

Tracking restaurant menu items in the UK

Energy and nutrient trends

Coffee Break Seminar

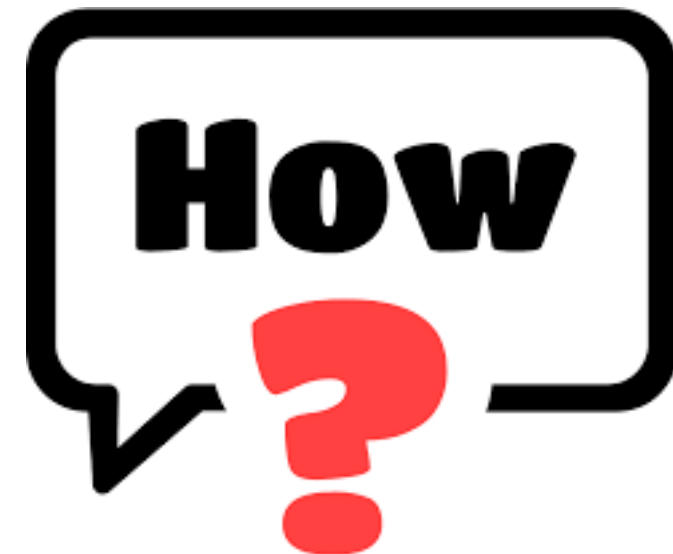
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Population Health Interventions (PHI)
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Content



do we need to track the nutrient composition of restaurant menu items?



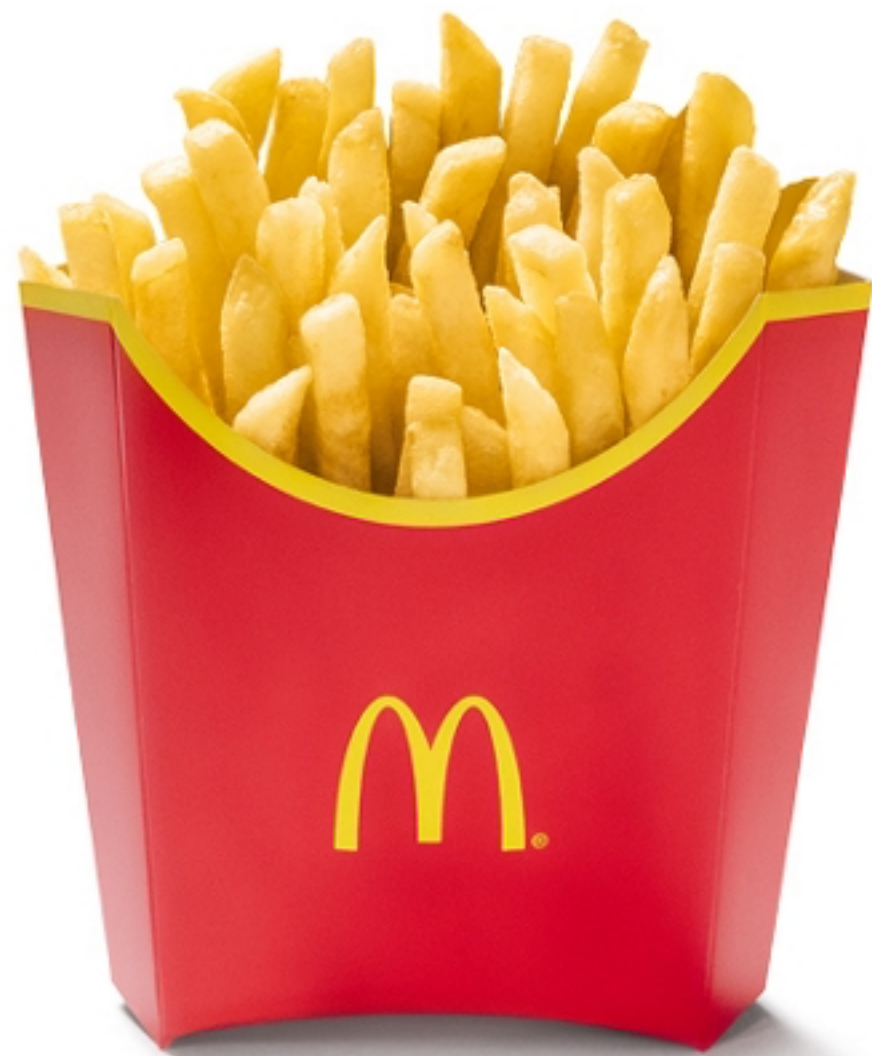
can we track the nutrient composition of restaurant menu items?



