

MDPI

Article

# Public Support for Nutrition-Related Actions by Food Companies in Australia: A Cross-Sectional Analysis of Findings from the 2020 International Food Policy Study

Ebony Yin <sup>1</sup>, Adrian J. Cameron <sup>1</sup>, Sally Schultz <sup>1</sup>, Christine M. White <sup>2</sup>, Lana Vanderlee <sup>3</sup>, David Hammond <sup>2</sup> and Gary Sacks <sup>1</sup>,\*

- Institute for Health Transformation, Global Centre for Preventive Health and Nutrition, Deakin University, Burwood 3125. Australia
- School of Public Health Sciences, University of Waterloo, Waterloo, ON N2L 3G1, Canada
- School of Nutrition, Centre Nutrition, Santé et Société (NUTRISS), Institut sur la Nutrition et les Aliments Fonctionnels (INAF), Université Laval, Québec City, QC G1V 0A6, Canada
- \* Correspondence: gary.sacks@deakin.edu.au; Tel.: +61-3-9251-7105

Abstract: Unhealthy food environments contribute to unhealthy population diets. In Australia, the government currently relies on voluntary food company actions (e.g., related to front-of-pack labelling, restricting promotion of unhealthy foods, and product formulation) as part of their efforts to improve population diets, despite evidence that such voluntary approaches are less effective than mandatory policies. This study aimed to understand public perceptions of potential food industry nutrition-related actions in Australia. An online survey was completed by 4289 Australians in 2020 as part of the International Food Policy Study. The level of public support was assessed for six different nutrition-related actions related to food labelling, food promotion, and product formulation. High levels of support were observed for all six company actions, with the highest support observed for displaying the Health Star Rating on all products (80.4%) and restricting children's exposure to online promotion of unhealthy food (76.8%). Findings suggest the Australian public is strongly supportive of food companies taking action to improve nutrition and the healthiness of food environments. However, given the limitations of the voluntary action from food companies, mandatory policy action by the Australian government is likely to be needed to ensure company practices align with public expectations.

**Keywords:** food industry; food environment; nutrition policy; food company; nutrition initiative; public attitudes



Citation: Yin, E.; Cameron, A.J.; Schultz, S.; White, C.M.; Vanderlee, L.; Hammond, D.; Sacks, G. Public Support for Nutrition-Related Actions by Food Companies in Australia: A Cross-Sectional Analysis of Findings from the 2020 International Food Policy Study. Int. J. Environ. Res. Public Health 2023, 20, 4054. https://doi.org/10.3390/ ijerph20054054

Academic Editor: Lorrene D. Ritchie

Received: 1 February 2023 Revised: 20 February 2023 Accepted: 22 February 2023 Published: 24 February 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

## 1. Introduction

Unhealthy diets are a key risk factor for non-communicable diseases (NCDs) and a global health priority [1]. It is widely accepted that food environments have a major influence on dietary intake [2,3]. In Australia, food environments generally do not promote healthy eating [4–7], with "discretionary" foods that are high in energy, sugar, salt and/or saturated fat widely available and heavily promoted [7]. The supply and marketing of discretionary food in Australia is led by a relatively small number of large food companies with substantial market power [7,8]. These food companies use a wide range of strategies to influence consumers as part of integrated marketing campaigns, including: traditional and digital marketing tactics (e.g., television and outdoor advertisements, social media and gamification) [9]; retail-based promotion (e.g., price promotions, positioning and shelf space) [8]; and on-package marketing (e.g., cartoon characters and health claims) [10,11].

There have been consistent calls for government-led policy action to improve the healthiness of food environments as part of efforts to address unhealthy diets [2,3,12]. Some countries have implemented a suite of mandatory food-related policies including:

restricting exposure of children to marketing of unhealthy food [13]; providing front-of-pack nutrition labelling [14]; and increasing the prices of unhealthy foods (e.g., taxes on sugary drinks) [15]. In contrast, the Australian government's policy response to unhealthy diets falls far short of global benchmarks [16]. Currently, Australia's nutrition-related policies rely heavily on voluntary action by food companies, including the voluntary Health Star Rating (HSR) front-of-pack nutrition labelling system [17], industry codes for adult and children's marketing guidelines [18], and the Healthy Food Partnership Reformulation Program [19]. The lack of mandatory action has been attributed to multiple factors, including food industry lobbying to limit regulations that may harm their profits, and the prioritisation of economic wealth over public health [20–23]. Reliance on voluntary action has for the most part been shown to be ineffective, with limited uptake of such policies by food companies coupled with weak or incomplete implementation where there is uptake [24–26]. A 2018 assessment of Australian food company nutrition-related policies and commitments found that most companies fell short of global recommendations [27].

In the absence of government regulation, pressure on food companies from external stakeholders such as the general public and investors can lead to increased implementation of nutrition-related actions (e.g., via corporate sustainability strategies) [28–30]. An understanding of the extent of public support for food company action is an important advocacy tool to inform strategies to influence food industry efforts to improve the healthiness of Australian food environments. Public expectations of food companies can also guide government policy development [31].

Previous research has found that public support for various nutrition-related policies differs between countries, due to factors such as differing cultural norms, political ideology, and stage of implementation [32,33]. Research examining public support for nutrition-related policies in Australia has largely focused on support for government-led policy solutions [34,35], with limited research focused on public perceptions related to food company action [36–38]. Two previous studies investigated public perceptions of unhealthy food sponsorship at community events and in community sport [37,38]; and one study investigated the perceived responsibility of food companies to address population health outcomes, generally [36]. While these studies found strong support for increased food company action to improve population diets, they were very limited in the scope of the nutrition-related actions they explored. To contribute to addressing this knowledge gap, this study aimed to understand public support for food company actions targeting front-of-pack nutrition labelling, exposure of children to marketing of unhealthy foods and product reformulation in Australia, and how the level of support varied by socio-demographic factors.

