

Awareness of marketing for high fat, salt, or sugar (HFSS) foods, and the association with higher weekly consumption among adolescents: A rejoinder to the UK Government's consultations on marketing regulation. - CORRIGENDUM

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It has come to the authors' attention that a minority of participants were assigned an incorrect Extended International Obesity Task Force (IOTF) grade for their Body Mass Index (BMI). The misclassification concerns a minority of cases (approximately 2% of the sample) and is limited to only a subset of female participants aged 11-17 years old.

The findings, conclusions, and interpretations of the paper are unchanged, but corrections to the text and tables of the above published article are presented below:

# Original text (page 2637, Abstract; Results)

For example, those reporting medium marketing awareness were 1.5 times more likely to report higher weekly consumption of cakes/biscuits compared with those reporting low awareness (AOR = 1.51, P = 0.012).

For example, those reporting medium marketing awareness were 1.5 times more likely to report higher weekly consumption of cakes/biscuits compared with those reporting low awareness (AOR = 1.49, P = 0.014).

# Original text (page 2638, Design)

A survey weight (based on age, gender, ethnicity, region and social grade) enabled descriptive data to be representative of the UK population.

#### Correction

A survey weight (based on age, gender, ethnicity, region, and area level of deprivation) enabled descriptive data to be representative of the UK population.

# Original text (page 2638, Measures)

Participants self-reported their height (options presented in both feet and inches or centimetres) and weight (options presented in stones and pounds, kilograms or pounds only).

#### Correction

Participants self-reported their height (options presented in both feet and inches or centimetres) and weight (options presented in stones and pounds, kilograms or pounds only). This information was reported by participants aged 16-19 years and parent(s)/guardian(s) for 11-15 year olds.

# Original text (page 2642, Sample Characteristics)

After excluding participants with missing data for height or weight (n 816, weighted), 61.5 % were categorised as healthy weight, 17.3 % underweight, 16.2 % overweight and 5.0 % obese.

#### Correction

After excluding participants with missing data for height or weight (n 816, weighted), 61.9% were categorised as healthy weight, 18.0% underweight, 15.3% overweight and 4.8% obese.

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# Original text (page 2640, Table 2)

Table 2 Binary logistic regressions exploring the association between high fat, salt or sugar (HFSS) marketing awareness and consumption of group 1 foods