have we found through tracking restaurant menu items in the UK?

Saltiest chips/fries competition

Which one contains the highest amount of salt?



**McDonald's Fries
(Medium)**

0.62 g



**Nando's Chips
(Regular)**

0.60 g



**The Regal: Bowl
of Chips
(Wetherspoons)**

2.2 g



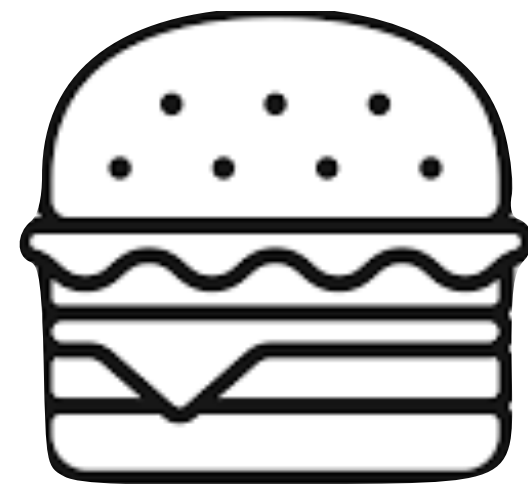
**McCain Home
Chips (one
serving of 100g)**

0.54 g

Nutrient composition of restaurant menu items

Why?

Restaurant foods tend to be high in **energy, fat, and salt**, yet low in **fibre and micronutrients**.



Compare to their supermarket equivalents, the food and drinks served out-of-home (or takeaway meals) contain **twice as many calories** on average