# 2. Materials and Methods

## 2.1. Study Design and Sampling

Data are from the 2020 International Food Policy Study (IFPS), an online annual repeat cross-sectional survey conducted across five countries: Australia, Mexico, Canada, the USA, and the UK [39]. The current study used data collected between November and December 2020 from respondents in Australia.

Participants aged 18 to 100 residing in Australia were recruited through Nielsen Consumer Insights Global Panel and their partners' panels, using non-probability sampling methods. Email invitations were sent to a random sample of eligible panellists. Participants provided informed consent prior to survey completion. Participants received remuneration in line with the panels' existing incentive structure (e.g., points-based or monetary) [40]. The study received ethics clearance through a University of Waterloo Research Ethics Committee (ORE# 30829). Deakin University Human Research Ethics Committee provided an ethics exemption in 2018. A full description of the study methodology has been published elsewhere [40].

#### 2.2. Measures

## 2.2.1. Support for Food Company Action

Public support was assessed for six actions food companies can take to improve the overall healthiness of the food supply, as outlined in Table 1. The set of actions was derived from global, nutrition-related recommendations for food companies [27]. Respondents were randomly selected to answer only one of the six questions to reduce overall survey length and response fatigue. Support was measured by asking respondents, "Please tell us whether you agree or disagree with the following statement". A 5-point Likert scale was used to assess support including "strongly agree", "agree", "neutral", "disagree" and "strongly disagree". Each question also had a "refuse to answer" and "don't know" option.

**Table 1.** Voluntary food company actions assessed in the IFPS study, 2020.

Food composition	Food companies have a responsibility to make food and drinks healthier for consumers (e.g., by reducing salt/sugar/saturated fat).
Food labelling	<ul> <li>Food companies SHOULD clearly display the Health Star Rating on the packaging of ALL food and drinks.</li> <li>Food companies SHOULD only make nutrition claims (e.g., low in fat) on products that are healthy overall.</li> </ul>
Food Promotion	<ul> <li>Food companies SHOULD NOT place cartoon characters or other images that appeal to children on product packaging for unhealthy food and drinks.</li> <li>Food companies SHOULD NOT advertise unhealthy food and drinks on TV at times when children and teenagers are likely to be watching.</li> <li>Food companies SHOULD NOT target children and teenagers with online ads for unhealthy food and drinks.</li> </ul>

## 2.2.2. Sociodemographic Variables

Self-reported demographic variables included age group (18-29, 30-44, 45-59, 60+ years), sex, education, body mass index (BMI), household income, whether respondents had children, and the respondents' food shopping responsibility. Education was categorised into three levels; "low" (year 12 or lower), "medium" (trade certificate or diploma) and "high" (bachelor's degree or above). BMI was calculated using self-reported height and weight and was categorised according to World Health Organization classification [41]. Household income was reported in ranges of AUD 10,000 from "Less than AUD 10,000" to "AUD 150,000 and over". Equivalised household income was calculated using the OECD-modified equivalence scale [42]. This scale is used by the Australian Bureau of Statistics to adjust for economies that occur from sharing resources within households, allowing for more meaningful comparisons of household income [43]. The equivalisation scale assigns a value of 1 to the household head, 0.5 to each additional adult and 0.3 to each child [42]. The categorical data collected for income were assigned a value in the middle of each income range (e.g., AUD 20,000-30,000 became AUD 25,000). The OECDmodified equivalence scale was applied to this value to determine an estimated equivalised household income. Income was then recategorized into low, medium, and high tertiles. Variables representing socio-demographic characteristics were selected for inclusion in regression models a priori based on being both assessed in the IFPS study and known to influence diet-related behaviours [32,44,45].

The extent of food shopping responsibility was categorised as "most", "shared equally", "some, but less than others" and "none". Dietary health was categorised as "poor", "fair", "good", "very good" and "excellent". Each variable also had "refuse to answer" and "do not know" options.

## 2.3. Data Management and Analysis

A total of 5500 respondents completed the survey. Respondents were excluded for the following reasons: invalid response to a data quality question; survey completion time under 15 min; and/or invalid responses to at least 3 of 21 open-ended measures (n = 1211), leaving an analytic sample of 4289 respondents. Participants with missing results for the sociodemographic variables were included in the descriptive analysis, but were excluded in the logistic regression models that included these variables. Missing data, "refuse to answer", and "do not know" responses were excluded from analysis. Data were weighted using post-stratification sample weights constructed using a raking algorithm with population estimates based on age, sex at birth, region, ethnicity, and education [40]. Estimates reported are weighted. Analyses were conducted using Stata/BE-17 [46].

Explanatory variables used in the models included age, sex, BMI, education, equivalised household income, shopping role, guardian/parental status, and health of diet. These were chosen as covariates based on the existing literature [34,44].

Additional sensitivity analysis was undertaken to determine best fit of the model through exploratory univariate logistic regression modelling for each covariate [47]. To determine the impact of "neutral" responses, a separate multivariable logistic regression analysis was conducted on all outcome measures, excluding "neutral" responses. The results from this analysis were similar to the final model that included the "neutral" response option. The final model was tested for goodness of fit using the Hosmer–Lemeshow test [47]. Due to the number of response options being tested, the significance level was set at the 0.01 level.

#### 3. Results

## 3.1. Sample Characteristics

The weighted sociodemographic characteristics of respondents are detailed in Table 2. The mean age of respondents was 46.6 years (min 18–max 92) and there was an approximately equal proportion of male and female respondents. The majority of respondents reported low to medium education levels, having no children, doing most of the food shopping in their household and rated their overall diet quality as "good" to "excellent".

<b>Table 2.</b> Sociodemographic	characteristics of Australian	n IFPS respondents, 2020 ( $n=428$	39).