								Food	and dri	nk produc	ct types	i						
	Sugary drinks*		Flavoured yoghurts*		Sweets/ chocolate*		Cakes and biscuits*		Fruit†		Vegetables†		Diet/sugar- free drinks‡		Crisps*		Des	sserts*
Variable and reference categories	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	Р
Age																		
11-13 years	Ref	NS	Ref	<0.001	Ref	0.001	Ref	<0.001	Ref	<0.001	Ref	NS	Ref	0.011	Ref	<0.001	Ref	<0.001
14-17 years (v. younger)	1.26	0.029	0.63	<0.001	0.76	0.010	0.81	0.035	0.71	0.005	0.97	NS	1.09	NS	0.67	<0.001	0.61	<0.001
18–19 years ( <i>v.</i> younger)	1.08	NS	0.42	<0.001	0.74	0.003	0.58	<0.001	0.63	<0.001	0.72	0.017	0.74	0.005	0.62	<0.001	0.53	<0.001
Gender																		
Female	Ref	_	Ref	_	Ref	-	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_
Male	1.76	<0.001	1.14	NS	0.97	NS	1.12	NS	0.69	<0.001	0.83	NS	1.28	0.006	1.27	0.005	1.20	0.033
Ethnicity																		
Other	Ref	_	Ref	_	Ref	-	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_
White British	1.00	NS	1.24	NS	1.44	0.001	1.13	NS	0.84	NS	1.32	NS	1.43	0.004	1.55	<0.001	1.12	NS
Country																		
England	Ref	0.010	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	0.001	Ref	NS	Ref	NS	Ref	<0.001
Wales (v. England)	1.02	NS	0.89	NS	1.02	NS	0.85	NS	0.89	NS	0.52	0.002	0.74	NS	1.00	NS	0.78	NS
Scotland (v. England)	1.38	0.016	0.88	NS	1.30	NS	1.14	NS	1.06	NS	0.59	0.003	1.13	NS	0.86	NS	0.54	<0.001
North Ireland (v. England)	1.64	0.011	1.34	NS	1.09	NS	1.15	NS	1.04	NS	0.64	NS	1.07	NS	1.30	NS	0.34	<0.001
IMD																		
1	Ref	<0.001	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	<0.001	Ref	NS	Ref	0.049	Ref	NS
2 (v. 1)	0.67	0.004	1.02	NS	1.37	0.028	1.36	0.027	1.21	NS	1.59	0.010	1.01	NS	0.97	NS	1.20	NS
3 (v. 1, 2)	0.98	NS	0.94	NS	1.14	NS	1.20	NS	1.08	NS	1.41	0.030	0.94	NS	0.73	0.006	1.10	NS
4 (v. 1, 2, 3)	0.64	<0.001	0.99	NS	0.99	NS	1.09	NS	1.18	NS	1.94	<0.001	1.02	NS	0.86	NS	1.19	NS
5 (v. 1, 2, 3, 4)	0.75	0.014	0.90	NS	0.89	NS	0.93	NS	1.23	NS	2.33	<0.001	0.98	NS	0.99	NS	1.24	NS
Weight status																		
Underweight	Ref	NS	Ref	NS	Ref	NS	Ref	0.012	Ref	0.001	Ref	<0.001	Ref	<0.001	Ref	NS	Ref	NS
Healthy weight (v. underweight)	1.13	NS	1.01	NS	1.04	NS	0.70	0.003	0.98	NS	0.91	NS	1.54	0.001	0.94	NS	1.09	NS
Overweight (v. underweight and healthy)	1.21	NS	1.30	0.046	0.97	NS	0.80	NS	0.75	0.032	0.80	NS	1.70	<0.001	0.96	NS	0.94	NS
Obese (v. all other)	1.20	NS	0.71	NS	1.36	NS	0.78	NS	0.55	0.002	0.39	<0.001	3.46	<0.001	1.04	NS	1.02	NS
Marketing awareness																		
Low	Ref	<0.001	Ref	0.005	Ref	0.026	Ref	<0.001	Ref	NS	Ref	NS	Ref	<0.001	Ref	0.006	Ref	NS
Medium (v. low)	1.79	0.001	1.35	NS	1.32	NS	1.51	0.012	1.17	NS	1.27	NS	1.39	NS	1.40	0.038	1.16	NS
High (v. low and medium)	2.30	<0.001	1.48	0.010	1.48	0.010	1.77	<0.001	1.22	NS	0.95	NS	1.70	<0.001	1.51	0.004	1.39	0.021
Not stated (v. all other)	0.93	NS	0.84	NS	1.02	NS	1.02	NS	0.93	NS	0.90	NS	0.91	NS	1.05	NS	0.94	NS

AOR, adjusted OR; IMD, Index of Multiple Deprivation; NS, not significant (P > 0.05).

Dependant variable for all models = high consumption ( $\ge$ 2 portions per week) v. low ( $\le$ 1 portion); Hosmer–Lemeshow test for all models, P > 0.05;  $\chi^2$  test of coefficients for all models, P < 0.001.

\*HFSS products.

†Non-HFSS products.

‡HFSS alternatives. Cases with missing data on one or more variables excluded model-by-model, sugary drinks (n 895), flavoured yoghurts (n 911), sweets/chocolate (n 892), cake/biscuits (n 898), fruit (n 900), vegetables (n 899), diet/sugar-free drinks (n 927), crisps (n 892) and desserts (n 906).