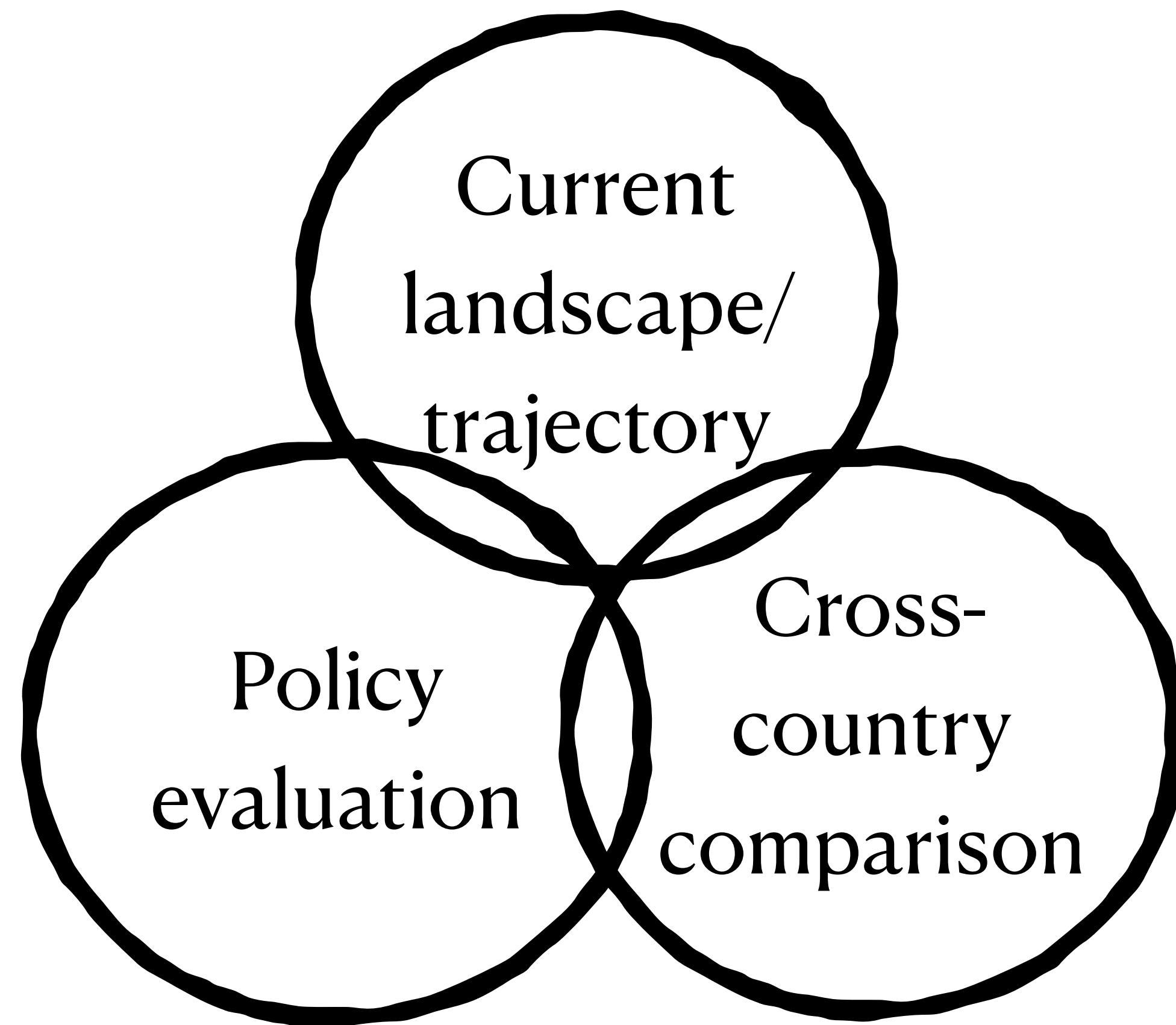


The food we eat outside the home makes up **20-25%** of adult daily calorie intake.

Frequent restaurant food consumption is associated with higher **daily energy intake** and **BMI**

Nutritional composition of restaurant menu items

Why?



Restaurant food environment



Participant YH's food diary

Breakfast: regular oat latte +
croissant from Caffe Nero



Lunch: Italian B.M.T wrap from
subway

Dinner:
tantanmen beef brisket ramen
from wagamama



Improve the estimation of nutrient
consumption

Nutritional composition of restaurant menu items

How?



Nutritional composition of restaurant menu items

How?

Luckily, some restaurants post this information online and/or in-store!