Sex			
Male	49.1%		
Female	51.0%		
Age			
18–29	21.1%		
30–44	26.9%		
45–59	23.9%		
60+	28.1%		
Education			
Low	41.9%		
Medium	32.0%		
High	25.5%		
Not stated	0.5%		
Household Income			
Less than AUD 10,000	3.0%		
AUD 10,000 to less than AUD 20,000	4.7%		
AUD 20,000 to less than AUD 30,000	11.6%		
AUD 30,000 to less than AUD 40,000	8.8%		
AUD 40,000 to less than AUD 50,000	8.0%		
AUD 50,000 to less than AUD 60,000	9.1%		
AUD 60,000 to less than AUD 70,000	7.3%		

Table 2. Cont.

Household Income			
AUD 70,000 to less than AUD 80,000	5.7%		
AUD 80,000 to less than AUD 90,000	5.3%		
AUD 90,000 to less than AUD 100,000	5.3%		
AUD 100,000 to less than AUD 150,000	13.9%		
AUD 150,000 and over	8.7%		
Not stated	8.6%		
BMI (kg/m²)			
<18.5–24.9	35.8%		
25–29.9	26.9%		
>30	21.9%		
Missing data	15.5%		
Parental Status			
No Children	58.4%		
Has Children	41.6%		
Not stated	0.1%		
Amount of food shopping responsibility			
None	2.5%		
Some	7.3%		
Equal	24.7%		
Most	65.3%		
Not stated	0.3%		
Health of Diet			
Poor	5.8%		
Fair	23.9%		
Good	44.3%		
Very Good	20.9%		
Excellent	3.8%		
Not stated	1.4%		

# 3.2. Support for Food Company Action

The proportion of respondents who supported the various food company nutrition-related actions is detailed in Figure 1. There was more than 60% support for all actions, with the highest level of support for food companies displaying the Health Star Rating on packaging of all food and drinks (80.4%). The lowest support was for food companies not placing "cartoon characters or other images that appeal to children on product packaging for unhealthy food and drinks" (61.6%) and only making "nutrition claims on products that are healthy overall" (61.9%). Across all food company actions, the proportion of participants who opposed the actions was low (2.0% to 10.1%), while the proportion of participants reporting a neutral response ranged from 15.4% to 29.6%.

# 3.3. Support for Food Company Actions by Sociodemographic Characteristics

Results from the multivariable logistic regression model fitted to examine associations between sociodemographic characteristics and level of support for voluntary food company action are detailed in Table 3. Overall, age was a significant covariate for three of the six initiatives. Respondents aged over 60 years old were more than twice as likely than 18–29 year-olds to support food companies "not placing cartoon characters or other images that appeal to children on product packaging for unhealthy food and drinks", and "not advertising unhealthy food and drinks on TV at times when children and teenagers are likely to be watching". Those aged above 60 years were more than three times as likely than 18–29 year olds to support food companies "not targeting children and teenagers

90.0% 80.4% 80.0% 76.8% 70.5% 70.0% 64.2% 61.9% 61.6% 60.0% 50.0% 40.0% 29.6% 30.0% 26.8% 24.1% 22.1% 17.3% 20.0% 15.4% 10.1% 7.9% 10.0% 7.3% 5.9% 4.6% 2.0% 0.0% Food companies Food companies have a Food companies should Food companies Food companies Food companies responsibility to make clearly display the SHOULD only make SHOULD NOT place SHOULD NOT advertise SHOULD NOT target food and drinks Health Star Rating on unhealthy food and nutrition claims (e.g., cartoon characters or children and teenagers healthier (n=666) the packaging of ALL low in fat) on products other images that appeal drinks on TV at times with online ads for food and drinks (n=725) when children and that are healthy overall to children on product unhealthy food and drinks (n=736) (n=664)packaging for unhealthy teenagers are likely to be food and drinks (n=728) watching (n=746) ■ Support ■ Opposed ■ Neutral

with online ads for unhealthy food and drinks". No significant differences in support were found for any other age groups.

**Figure 1.** Proportion of Australian public support for nutrition-related actions by food companies (%), IFPS, 2020. Weighted data used for total number of respondents in each category.

Females were almost twice as likely as males to report support for not targeting "children and teenagers with online ads for unhealthy food and drinks". Sex was not significantly associated with support for any other initiative. Respondents with bachelor's degrees or above were more than twice as likely to support food companies not targeting "children and teenagers with online ads for unhealthy food and drinks" compared to respondents with low education levels.

No significant associations were found between categories of household income, BMI, parental status, shopping responsibility, and the overall health of diet and level of support for any initiative. For three food company initiatives (that food companies "have a responsibility to make food and drinks healthier for consumers", "should clearly display the Health Star Rating on the packaging of ALL food and drinks" and "should only make nutrition claims on products that are healthy overall"), no significant associations were found between any sociodemographic variables or BMI and level of support.

**Table 3.** Results \* from the multivariable logistic regression model (OR, 99% Confidence Intervals \*\*) for support of a range of nutrition-related actions by food companies, IFPS, 2020.