# Correction

Table 2 Binary logistic regressions exploring the association between high fat, salt or sugar (HFSS) marketing awareness and consumption of group 1 foods

								Food	and dr	ink produc	ct types							
	Sugary drinks*		Flavoured yoghurts*		Sweets/ choclate*		Cakes and biscuits*		Fruit†		Vegetables†		Diet/sugar- free drinks‡		Crisps*		Desserts*	
Variable and reference categories	AOR	P	AOR	P	AOR	Р	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P
Age																		
11-13 years	Ref	NS	Ref	<0.001	Ref	0.001	Ref	<0.001	Ref	<0.001	Ref	NS	Ref	0.007	Ref	<0.001	Ref	<0.001
14-17 years (v. younger)	1.26	0.028	0.63	<0.001	0.76	0.010	0.81	0.034	0.71	0.005	0.96	NS	1.09	NS	0.67	<0.001	0.61	<0.001
18-19 years (v. younger)	1.08	NS	0.42	<0.001	0.74	0.003	0.58	<0.001	0.63	<0.001	0.73	0.022	0.73	0.004	0.62	<0.001	0.53	<0.001
Gender																		
Female	Ref	_	Ref	_	Ref	-	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_
Male	1.75	<0.001	1.14	NS	0.97	NS	1.13	NS	0.69	<0.001	0.84	NS	1.25	0.013	1.26	0.005	1.19	0.033



#### Table 2 Continued

								Food	and dr	ink produc	ct types	i						
Variable and reference categories	Sugary drinks*		Flavoured yoghurts*		Sweets/ choclate*		Cakes and biscuits*		Fruit†		Vegetables†		Diet/sugar- free drinks‡		Crisps*		Des	sserts*
	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	Р	AOR	P	AOR	Р	AOR	P
Ethnicity																		
Other	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	Ref	_
White British	1.00	NS	1.24	NS	1.43	0.002	1.13	NS	0.83	NS	1.31	NS	1.42	0.005	1.54	<0.001	1.11	NS
Country																		
England	Ref	0.011	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	0.001	Ref	NS	Ref	NS	Ref	<0.001
Wales (v. England)	1.02	NS	0.88	NS	1.02	NS	0.85	NS	0.89	NS	0.52	0.002	0.74	NS	0.99	NS	0.77	NS
Scotland (v. England)	1.38	0.017	0.87	NS	1.30	NS	1.14	NS	1.05	NS	0.58	0.003	1.13	NS	0.86	NS	0.54	<0.001
Northern Ireland (v. England)	1.64	0.012	1.35	NS	1.09	NS	1.16	NS	1.04	NS	0.65	NS	1.07	NS	1.30	NS	0.34	<0.001
IMD																		
1	Ref	<0.001	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	<0.001	Ref	NS	Ref	NS	Ref	NS
2 (v. 1)	0.67	0.004	1.02	NS	1.37	0.028	1.36	0.027	1.22	NS	1.59	0.009	1.01	NS	0.97	NS	1.20	NS
3 (v. 1, 2)	0.98	NS	0.93	NS	1.14	NS	1.20	NS	1.09	NS	1.41	0.029	0.94	NS	0.73	0.006	1.10	NS
4 (v. 1, 2, 3)	0.64	<0.001	0.99	NS	0.99	NS	1.09	NS	1.18	NS	1.94	<0.001	1.01	NS	0.86	NS	1.19	NS
5 (v. 1, 2, 3, 4)	0.75	0.014	0.91	NS	0.89	NS	0.92	NS	1.22	NS	2.33	<0.001	0.97	NS	0.98	NS	1.24	NS
Weight status																		
Underweight	Ref	NS	Ref	NS	Ref	NS	Ref	0.011	Ref	<0.001	Ref	<0.001	Ref	<0.001	Ref	NS	Ref	NS
Healthy weight (v. underweight§)	1.10	NS	1.08	NS	1.06	NS	0.71	0.005	0.95	NS	0.96	NS	1.42	0.006	0.96	NS	1.08	NS
Overweight (v. underweight and healthy)	1.25	NS	1.24	NS	0.94	NS	0.76	0.025	0.72	0.018	0.72	NS	1.71	<0.001	0.92	NS	0.94	NS
Obese (v. all other)	1.13	NS	0.77	NS	1.38	NS	0.79	NS	0.50	0.001	0.42	<0.001	3.46	<0.001	1.03	NS	1.04	NS
Marketing awareness																		
Low	Ref	<0.001	Ref	0.006	Ref	0.026	Ref	<0.001	Ref	NS	Ref	NS	Ref	<0.001	Ref	0.006	Ref	NS
Medium (v. low)	1.82	<0.001	1.35	NS	1.32	NS	1.49	0.014	1.17	NS	1.27	NS	1.41	NS	1.41	0.034	1.17	NS
High (v. low and medium)	2.29	<0.001	1.48	0.010	1.47	0.010	1.78	<0.001	1.22	NS	0.95	NS	1.68	<0.001	1.50	0.004	1.38	0.022
Not stated (v. all other)	0.93	NS	0.85	NS	1.01	NS	1.02	NS	0.93	NS	0.90	NS	0.90	NS	1.05	NS	0.93	NS

