vulnerable groups," it fails to address children and adolescents at all.[353] Similarly, though social media companies and major

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food and beverage corporations have made numerous commitments to address discrimination and racial justice issues, they have failed to acknowledge their role in the aggressive marketing of unhealthy products to youth of color.

Yet when taken together, all of these developments—growing public health concerns over the role of digital food marketing in the childhood obesity crisis, increasing regulatory pressures from EU and UK policy makers, and public calls for greater tech accountability— have created a political climate that neither the technology industry nor the food industry can ignore. Even in the U.S., where both industries have managed for decades

to avoid government regulation, there are signs of significant change. Rising concerns over the data and advertising practices of major social media platforms and tech companies have shifted the public debate significantly, along with a growing consensus that the country is lagging behind other developed democracies in curtailing the impact of surveillance technologies.[354] A number of

privacy bills have been introduced in Congress, including several that would specifically protect young people.[355] Thanks to the leadership of civil rights organizations, much progress has been made to place anti-discrimination protections at the center of many of the broader federal privacy proposals, including restrictions on the use of algorithms, facial recognition, AI and other techniques commonly employed by marketers.[356] Recent legislative and legal antitrust actions against tech giants Facebook, Google, and Amazon could have impacts on a wide variety of practices across digital platforms, including marketing, data collection, and those affecting young people.[357]

PART 5: CREATING A HEALTHIER DIGITAL ENVIRONMENT FOR YOUNG PEOPLE

With the arrival of a successful vaccine for the COVID-19 pandemic, the nation is eager to put the experience behind us, and to allow the crisis to fade into the background. As the country tries to get back to some semblance of normalcy, it will be important to examine the many factors that made the health crisis so bad, as well as what should be done to prevent something similar from happening in the future.

"The Covid-19 pandemic has laid bare stark health and social inequities in our country," observes public health professor William Dietz, "and underscores the urgent need to build healthy and equitable communities that can withstand future public health crises like the one we face today."[358] There is mounting evidence that the prevalence of obesity—which disproportionately affects Black, Latinx, and Native American communities—is making our population increasingly vulnerable to this and other diseases. Therefore, we need to bring the obesity crisis back to the foreground of U.S. health policy.[359]

Developing effective policies to shield young people from the harmful impacts of unhealthy food promotion should be a key component of prevention strategies.

Such an effort will require rethinking the traditional U.S. framework for regulating marketing, advertising and a host of related data practices, especially those that affect children and adolescents. The current approach is far too weak and narrow, offering minimal protections for only the youngest children, and placing an unfair burden on parents. For years, there has been a major and long-standing failure by regulators to address data and marketing practices. In the case of online marketing of foods and beverages, the government has relied on limited self-regulatory regimes developed and run by the food, beverage, and advertising industries, with little or no regulatory oversight. If the nation expects to significantly improve children's prospects for a healthy life, policy makers will need to assert the government's

responsibility to regulate both the technology and food sectors, and be much more proactive than they have been in the past. With the new Biden administration, and the calls to "reimagine" public health, we have a renewed opportunity to place the health of our children front and center on the U.S. policy agenda.[360]

Creating a healthier digital environment for young people will also require participation from a variety of players in both the public and private sectors, including stronger government policy development, regulation, enforcement, and oversight; a commitment by corporations and industry to institute effective solutions and accountability; input from public health and child development experts; and ongoing monitoring by civil society. While we focus below on U.S. domestic policy, it is important to underscore the global nature of the food and technology industries, which are governed by international, regional, and national policies. Protecting children and young people requires coordination among stakeholders and governments to hold these industries accountable and to ensure that the strongest standards in place around the world will apply to young people in the U.S. There is already a multilateral movement underway from the European Union, which published a December 2020 document entitled "A New EU-US Agenda for Global Change," signaling a renewed effort to reestablish

and solidify cooperation between the U.S. and the EU on health, trade, and technology policies, and proposing "a new transatlantic dialogue on the responsibility of online platforms." The leading EU consumer organization, BEUC, has urged policymakers in that dialogue to "address harmful business models based on data exploitation," and to ensure that "consumer protection and consumer welfare are an overarching objective of the cooperation...."[361]