	Food Companies Have a Responsibility to Make Food and Drinks Healthier for Consumers (e.g., by Reducing Salt/Sugar/ Saturated Fat).	Food Companies Should Clearly Display the Health Star Rating on the Packaging of ALL Food And Drinks.	Food Companies Should Only Make Nutrition Claims (e.g., Low in Fat) on Products That Are Healthy Overall.	Food Companies Should Not Place Cartoon Characters or Other Images That Appeal to Children on Product Packaging for Unhealthy Food and Drinks	Food Companies Should not Advertise Unhealthy Food and Drinks on TV at Times When Children and Teenagers Are Likely to Be Watching.	Food Companies Should Not Target Children and Teenagers with Online ads for Unhealthy Food and Drinks.
	OR, [99% CI]	OR, [95% CI]	OR, [95% CI]	OR, [95% CI]	OR, [95% CI]	OR, [95% CI]
Sex Male Female	Reference 1.02 (0.57, 1.83)	Reference 1.22 (0.73, 2.04)	Reference 1.22 (0.73, 2.04)	Reference 1.38 (0.83, 2.29)	Reference 0.88 (0.54, 1.46)	Reference 1.85 (1.01, 3.41)
Age 18-29 30-44 45-59 60+	Reference 0.85 (0.37, 1.97) 1.05 (0.45, 2.44) 2.22 (0.88, 5.57)	Reference 1.14 (0.50, 2.62) 1.59 (0.58, 4.33) 1.58 (0.60, 4.14)	Reference 1.00 (0.47, 2.11) 1.28 (0.57, 2.88) 1.49 (0.65, 3.41)	Reference 1.32 (0.65, 2.66) 1.20 (0.58, 2.49) 2.75 (1.24, 6.12)	Reference 1.63 (0.76, 3.51) 1.86 (0.85, 4.08) 2.72 (1.24, 5.95)	Reference 1.13 (0.48, 2.68) 1.41 (0.58, 3.44) 3.49 (1.38, 8.81)
Education Level Low Medium High	Reference 1.51 (0.79, 2.90) 0.98 (0.46, 2.12)	Reference 0.86 (0.43, 1.70) 1.07 (0.48, 2.39)	Reference 1.41 (0.79, 2.51) 1.59 (0.78, 3.26)	Reference 1.08 (0.61, 1.94) 0.74 (0.38, 1.41)	Reference 0.89 (0.52, 1.54) 1.22 (0.62, 2.42)	Reference 1.41 (0.69, 2.89) <b>2.36 (1.06, 5.22)</b>
Equivalised House Low Medium High	ehold Income Reference 1.06 (0.55, 2.04) 1.5 (0.71, 3.17)	Reference 0.64 (0.31, 1.33) 0.86 (0.41, 1.82)	Reference 1.15 (0.63, 2.09) 0.96 (0.51, 1.79)	Reference 1.36 (0.73, 2.54) 1.35 (0.73, 2.50)	Reference 1.34 (0.76, 2.36) 1.61 (0.84, 3.06)	Reference 0.74 (0.34, 1.63) 0.59 (0.26, 1.34)
BMI (kg/m²) ≤24.9 25–29.9 >30 Missing data	Reference 0.96 (0.45, 2.02) 0.64 (0.30, 1.36) 0.49 (0.21, 1.14)	Reference 1.03 (0.49, 2.14) 1.16 (0.49, 2.76) 0.68 (0.27, 1.73)	Reference 0.88 (0.47, 1.67) 1.35 (0.67, 2.72) 1.25 (0.59, 2.65)	Reference 1.57 (0.82, 2.99) 1.16 (0.60, 2.25) 0.72 (0.32, 1.61)	Reference 1.17 (0.63, 2.17) 1.08 (0.57, 2.06) 0.99 (0.45, 2.17)	Reference 1.15 (0.55, 2.40) 1.21 (0.53, 2.77) 0.68 (0.28, 1.67)
Parental Status No Children Children	Reference 0.79 (0.44, 1.43)	Reference 0.57 (0.30, 1.10)	Reference 1.22 (0.70, 2.14)	Reference 0.97 (0.57, 1.63)	Reference 1.25 (0.73, 2.12)	Reference 0.88 (0.47, 1.67)
Amount of food sl Never Some Equal Most	nopping responsibility Reference 1.38 (0.21, 9.04) 2.15 (0.39, 11.87) 3.93 (0.73, 21.12)	Reference 2.43 (0.37, 15.92) 2.70 (0.53, 13.83) 3.08 (0.61, 15.53)	Reference 1.88 (0.34, 10.45) 1.95 (0.45, 8.43) 2.34 (0.56, 9.83)	Reference 0.92 (0.09, 9.63) 1.25 (0.13, 11.79) 1.64 (0.18, 15.17)	Reference 0.94 (0.18, 4.93) 0.63 (0.14, 2.82) 1.36 (0.31, 5.99)	Reference 0.41 (0.04, 4.34) 0.68 (0.07, 6.58) 0.91 (0.10, 8.43)
Health of Diet Poor Fair Good Very Good Excellent	Reference 1.27 (0.32, 5.03) 1.43 (0.38, 5.38) 1.91 (0.46, 8.04) 1.00 (0.15, 6.47)	Reference 0.28 (0.04, 2.09) 0.24 (0.03, 1.78) 0.24 (0.03, 1.93) 0.34 (0.02, 4.66)	Reference 0.56 (0.19, 1.61) 0.79 (0.29, 2.20) 1.34 (0.43, 4.20) 2.26 (0.40, 12.84)	Reference 1.14 (0.40, 3.24) 0.92 (0.33, 2.59) 1.01 (0.34, 3.04) 2.49 (0.50, 12.46)	Reference 0.57 (0.16, 2.02) 0.70 (0.20, 2.38) 0.92 (0.25, 3.39) 1.51 (0.24, 9.33)	Reference 1.26 (0.39, 4.05) 1.33 (0.44, 4.02) 1.80 (0.54, 6.07) 3.66 (0.44, 30.39)

<sup>\*</sup> Weighted data used for total number of respondents in each category. \*\* Statistically significant associations (p < 0.01) denoted in bold.

## 4. Discussion

This study found strong public support for food companies to take action to improve the healthiness of Australian food environments. The highest level of support was observed for displaying the Health Star Rating on all products, restricting exposure of children to promotion of unhealthy food online, and manufacturing healthier food and drinks. Support for restricting other types of marketing of unhealthy products to children and the responsible use of nutrition claims was also high.

Public support for voluntary nutrition-related action by food companies in this study was generally consistent with findings related to the support of government regulation of food companies from previous studies in Australia and internationally [33–35,37,38,48].

A scoping review of 18 studies that explored Australians' views on regulatory nutrition policies found high levels of support for implementation of interpretive front-of pack nutrition labelling, and moderate to high levels of support for restricting unhealthy food marketing to children and reformulation to improve product healthiness [35]. Likewise, an international study examining public support for nutrition interventions in seven countries, including Australia, found high support across all countries for reformulation interventions and interpretive front-of-pack nutrition labelling (e.g., Health Star Rating, Nutriscore) [48].