AOR, adjusted OR; IMD, Index of Multiple Deprivation.

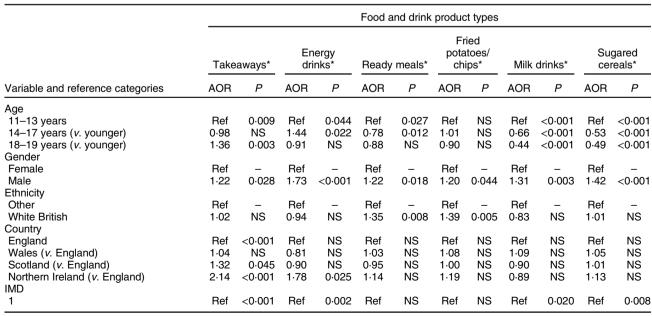
Dependant variable for all models = high consumption ( $\geq 2$  portions per week) v. low ( $\leq 1$  portion); Hosmer-Lemeshow test for all models, P > 0.05;  $\chi^2$  test of coefficients for all models, P < 0.001. \*HFSS products.

†Non-HFSS products.

‡HFSS alternatives. Cases with missing data on one or more variables excluded model-by-model sugary drinks (n 894), flavoured yoghurts (n 910), sweets/chocolate (n 891), cake/biscuits (n 897), fruit (n 899), vegetables (n 898), diet/sugar-free drinks (n 926), crisps (n 891) and desserts (n 905).

# Original text (page 2641, Table 3)

Table 3 Binary logistic regressions exploring the association between high fat, salt or sugar (HFSS) marketing awareness and consumption of group 2 foods







# Table 3 Continued

		Food and drink product types													
		eaways*		Energy drinks*		Ready meals*		ried atoes/ ips*	Milk drinks*			gared reals*			
Variable and reference categories	AOR	Р	AOR	Р	AOR	Р	AOR	Р	AOR	Р	AOR	Р			
2 (v. 1) 3 (v. 1, 2) 4 (v. 1, 2, 3) 5 (v. 1, 2, 3, 4) Weight status Underweight Healthy weight (v. underweight) Overweight (v. underweight and healthy) Obese (v. all other)	0.71 0.80 0.75 0.68 Ref 1.04 1.21 1.30	0.016 NS 0.007 0.002 NS NS NS	0.73 0.68 0.63 0.75 Ref 1.20 1.52 0.94	NS 0.027 0.007 NS NS NS 0.019	1.02 0.88 0.94 0.82 Ref 0.96 0.88 1.49	NS NS NS NS NS NS NS	0.86 0.99 0.87 0.82 Ref 0.91 1.28 0.91	NS NS NS NS NS NS	1.06 0.83 0.85 0.71 Ref 1.16 1.10 0.97	NS NS NS 0.007 NS NS NS	0.95 0.87 0.69 0.99 Ref 0.77 0.93 1.21	NS NS <0.001 NS NS 0.025 NS			
Marketing awareness Low Medium (v. low) High (v. low and medium) Not stated (v. all other)	Ref 1.46 2.16 0.87	<0.001 0.037 <0.001 NS	Ref 2·09 2·86 0·63	<0.001 0.009 <0.001 0.001	Ref 1.96 1.53 0.86	<0.001 <0.001 0.004 NS	Ref 1.24 1.66 0.88	0.005 NS 0.001 NS	Ref 1.26 1.63 0.78	<0.001 NS 0.001 0.007	Ref 1.30 1.28 0.95	NS NS NS NS			

AOR, adjusted OR; IMD, Index of Multiple Deprivation; NS, not significant (P > 0.05).