News story

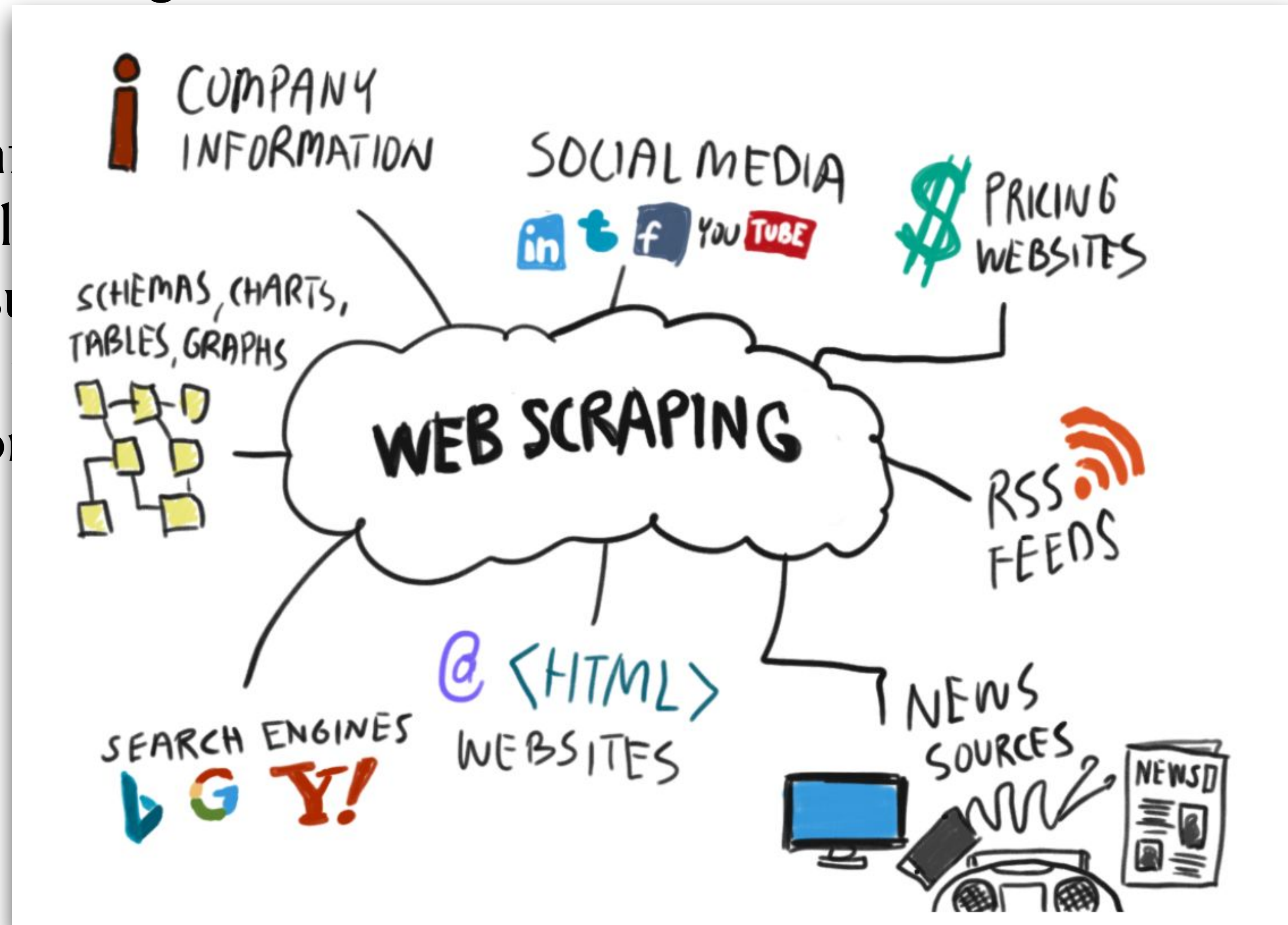
Calorie labelling on menus to be introduced in cafes, restaurants and takeaways

Government renews drive to tackle obesity and improve the nation's health

Nutritional composition of restaurant menu items

Building a database

- Energy and nutritional information of menu items served by 100 restaurants (potentially subject to the calorie labelling rule) and the nutritional information of



Web scraping

The power of web scraping



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Alerts

Nutrition and metabolism Research

Nutrient composition comprehensive, real-time

Richard Andrew Harrington ,  Vyas A

Correspondence to Dr Richard Andrew Har

Abstract

Objectives Traditional methods for c

rapid pace of change in the food and c

marketplace, and presents analyses ill

Design foodDB has been used to coll

November 2017. As of June 2018, foo

multiple timepoints.

Methods Weekly extraction of nutriti

websites. This process was automated

Results Analyses using a single week

and showed that lower price ready me


analyses of 903 pizzas revealed that 1

discontinued or new market entries.

Conclusions foodDB is a powerful ne

granularity of collection provides pow

branded foods, timely observation of p

 PDF

A primer on theory-driven web scraping: Automatic extraction of big data from the Internet for use in psychological research.