The strong level of support for Health Star Rating labelling corresponds with previous studies that have found support for health-related policies and actions increased after their widespread implementation [32,49]. In Australia, the Health Star Rating system was first introduced in 2014, with uptake increasing to 43% of eligible products by 2021 [7]. Some studies have posited that increased acceptance of an initiative after implementation may be associated with the public observing positive impacts or not observing negative consequences [49].

The association between demographic characteristics and the extent of support for various food company nutrition-related actions was generally uniform, with some variation across the different actions. Of note, support for food companies not targeting children with online advertisements for unhealthy food and drinks was significantly higher for those over 60 years compared with 18–29 year olds. Other studies have also found that those above 60 years old were more likely to support nutrition-related policies that were similar to the ones examined in this study [33,50]. The lack of association between parental status and support for food company actions is consistent with previous research which found that parental status was not significantly associated with support for government policies focused on restricting the marketing and promotion of unhealthy food and beverages to children [37,50,51]. While previous literature has identified being female and having a higher level of education as common demographic characteristics associated with increased support for food-related interventions (i.e., sugar sweetened beverage tax, food placement, price-promotion, and restriction of unhealthy food marketing to children), the current study found no significant association between education and most nutritionrelated actions [34,44,50]. The exception was a significant association between education and support for online advertising restrictions. The lack of significant differences in the results across different socioeconomic groups likely reflects the broad support for such measures across the population.

Despite this study's findings that there is both strong public support for companies to take action to improve nutrition, and minimal public opposition to such action, voluntary uptake of globally recommended nutrition-related actions by food companies in Australia has generally been limited. The most recent report (2020) measuring uptake of the Health Star Rating system showed that, six years post-implementation, only 41% of eligible products displayed the Health Star Rating [7]. Reformulation efforts have also been limited, with little change in the overall nutritional quality across all packaged food categories between 2019 and 2021, and few companies formally committing to the Healthy Food Partnership's reformulation program [7]. There is also consistent evidence to demonstrate the inadequacy of current industry self-regulation in protecting Australian children from unhealthy food marketing online, on television, outdoors, and through sport sponsorships [52–55]. An assessment of Australia's largest food and beverage manufacturers found there were significant opportunities to improve nutrition-related policies and practices across the sector, including those related to reformulation, nutrition labelling, and food marketing [27].

# **Implications**

Overall, the relatively low level of implementation of globally recommended nutrition policies by food companies likely indicates that public support for nutrition-related action is not sufficient to drive policy and practice change for the food industry as a whole. Nevertheless, there appears to be potential to capitalise on the high levels of public support for action to better advocate for change by food companies. Such advocacy is likely to

prove most influential if it involves coalitions working together [3]. Due to their potential to influence the actions of public companies, including the large multi-national food companies that dominate food systems in Australia, the institutional investment community may represent a potential lever for increased action [56].

The Australian government currently relies heavily on voluntary actions to improve population diets. Not only do such policies fall short of global recommendations, over the past five years (2017–2022) little policy progress has been observed at the federal government level [16]. The recently released National Obesity Strategy (2022–2032) [57] and National Preventive Health Strategy (2021–2030) [58] have a strong focus on policies for creating healthier food environments, including in the areas of food labelling, food promotion, and food composition. Public support for food company actions in this area is an important consideration as part of policy development processes [21], with the current study indicating strong public support for greater action. A number of other countries, including the United Kingdom [59] and Chile [60], have recently implemented mandatory regulations in these areas, providing a clear pathway for action for the Australian government.

The findings from the current study provide important insight into the current perceptions of the Australian public towards nutrition-related actions by the food industry. The study's main strength is that it drew data from a relatively large sample of Australians (with selection of participants weighted to ensure the sample closely resembled the population sociodemographics in Australia). Respondents were recruited using nonprobability-based sampling from a commercial panel, meaning that despite the national sample, the findings should not be presumed to provide nationally representative estimates [61,62]. Importantly, the survey measures did not specify whether the relevant food company action would be implemented voluntarily or in response to government legislation. As such, this study is not able to provide any indication of whether the Australian public prefers a voluntary or mandatory approach to food company nutrition-related actions [63].

## 5. Conclusions

This study found strong public support in Australia for food companies to take action to improve nutrition and the healthiness of food environments. The findings from this study support greater implementation of nutrition-related policies and initiatives focused on improving the healthiness of food products, transparent labelling practices and socially responsible marketing strategies. With the current reliance on voluntary action from food companies in Australia, mandatory policy action may be needed to ensure company practices align with public expectations.

**Author Contributions:** Conceptualization, G.S., A.J.C., C.M.W., D.H., S.S. and L.V.; methodology, C.M.W., D.H. and L.V.; formal analysis, E.Y., A.J.C., S.S. and G.S.; writing—original draft preparation, E.Y., A.J.C., S.S. and G.S.; writing—review and editing, E.Y., G.S., A.J.C., S.S., C.M.W., D.H. and L.V.; All authors have read and agreed to the published version of the manuscript.

Funding: G.S. is a recipient of a National Health and Medical Research Council (NHMRC) Emerging Leadership Fellowship (2021/GNT2008535), and a Heart Foundation Future Leader Fellowship (102035) from the National Heart Foundation of Australia. G.S. is a researcher within NHMRC Centres for Research Excellence entitled Reducing Salt Intake Using Food Policy Interventions (2016/GNT1117300), Centre of Research Excellence in Food Retail Environments for Health (RE-FRESH) (2018/GNT1152968), and Healthy Food, Healthy Planet, Healthy People (2021/GNT2006620) (Australia). A.J.C. is a recipient of a Heart Foundation Future Leader Fellowship from the National Heart Foundation of Australia (project number 102611) and is a researcher within the Centre of Research Excellence in Food Retail Environments for Health (RE-FRESH) (2018/GNT1152968). L.V. is a Fonds de recherche du Québec—Santé (FRQS) research scholar. Funding for this project was provided by a Canadian Institutes of Health Research (CIHR) Project Grant (PJT162167), with additional support from Health Canada, the Public Health Agency of Canada (PHAC), and a CIHR—PHAC Applied Public Health Chair (D.H.).