U.S. digital policies for young people should also build on the global initiatives currently underway at WHO, UNICEF, and other international agencies, and should be grounded in the fundamental rights of children and the responsibilities of the companies that serve them. This is a basic tenet in the United Nation's Convention on the Rights of the Child, which is considered "the most widely ratified international human rights treaty," and which "sets out the civil political, economic, social,

and cultural rights of children."[362] Global rights-based standards should also be supplemented and informed by the United States' unique experiences as a nation, addressing disparate treatment and impacts affecting Black and Brown and other disadvantaged communities with the goal of producing equitable outcomes and equal opportunity.

KEY COMPONENTS FOR A POLICY FRAMEWORK

We now have a substantial amount of research from governments, scholars, health experts, and international organizations that can offer guidance on developing effective policies to protect young people from contemporary marketing of unhealthy foods and beverages.[363] Based on this growing body of evidence, as well as our own analysis of the digital marketplace, we want to highlight eight key principles that should be central elements in a new U.S. policy framework:

1

Protections for adolescents as well as young children

In their U.S. operations, food and beverage companies, as well as technology companies, have successfully resisted efforts to establish safeguards for protecting adolescents in the digital marketplace. This stance ignores the growing body of scientific evidence documenting adolescent developmental vulnerabilities, and is inconsistent with recommendations from major international governing and health organizations. For example, the United Nations defines a child as anyone under the age of 18, and the World Health Organization Europe has provided substantial documentation to support the need to protect adolescents, who are "developmentally, neurologically and socially likely to be susceptible to HFSS advertising."[364] Restricting protections only to the youngest children is also at odds with policies in a number of other countries.[365] Google's recent change in corporate advertising practices is an indicator of the technology industry's recognition that changing policies in European regulatory jurisdictions will require them to expand protections to older children. It is ironic that U.S.-based Google offers such safeguards to adolescents only if they are living in the UK or Europe, leaving U.S. (and other global) teens completely uncovered. While safeguards must be age-appropriate and incorporate age groups' different developmental needs, it is time for U.S. technology and food and beverage companies to extend them to all children under 18.[366]

2

Uniform, global, science-based nutritional criteria

Most government and self-regulatory food marketing policies are focused on limiting young people's exposure to unhealthy products, using nutritional criteria to identify which foods and beverages are high in fats, sugars, and salts (HFSS).[367] There are a number of different nutrition-based profiling systems operating in various parts of the world, including those developed by independent health organizations or governments, such as the WHO Europe model and the Australia and New Zealand Nutrient Profiling Scoring Criterion, and those developed by private industry, such as the U.S. Better Business Bureau's CFBAI program, the EU Pledge, and, most recently, Google's corporate nutrient model developed for the EU and UK markets. The public would benefit from having a consistent and scientifically sound model, developed by leading independent nutritional experts, that would operate worldwide (since so much of what is sold to young people is developed and promoted by global brands), and with flexibility to address products, cultural practices, and regulations that are unique to one country or region. A worldwide standard would set a bright line for determining the kinds of foods that are appropriate for a healthy diet for young people, and those that should be avoided or limited. It would also provide clear guidance for both the food industry and the technology industry.