Dependant variable for all models = high consumption ( $\geq$ 1 portion per week) v. low (0 portion per week); Hosmer–Lemeshow test for all models, P > 0.05;  $\chi^2$  test of coefficients

\*HFSS products.

Cases with missing data on one or more variables excluded model-by-model, takeaways (n 899), energy drinks (n 914), ready meals (n 901), fried potatoes/chips (n 897), milk drinks (n 927) and sugar-sweetened cereals (n 898).

# Correction

Table 3 Binary logistic regressions exploring the association between high fat, salt or sugar (HFSS) marketing awareness and consumption of group 2 foods

	Food and drink product types												
	Takeaways*		Energy drinks*		Ready meals*		Fried potatoes/ chips*		Milk drinks*			gared reals*	
Variable and reference categories	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	
Age													
11–13 years	Ref	0.012	Ref	0.042	Ref	0.028	Ref	NS	Ref	<0.001	Ref	<0.001	
14–17 years ( <i>v</i> . younger)	0.98	NS	1.44	0.022	0.78	0.012	1.01	NS	0.66	<0.001	0.53	<0.001	
18–19 years ( <i>v.</i> younger)	1.35	0.004	0.90	NS	0.89	NS	0.90	NS	0.44	<0.001	0.49	<0.001	
Gender													
Female	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_	Ref	_	
Male	1.21	0.031	1.71	<0.001	1.22	0.018	1.19	0.048	1.31	0.003	1.42	<0.001	
Ethnicity													
Other	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	Ref	-	
White British	1.02	NS	0.94	NS	1.34	0.009	1.38	0.006	0.83	NS	1.01	NS	
Country													
England	Ref	<0.001	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	NS	
Wales (v. England)	1.04	NS	0.81	NS	1.03	NS	1.08	NS	1.09	NS	1.05	NS	
Scotland (v. England)	1.32	0.045	0.89	NS	0.96	NS	0.99	NS	0.90	NS	1.02	NS	
Northern Ireland (v. England)	2.13	<0.001	1.79	0.024	1.14	NS	1.19	NS	0.90	NS	1.12	NS	
IMD													
1	Ref	<0.001	Ref	0.001	Ref	NS	Ref	NS	Ref	0.019	Ref	0.008	
2 (v. 1)	0.71	0.016	0.73	NS	1.02	NS	0.86	NS	1.06	NS	0.94	NS	
3 (v. 1, 2)	0.80	NS	0.67	0.024	0.89	NS	0.99	NS	0.83	NS	0.87	NS	
4 (v. 1, 2, 3)	0.75	0.007	0.63	0.007	0.94	NS	0.87	NS	0.85	NS	0.69	<0.001	
5 (v. 1, 2, 3, 4)	0.68	0.002	0.75	NS	0.82	NS	0.82	NS	0.71	0.008	0.98	NS	
Weight status	D - (	NO	D-1	NO	D - (	NO	D-1	NO	D-1	NO	D - (	NO	
Underweight	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	NS	Ref	NS 0.007	
Healthy weight (v. underweight†)	1.00	NS	1.28	NS 0.010	0.95	NS	0.91	NS	1.16	NS	0.79	0.037	
Overweight (v. underweight and healthy)	1.25	NS	1.53	0.019	0.87	NS	1.23	NS	1.08	NS	0.95	NS	