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Landers, R. N., Brusso, R. C., Cavanaugh, K. J., & Collmus, A. B. (2016). A primer on theory-driven web scraping: Automatic extraction of big data from the Internet for use in psychological research. *Psychological Methods*, 21(4), 475–492. <https://doi.org/10.1037/met0000081>

The term *big data* encompasses a wide range of approaches of collecting and analyzing data in ways that were not possible before the era of modern personal computing. One approach to big data of great potential to psychologists is web scraping, which involves the automated collection of information from webpages. Although web scraping can create massive big datasets with tens of thousands of variables, it can also be used to create modestly sized, more manageable datasets with tens of variables but hundreds of thousands of cases, well within the skillset of most psychologists to analyze, in a matter of hours. In this article, we demystify web scraping methods as currently used to examine research questions of interest to psychologists. First, we introduce an approach called the

follow substantive assumptions a res
scrape data from i
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web tutorial design
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Web scraping for food price research

Judith Hillen ▾

British Food Journal

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Issue publication date: 27 November 2019

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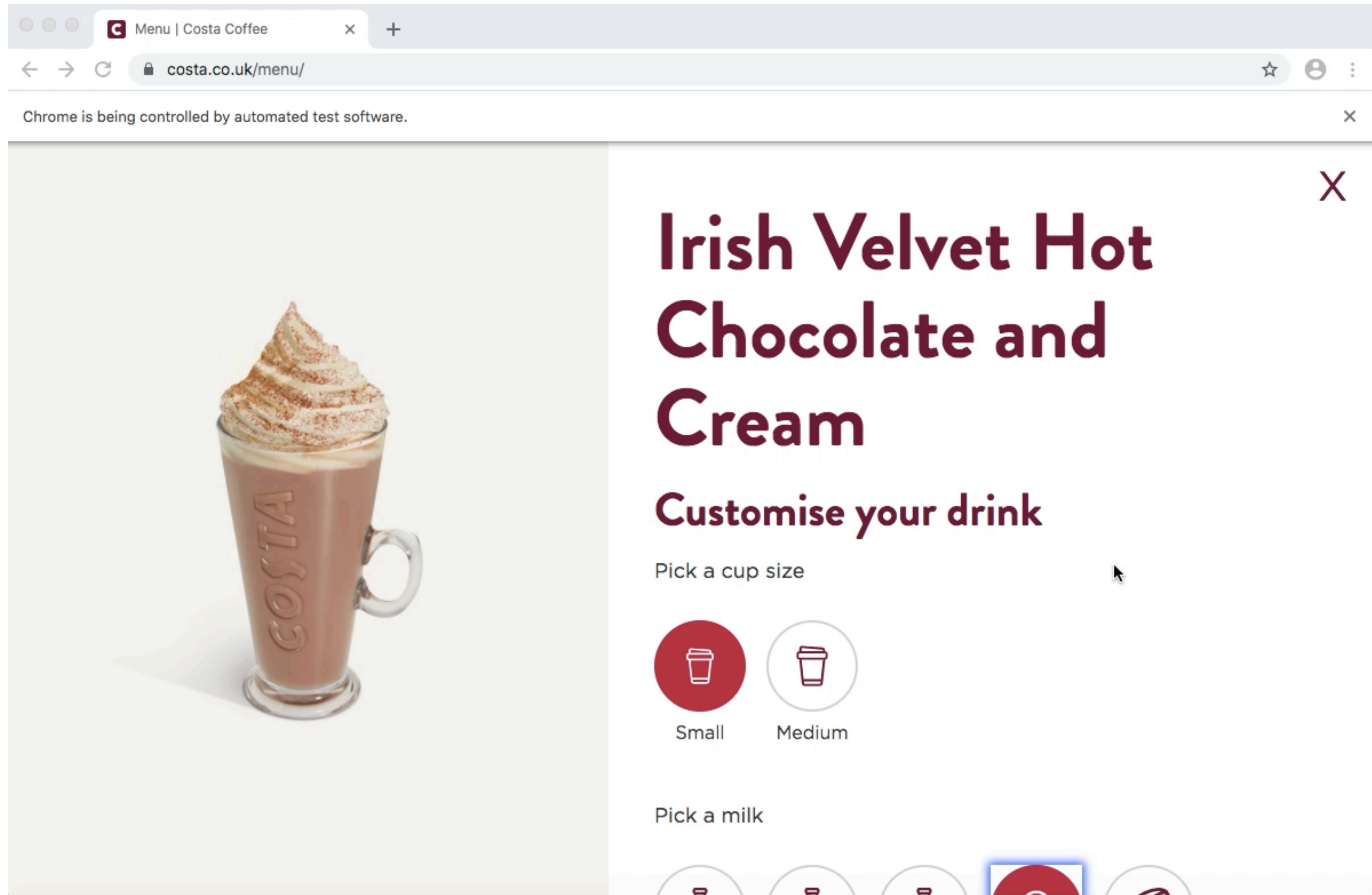
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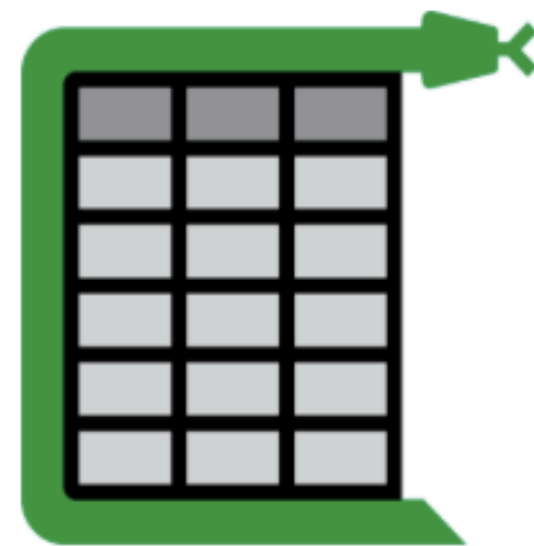
Web scraping