3

Restrictions on brand promotion

No matter how rigorous the nutritional model, it will only go part of the way in shielding young people from the marketing of unhealthy foods and beverages. As this report has documented, major producers of many of the most popular HFSS products on the market are engaging in a variety of brand-promotion campaigns, through "native advertising," influencer marketing, and other techniques that are designed to circumvent ad-blocking technologies and to appeal to young people who do not like advertising. Brand marketing has become the most dominant strategy used to promote foods and beverages to youth.[368] Marketers engage in it because it works, solidifying loyalty and translating into purchases and consumption of a brand's products, including many that are unhealthy. Academic research has shown that even if the marketing message does not feature any unhealthy products, it can still contribute to young people's consumption of unhealthy foods.[369] Policies that do not address brand promotion are likely to create giant loopholes, and will encourage the food industry to conduct even more of its marketing through these strategies.[370]

4

Limits on the collection and use of data

As our research has shown, contemporary food and beverage marketing to young people relies extensively on the collection and use of data. Both the technology industry and the food and beverage industry are involved in unprecedented data collection as a core element of their marketing efforts. Data and advertising have become so inextricably intertwined that almost all of today's marketing is now *data-driven*. Any policies to address digital food marketing should include restrictions on the use of data, including prohibitions of profiling and targeting young people under 18. Congress is expected to consider a number of legislative proposals that could address some of these practices, as part of its deliberations on a new federal privacy statute, which could bring robust protections for every American, including young people. One proposed bill, for example, would eliminate all data-driven ad targeting, allowing only a limited set of permissible uses, while permitting some less harmful forms of digital advertising.[371] Under two separate pieces of legislation, both in the House and the Senate, privacy protections would be extended to children up to age 18, and safeguards would be put in place against targeted digital advertising, discriminatory profiling practices, and manipulative techniques. Provisions also include requirements for responsible design of digital products and additional resources to enable more robust enforcement by the FTC.[372]

5

Prohibition of marketing techniques and design features that are manipulative or unfair

Research on digital food marketing demonstrates that exposure to advertising messages is only a partial determinant of their impact on young people.[373] Given the sophisticated nature of digital marketing, the most effective way to protect young people is to combine restrictions on both the products and brands with curbs on the techniques used to market them. Eliminating targeted advertising and profiling for children under 18 would address some of the techniques, but not necessarily all of them. Among those requiring specific attention are "nudging" and other enticements; in-game advertising, especially techniques that offer rewards and prompt instant responses; and strategies for inducing young people to engage, amplify or promote (e.g., "like," "share," create "user generated content," or post photos). In addition, there should be restrictions on virtual reality and similar techniques that purposefully blur reality and fiction when used for advertising purposes. Influencer marketing deserves special focus, since it is so widely used to promote unhealthy brands and products to young people.[374] While the FTC has established rules requiring disclosure by influencers, they are not a sufficient safeguard for the kinds of marketing we have documented in this report.[375] More robust safeguards need to be developed to address these covert, unfair, and often deceptive methods. Many of the most problematic practices for young people are built into the design of digital operations. U.S. policy makers should develop a system that draws from the UK ICO's "Age Appropriate Design" code, along with other best practices, to identify a set of defaults that must be incorporated into the design of digital services. These criteria should be context-specific and recognize the different developmental stages and vulnerabilities of children.[376] Regulators should be empowered to ensure corporate compliance, and to establish a system for the ongoing oversight of emerging technologies and data practices.

6

Market research protections for young people

The market research industry, working with major food and beverage brands and technology platforms, routinely enlists children and teens to serve on virtual panels, participate in focus groups, and allow their devices to be continuously monitored and measured via behavioral and psychological studies. Young people are also connected to eye-tracking and neuromarketing tools, cross-device trackers, virtual reality and other technologies. These practices, and the information they generate, are proprietary and unaccountable to the public, designed primarily to optimize targeting and influence behaviors. Participation in these studies should be prohibited for young children. Government policy makers and other stakeholders should work together to assess these operations and to establish a framework for determining whether any market research practices may be acceptable for teens.