#### Table 3 Continued

	Food and drink product types													
	Takeaways*		Energy drinks*		Ready meals*		Fried potatoes/ chips*		Milk drinks*			ared eals*		
Variable and reference categories	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P	AOR	P		
Obese (v. all other) Marketing awareness	1.38	NS	0.93	NS	1.46	NS	1.06	NS	0.91	NS	1.21	NS		
Low Medium (v. low) High (v. low and medium) Not stated (v. all other)	Ref 1.45 2.16 0.87	<0.001 0.039 <0.001 NS	Ref 2·10 2·86 0·63	<0.001 0.009 <0.001 <0.001	Ref 1.96 1.52 0.86	<0.001 <0.001 0.004 NS	Ref 1.24 1.65 0.88	0.006 NS 0.002 NS	Ref 1·25 1·64 0·78	<0.001 NS <0.001 0.007	Ref 1.29 1.28 0.95	NS NS NS NS		

AOR, adjusted OR; IMD, Index of Multiple Deprivation.

Dependant variable for all models = high consumption ( $\geq$ 1 portion per week)  $\nu$ . low ( $\leq$ 0 portion per week); Hosmer–Lemeshow test for all models, P > 0.05;  $\chi^2$  test of coefficients for all models, P < 0.001.

# Original text (page 2642, Marketing awareness and weekly consumption of foods high in fat, salt or sugar)

For example, those reporting medium marketing awareness were 1.51 times (95 % CI 1.10, 2.08) more likely to report higher weekly consumption of cakes/biscuits v. low awareness, whereas those reporting high awareness were 1.77 times more likely (95 % CI 1.33, 2.36) v. low and medium awareness combined

#### Correction

For example, those reporting medium marketing awareness were 1.49 times (95 % CI 1.08, 2.06) more likely to report higher weekly consumption of cakes/biscuits v. low awareness, whereas those reporting high awareness were 1.78 times more likely (95 % CI 1.33, 2.37) v. low and medium awareness combined

# Original text (page 2642, Marketing awareness and weekly consumption of foods high in fat, salt or sugar)

Consistent with the first group, the likelihood of higher weekly consumption increased relative to marketing awareness. For example, those reporting medium marketing awareness were 1.46 times (95 % CI: 1.02, 2.08) more likely to report higher weekly consumption of takeaways v. low awareness, while those reporting high awareness were 2.16 times (95 % CI 1.62, 2.86) more likely v. low and medium combined

#### Correction

Consistent with the first group, the likelihood of higher weekly consumption increased relative to marketing awareness. For example, those reporting medium marketing awareness were 1.45 times (95 % CI: 1.02, 2.07) more likely to report higher weekly consumption of takeaways v. low awareness, while those reporting high awareness were 2.16 times (95 % CI 1.62, 2.87) more likely v. low and medium combined

#### Original text (page 2643, Marketing awareness and weekly consumption of healthy foods)

There was an association between awareness of marketing for HFSS foods and higher weekly consumption of diet/sugar-free drinks (HFSS alternative) – with those reporting high marketing awareness being 1.7 times (95 % CI 1.28, -2.26) more likely to report high weekly consumption of diet/sugar-free drinks than those reporting medium or low awareness.

#### Correction

There was an association between awareness of marketing for HFSS foods and higher weekly consumption of diet/sugar-free drinks (HFSS alternative) – with those reporting high marketing awareness being 1.68 times (95 % CI 1.27, -2.23) more likely to report high weekly consumption of diet/sugar-free drinks than those reporting medium or low awareness.

# Reference

Critchlow, N., Bauld, L., Thomas, C., Hooper, L., & Vohra, J. (2020). Awareness of marketing for high fat, salt or sugar foods, and the association with higher weekly consumption among adolescents: A rejoinder to the UK government's consultations on marketing regulation. *Public Health Nutrition*, **23**(14), 2637–2646. doi: 10.1017/S1368980020000075



<sup>\*</sup>HFSS products. Cases with missing data on one or more variables excluded model-by-model takeaways (n 898), energy drinks (n 913), ready meals (n 900), fried potatoes (n 896), milk drinks (n 926) and sugar-sweetened cereals (n 897).