**Institutional Review Board Statement:** The study was conducted in accordation with Declaration of Helsinki, and was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee on 16 November 2020 (ORE# 30829) and Deakin University Human Research Ethics Committee (protocol code 2018-082 on 16 March 2018).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Data are available upon reasonable request to the International Food Policy Study team (see <a href="www.foodpolicystudy.com">www.foodpolicystudy.com</a>), accessed on 31 January 2023.

Conflicts of Interest: D.H. has provided paid expert testimony on behalf of public health authorities in response to legal challenges from the food and beverage industry. All other authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

#### References

- 1. Afshin, A.; Sur, P.J.; Fay, K.A.; Cornaby, L.; Ferrara, G.; Salama, J.S.; Mullany, E.C.; Abate, K.H.; Abbafati, C.; Abebe, Z.; et al. Health effects of dietary risks in 195 countries, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2019, 393, 1958–1972. [CrossRef]
- 2. Swinburn, B.A.; Sacks, G.; Hall, K.D.; McPherson, K.; Finegood, D.T.; Moodie, M.L.; Gortmaker, S.L. The global obesity pandemic: Shaped by global drivers and local environments. *Lancet* **2011**, *378*, 804–814. [CrossRef] [PubMed]
- 3. Swinburn, B.A.; Kraak, V.I.; Allender, S.; Atkins, V.J.; Baker, P.I.; Bogard, J.R.; Brinsden, H.; Calvillo, A.; De Schutter, O.; Devarajan, R.; et al. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *Lancet* 2019, 393, 791–846. [CrossRef] [PubMed]
- 4. Pulker, C.E.; Scott, J.A.; Pollard, C.M. Ultra-processed family foods in Australia: Nutrition claims, health claims and marketing techniques. *Public Health Nutr.* **2018**, *21*, 38–48. [CrossRef] [PubMed]
- 5. Cameron, A.J. The shelf space and strategic placement of healthy and discretionary foods in urban, urban-fringe and rural/non-metropolitan Australian supermarkets. *Public Health Nutr.* **2018**, *21*, 593–600. [CrossRef] [PubMed]
- 6. Riesenberg, D.; Backholer, K.; Zorbas, C.; Sacks, G.; Paix, A.; Marshall, J.; Blake, M.R.; Bennett, R.; Peeters, A.; Cameron, A.J. Price Promotions by Food Category and Product Healthiness in an Australian Supermarket Chain, 2017–2018. *Am. J. Public Health* 2019, 109, 1434–1439. [CrossRef]
- 7. The George Institute for Global Health. *FoodSwitch: State of the Food Supply 2021*; The George Institute for Global Health: Sydney, Australia, 2021; pp. 1–24.
- 8. Cullerton, K.; Donnet, T.; Lee, A.; Gallegos, D. Exploring power and influence in nutrition policy in Australia. *Obes. Rev.* **2016**, 17, 1218–1225. [CrossRef] [PubMed]
- 9. Boyland, E.J.; Nolan, S.; Kelly, B.; Tudur-Smith, C.; Jones, A.; Halford, J.C.; Robinson, E. Advertising as a cue to consume: A systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *Am. J. Clin. Nutr.* **2016**, *103*, 519–533. [CrossRef]
- 10. Hallez, L.; Qutteina, Y.; Raedschelders, M.; Boen, F.; Smits, T. That's My Cue to Eat: A Systematic Review of the Persuasiveness of Front-of-Pack Cues on Food Packages for Children vs. *Adults. Nutrients* **2020**, *12*, 1062. [CrossRef]
- 11. Deakin University. Australia's Food Environment Dashboard. Available online: https://foodenvironmentdashboard.com.au/(accessed on 16 November 2021).
- 12. World Health Organization (WHO). *Report of the Commission on Ending Childhood Obesity*; World Health Organization: Geneva, Switzerland, 2016.
- 13. Jensen, M.L.; Dillman Carpentier, F.R.; Adair, L.; Corvalán, C.; Popkin, B.M.; Taillie, L.S. TV advertising and dietary intake in adolescents: A pre- and post- study of Chile's Food Marketing Policy. *Int. J. Behav. Nutr. Phys. Act.* **2021**, *18*, 60. [CrossRef]
- 14. Reyes, M.; Smith Taillie, L.; Popkin, B.; Kanter, R.; Vandevijvere, S.; Corvalán, C. Changes in the amount of nutrient of packaged foods and beverages after the initial implementation of the Chilean Law of Food Labelling and Advertising: A nonexperimental prospective study. *PLoS Med.* **2020**, *17*, e1003220. [CrossRef] [PubMed]
- 15. Pell, D.; Mytton, O.; Penney, T.L.; Briggs, A.; Cummins, S.; Penn-Jones, C.; Rayner, M.; Rutter, H.; Scarborough, P.; Sharp, S.J.; et al. Changes in soft drinks purchased by British households associated with the UK soft drinks industry levy: Controlled interrupted time series analysis. *BMJ* **2021**, *372*, n254. [CrossRef] [PubMed]
- 16. Sacks G for the Food-EPI Australia Project Team. *Policies for Tackling Obesity and Creating Healthier Food Environments: Scorecard and Recommended Actions for the Australian Federal Government;* Deakin University: Melbourne, Australia, 2022.
- 17. Department of Health. Health Star Rating System. Available online: www.healthstarrating.gov.au (accessed on 14 November 2022).
- 18. AANA. Children's Advertising Code. Available online: https://aana.com.au/self-regulation/codes-guidelines/aana-code-for-advertising-marketing-communications-to-children/ (accessed on 10 August 2021).
- 19. Department of Health. Partnership Reformulation Program. Available online: https://www.health.gov.au/initiatives-and-programs/healthy-food-partnership/partnership-reformulation-program?utm\_source=health.gov.au&utm\_medium=callout-auto-custom&utm\_campaign=digital\_transformation (accessed on 10 August 2021).