web crawler in action



MenuTracker

A longitudinal restaurant nutritional database



Star 1,260

Useful Links

Camelot @ GitHub
Camelot @ PyPI

Camelot: PDF Table Extraction for Humans

Release v0.10.1. ([Installation](#))

build passing docs passing codecov 88% pypi v0.10.1 license MIT License python 3.6 | 3.7 | 3.8
chat on gitter code style black continuous quality deepsource

Camelot is a Python library that can help you extract tables from PDFs!

Note:

You can also check out [Excalibur](#), the web interface to Camelot!

Tabula



Tabula is a tool for liberating data tables locked inside PDF files.

Product	Ingredients	Size	Energy (kJ)	Energy (kcal)	Fat (g)	Of which saturated (g)	Carbohydrate (g)	Of which sugars (g)	Fibre (g)	Protein (g)	Salt (g)	Caffeine (mg)
Caffe Latte - Skimmed Milk	MILK, brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Semi-skimmed Milk	MILK, brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Whole Milk	MILK, brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Soya	MILK, brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Coconut	MILK, brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Almond	Almond drink [water, ALMOND, fructose, acidity regulators: dipotassium phosphate, monopotassium phosphate, potassium sorbate, potassium benzoate, stabilisers: cellulose gum, carrageenan, guar gum; natural flavouring], brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Oat	Oat Drink Doehler [water, OAT (12% flour, acidity regulator: dipotassium xanthan gum), brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Caffe Latte - Original Nut Blend	NUT & rice house blend [water, rice, flavourings, acidity regulators (potassium citrate, potassium sorbate, potassium benzoate, potassium dihydrogen phosphate, potassium dihydrogen orthophosphate), stabilisers (mono- and diglycerides), salt, vitamins (B2, B12, E, D2)], brewed espresso	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225
Vanilla Latte - Skimmed Milk	MILK, brewed espresso, vanilla flavouring, acidity regulator: citric acid	Short	257	60	0.2	0.0	9.0	8.0	0.0	5.8	0.16	75
		Tall	310	74	0.3	0.0	11.2	10.1	0.0	7.1	0.26	150
		Grande	343	82	0.3	0.0	12.8	12.0	0.0	8.2	0.29	150
		Venti	413	98	0.4	0.0	15.0	14.0	0.0	9.4	0.34	225