7

Elimination of digital racial discrimination

Black and Brown youth are key targets of the food and beverage marketing industry, and are also especially vulnerable to marketing of unhealthy brands and products. The aggressive and pervasive nature of "multicultural marketing" for sugar-sweetened beverages, fast foods, and energy drinks is particularly troubling, as is the appropriation of cultural symbols and popular celebrities. Policymakers need to pay special attention to how marketers research, identify, and target youth of color, with particular focus on the use of racial, ethnic, geolocation, and other forms of "proxy" data that can signify race. The use of classifying and predictive data analytics in automated or algorithmically driven decision making can also produce disparate impacts on communities of color.[377] If new policies succeed in curtailing both profiling and targeted food and beverage marketing to all children, these safeguards would help reduce the disparate impact of such practices on Black and Brown youth. However, these young people may remain vulnerable to other automated predictive decision systems and algorithms that implicate families and communities of color as a whole. Tech, advertising, food, and beverage companies should be required to address and mitigate practices that produce inequitable or unjust outcomes.

8

Transparency, accountability, and enforcement

Any new policy framework must be accompanied by much greater transparency and accountability on the part of technology companies, media networks, and leading food and beverage brands. Regulators have a particularly central role to play. While the Federal Trade Commission's powers are limited, there are legislative initiatives underway that, if successful, would grant the agency greater authority and resources, including oversight of the youth-directed online marketplace. The FTC already has the ability to investigate digital advertising and data practices. In December 2020, at the urging of a coalition of children's, civil rights, public health, privacy and other organizations, the agency issued a broad request for information on the digital operations of Google, Facebook, TikTok and other companies, as part of its analysis of both the social media and streaming video (OTT) marketplaces. A major focus of the request was on practices involving children and teens, including those that may lead to discriminatory outcomes based on race. The commission will use this information to propose new policies and for potential enforcement actions. The commission should launch a similar investigation into the digital marketing practices of major food and beverage companies, including their extensive use of data and their relationships with the ad and tech industries. Regulators should also require tech, food and beverage companies to conduct impact assessments of their youth marketing operations related to young people's health and psychosocial well-being. This approach would be comparable to the audits that both Facebook and Airbnb conducted at the behest of Color of Change and other civil rights groups to assess issues such as hate speech and racial discrimination. Government-required assessments should be ongoing, baked into compliance and governance processes, including independent review and oversight.[378] The results of these assessments should be made available to the public.

Industry should be called upon to provide documentation proving that safeguards established to protect young people from food and beverage marketing are actually working. One way this could be accomplished is through the use of the industry's own measurement and brand-safety systems, which generate the most accurate and comprehensive information available on contemporary strategies, marketing techniques, targeting data, delivery platforms, and impacts on user behaviors. Though this information has remained proprietary, regulators could require food, tech, and advertising companies to report this data and to develop ways to reduce exposure to underage youth.[379]

Both the technology and food industries should embrace their shared responsibility to ensure that the digital marketplace operates fairly for all children, and that its practices do not undermine their health. Companies such as Google and Facebook already operate a

variety of health-related services that give them the expertise to combat obesity and promote better nutrition. For example, these companies have developed sophisticated health-care systems for their own employees, conduct research and development on wearable devices and other digital health technologies, and support a number

of software applications to promote pharmaceuticals and medical care. They have already established a set of health-related advertising policies, including prohibitions on promotion of weight-loss products to young people, and restrictions on alcohol and tobacco advertising to minors that may be illegal under national laws. U.S. tech platforms with large youth followings should be required to establish a full spectrum of internal policies and other safeguards to protect children and teens from unhealthy food marketing.[380] Food and beverage corporations must also be held accountable for their advertising, promotion, and data practices, especially those that raise privacy, civil rights and consumer protection concerns. Shareholders and regulators should scrutinize their partnerships with Google, Facebook, and Amazon, as well as with grocery chains, data brokers and other advertising technology companies.

It is time for the U.S. to develop a comprehensive strategy for ending the youth obesity epidemic. In the absence of any interventions, the powerful food and technology industries will continue their relentless efforts to promote unhealthy products through the expanding digital culture, encouraging and rewarding behaviors that will put children and adolescents at even greater risk. Through legislation, regulation, legal action, and corporate responsibility initiatives, we must work together to ensure that all young people are given a fair chance to live a healthy life.

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