- 20. Crammond, B.; Van, C.; Allender, S.; Peeters, A.; Lawrence, M.; Sacks, G.; Mavoa, H.; Swinburn, B.A.; Loff, B. The possibility of regulating for obesity prevention–understanding regulation in the Commonwealth Government. *Obes. Rev.* 2013, 14, 213–221. [CrossRef] [PubMed]
- 21. Clarke, B.; Swinburn, B.; Sacks, G. The application of theories of the policy process to obesity prevention: A systematic review and meta-synthesis. *BMC Public Health* **2016**, *16*, 1084. [CrossRef]
- 22. Baker, P.; Gill, T.; Friel, S.; Carey, G.; Kay, A. Generating political priority for regulatory interventions targeting obesity prevention: An Australian case study. *Soc. Sci. Med.* **2017**, *177*, 141–149. [CrossRef]
- 23. Mialon, M.; Swinburn, B.; Allender, S.; Sacks, G. Systematic examination of publicly-available information reveals the diverse and extensive corporate political activity of the food industry in Australia. *BMC Public Health* **2016**, *16*, 283. [CrossRef]
- 24. Brambila-Macias, J.; Shankar, B.; Capacci, S.; Mazzocchi, M.; Perez-Cueto, F.J.A.; Verbeke, W.; Traill, W.B. Policy Interventions to Promote Healthy Eating: A Review of What Works, What Does Not, and What is Promising. *Food Nutr. Bull.* **2011**, 32, 365–375. [CrossRef] [PubMed]
- 25. Mills, C.; Martin, J.; Antonopoulos, N. *End the Charade! The Ongoing Failure to Protect Children from Unhealthy Food Marketing*; Obesity Policy Coalition: Melbourne, Australia, 2015.
- 26. Caraher, M.; Perry, I. Sugar, salt, and the limits of self regulation in the food industry. BMJ 2017, 357, j1709. [CrossRef]
- 27. Sacks, G.; Robinson, E.; Cameron, A.J.; Vanderlee, L.; Vandevijvere, S.; Swinburn, B. Benchmarking the Nutrition-Related Policies and Commitments of Major Food Companies in Australia, 2018. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6118. [CrossRef]
- 28. Shnayder, L.; van Rijnsoever, F.J.; Hekkert, M.P. Motivations for Corporate Social Responsibility in the packaged food industry: An institutional and stakeholder management perspective. *J. Clean Prod.* **2016**, 122, 212–227. [CrossRef]
- 29. Bossle, M.B.; De Barcellos, M.D.; Vieira, L.M. Why food companies go green? The determinant factors to adopt eco-innovations. *Br. Food J.* **2016**, *118*, 1317–1333. [CrossRef]
- 30. Tomlin, K.M. Assessing the Efficacy of Consumer Boycotts of U.S. Target Firms: A Shareholder Wealth Analysis. *South. Econ. J.* **2019**, *86*, 503–529. [CrossRef]
- 31. Cullerton, K.; Donnet, T.; Lee, A.; Gallegos, D. Playing the policy game: A review of the barriers to and enablers of nutrition policy change. *Public Health Nutr.* **2016**, *19*, 2643–2653. [CrossRef]
- 32. Diepeveen, S.; Ling, T.; Suhrcke, M.; Roland, M.; Marteau, T.M. Public acceptability of government intervention to change health-related behaviours: A systematic review and narrative synthesis. *BMC Public Health* **2013**, *13*, 756. [CrossRef] [PubMed]
- 33. Kwon, J.; Cameron, A.J.; Hammond, D.; White, C.M.; Vanderlee, L.; Bhawra, J.; Sacks, G. A multi-country survey of public support for food policies to promote healthy diets: Findings from the International Food Policy Study. *BMC Public Health* **2019**, 19, 1205. [CrossRef] [PubMed]
- 34. Morley, B.; Martin, J.; Niven, P.; Wakefield, M. Public opinion on food-related obesity prevention policy initiatives. *Health Promot. J. Aust.* **2012**, 23, 86–91. [CrossRef] [PubMed]
- 35. Cullerton, K.; Baker, P.; Adsett, E.; Lee, A. What do the Australian public think of regulatory nutrition policies? A scoping review. *Obes. Rev.* **2021**, 22, e13106. [CrossRef]
- 36. Howse, E.; Hankey, C.; Bauman, A.; Freeman, B. Are young adults' discussions of public health nutrition policies associated with common food industry discourses? A qualitative pilot study. *Aust. N. Z. J. Public Health* **2021**, *1*, 171–180. [CrossRef] [PubMed]
- 37. Pettigrew, S.; Pescud, M.; Rosenberg, M.; Ferguson, R.; Houghton, S. Public support for restrictions on fast food company sponsorship of community events. *Asia Pac. J. Clin. Nutr.* **2012**, *21*, 609–617. [PubMed]
- 38. Kelly, B.; Baur, L.A.; Bauman, A.E.; King, L.; Chapman, K.; Smith, B.J. Restricting unhealthy food sponsorship: Attitudes of the sporting community. *Health Policy* **2012**, 104, 288–295. [CrossRef] [PubMed]
- 39. Hammond, D.; Vanderlee, L.; White, C.M.; Acton, R.B.; White, M.; Roberto, C.A.; Cameron, A.; Sacks, G.; Kirkpatrick, S.; Dubin, J.; et al. The Conceptual Framework for the International Food Policy Study: Evaluating the Population-Level Impact of Food Policy. *J. Nutr.* 2022, *13* (Suppl. 1), 1S–12S. [CrossRef] [PubMed]
- 40. Hammond, D.; White, C.; Rynard, V.; Vanderlee, L. *International Food Policy Study: Technical Report*—2020 Survey (Wave 4); University of Waterloo: Waterloo, ON, Canada, 2021.
- 41. National Center for Chronic Disease Prevention and Health Promotion. About Adult BMI. Available online: https://www.cdc.gov/healthyweight/assessing/bmi/adult\_bmi/index.html (accessed on 19 December 2022).
- 42. Organisation for Economic Co-Operation and Development (OECD). What Are Equivalence Scales? Available online: https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf (accessed on 19 December 2022).
- 43. Australian Bureau of Statistics (ABS). Household Income and Wealth, Australia. Available online: https://www.abs.gov.au/statistics/economy/finance/household-income-and-wealth-australia/latest-release (accessed on 19 December 2022).
- 44. Gómez-Donoso, C.; Sacks, G.; Vanderlee, L.; Hammond, D.; White, C.M.; Nieto, C.; Bes-Rastrollo, M.; Cameron, A.J. Public support for healthy supermarket initiatives focused on product placement: A multi-country cross-sectional analysis of the 2018 International Food Policy Study. *Int. J. Behav. Nutr. Phys. Act.* 2021, 18, 78. [CrossRef] [PubMed]
- 45. Bos, C.; Van Der Lans, I.; Van Rijnsoever, F.; Van Trijp, H. Consumer acceptance of population-level intervention strategies for healthy food choices: The role of perceived effectiveness and perceived fairness. *Nutrients* 2015, 7, 7842–7862. [CrossRef] [PubMed]
- 46. StataCorp. StataCorp Stata Statistical Software: Release 17; StataCorp LLC.: College Station, TX, USA, 2021.
- 47. Hosmer D.W., Jr.; Lemeshow, S.; Sturdivant, R.X. Applied Logistic Regression; John Wiley & Sons: Hoboken, NJ, USA, 2013; Volume 398.

- 48. Pettigrew, S.; Booth, L.; Dunford, E.; Webster, J.; Wu, J.; Tian, M.; Praveen, D.; Scapin, T.; Sacks, G. An examination of public support for 35 nutrition interventions across seven countries. *Eur. J. Clin. Nutr.* **2022**, 77, 235–245. [CrossRef]
- 49. Swift, E.; Borland, R.; Cummings, K.M.; Fong, G.T.; McNeill, A.; Hammond, D.; Thrasher, J.F.; Partos, T.R.; Yong, H.-H. Australian smokers' support for plain or standardised packs before and after implementation: Findings from the ITC Four Country Survey. *Tob. Control* 2015, 24, 616. [CrossRef]
- 50. Berry, N.M.; Carter, P.; Nolan, R.; Dal Grande, E.; Booth, S. Public attitudes to government intervention to regulate food advertising, especially to children. *Health Promot. J. Aust.* **2017**, *28*, 85–87. [CrossRef]
- 51. Wolfson, J.A.; Gollust, S.E.; Niederdeppe, J.; Barry, C.L. The Role of Parents in Public Views of Strategies to Address Childhood Obesity in the United States. *Milbank Q.* **2015**, *93*, 73–111. [CrossRef]
- 52. Kelly, B.; Bosward, R.; Freeman, B. Social online marketing engagement (SoMe) study of food and drink brands: Real time measurement of Australian children. *J. Med. Internet Res.* **2021**, 23, e28144. [CrossRef]
- 53. Martino, F.; Chung, A.; Potter, J.; Heneghan, T.; Chisholm, M.; Riesenberg, D.; Gupta, A.; Backholer, K. A state-wide audit of unhealthy sponsorship within junior sporting clubs in Victoria, Australia. *Public Health Nutr.* **2021**, *24*, 3797–3804. [CrossRef] [PubMed]
- 54. Watson, W.L.; Lau, V.; Wellard, L.; Hughes, C.; Chapman, K. Advertising to children initiatives have not reduced unhealthy food advertising on Australian television. *J. Public Health* **2017**, *39*, 787–792. [CrossRef]
- 55. Smithers, L.G.; Haag, D.G.; Agnew, B.; Lynch, J.; Sorell, M. Food advertising on Australian television: Frequency, duration and monthly pattern of advertising from a commercial network (four channels) for the entire 2016. *J. Paediatr. Child. Health* **2018**, 54, 962–967. [CrossRef] [PubMed]
- 56. Robinson, E.; Carey, R.; Foerster, A.; Sacks, G. Latest Trends in Investing for Improved Nutrition and Obesity Prevention. *Curr. Nutr. Rep.* **2022**, *11*, 39–55. [CrossRef]
- 57. Commonwealth of Australia. The National Obesity Strategy 2022–2032; Commonwealth of Australia: Canberra, Australia, 2022.
- 58. Commonwealth of Australia. National Preventive Health Strategy 2021–2030; Commonwealth of Australia: Canberra, Australia, 2021.
- Department of Health and Social Care. Policy paper: Health and Care Bill: Advertising of Less Healthy Food and Drink. Available
  online: https://www.gov.uk/government/publications/health-and-care-bill-factsheets/health-and-care-bill-advertising-ofless-healthy-food-and-drink (accessed on 13 March 2022).
- 60. Taillie, L.S.; Reyes, M.; Colchero, M.A.; Popkin, B.; Corvalán, C. An evaluation of Chile's Law of Food Labeling and Advertising on sugar-sweetened beverage purchases from 2015 to 2017: A before-and-after study. *PLoS Med.* **2020**, *17*, e1003015. [CrossRef] [PubMed]
- 61. Hays, R.D.; Liu, H.; Kapteyn, A. Use of Internet panels to conduct surveys. Beh. Res. Methods 2015, 47, 685–690. [CrossRef] [PubMed]
- 62. Bethlehem, J. Selection Bias in Web Surveys. Int. Stat. Rev. 2010, 78, 161–188. [CrossRef]
- 63. Sheeran, P. Intention—Behavior Relations: A Conceptual and Empirical Review. Eur. Rev. Soc. Psychol. 2002, 12, 1–36. [CrossRef]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.