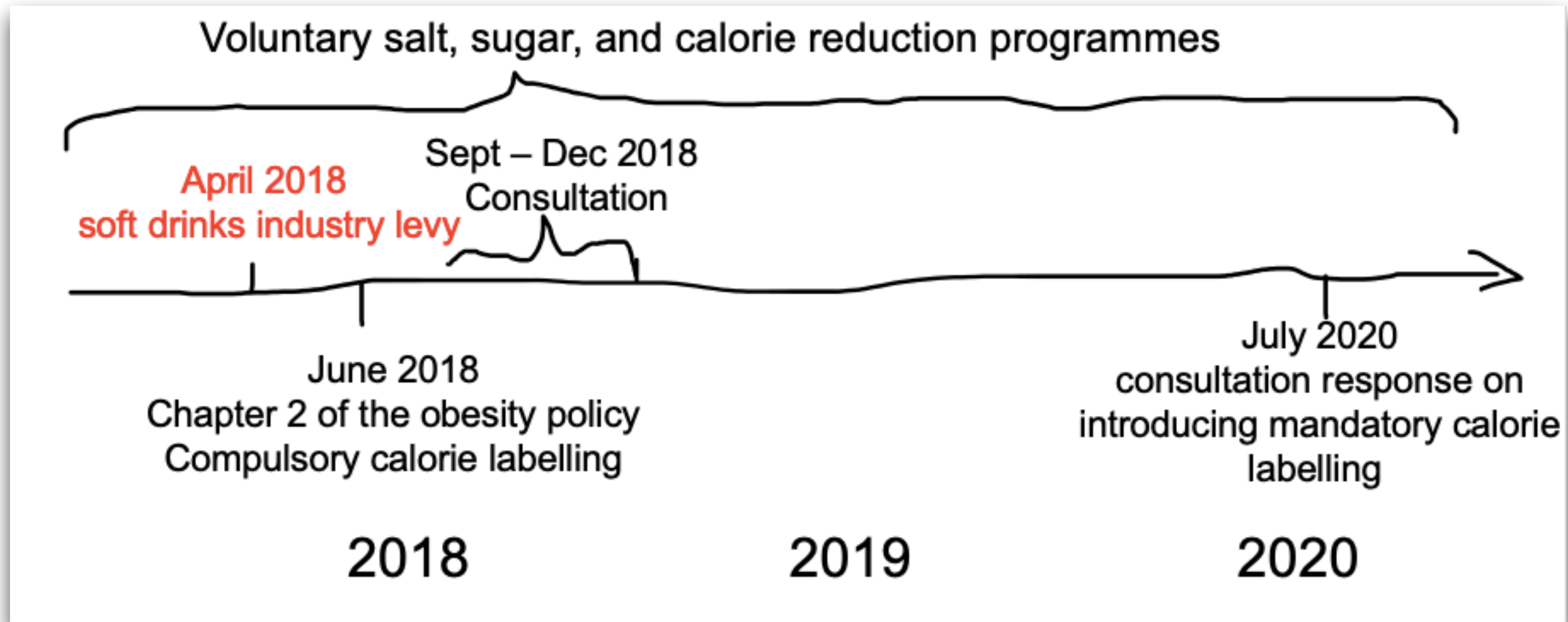
MenuTracker database

Data collected (quarterly)

Collection	Month Year	Number of food outlets (restaurants)	Number of Menu Items	Primary sampling frame
Pilot Data Collection	April-June 2018	42	10,782	top 100 based on volume sales
Pilot Data Collection	April 2019	48	13,678	over 20 outlets
Pilot Data Collection	October 2020	40	9,330	top 100 based on volume sales
Pilot Data Collection	December 2020	40	11,584	top 100 based on volume sales
Quarterly Data Collection	March 2021	85	18,005	Over 250 employees
Quarterly Data Collection	June 2021	83	19,310	Over 250 employees
Quarterly Data Collection	September 2021	79	19,323	Over 250 employees
Quarterly Data Collection	December 2021	81	19,698	Over 250 employees

Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020



Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

Core Items

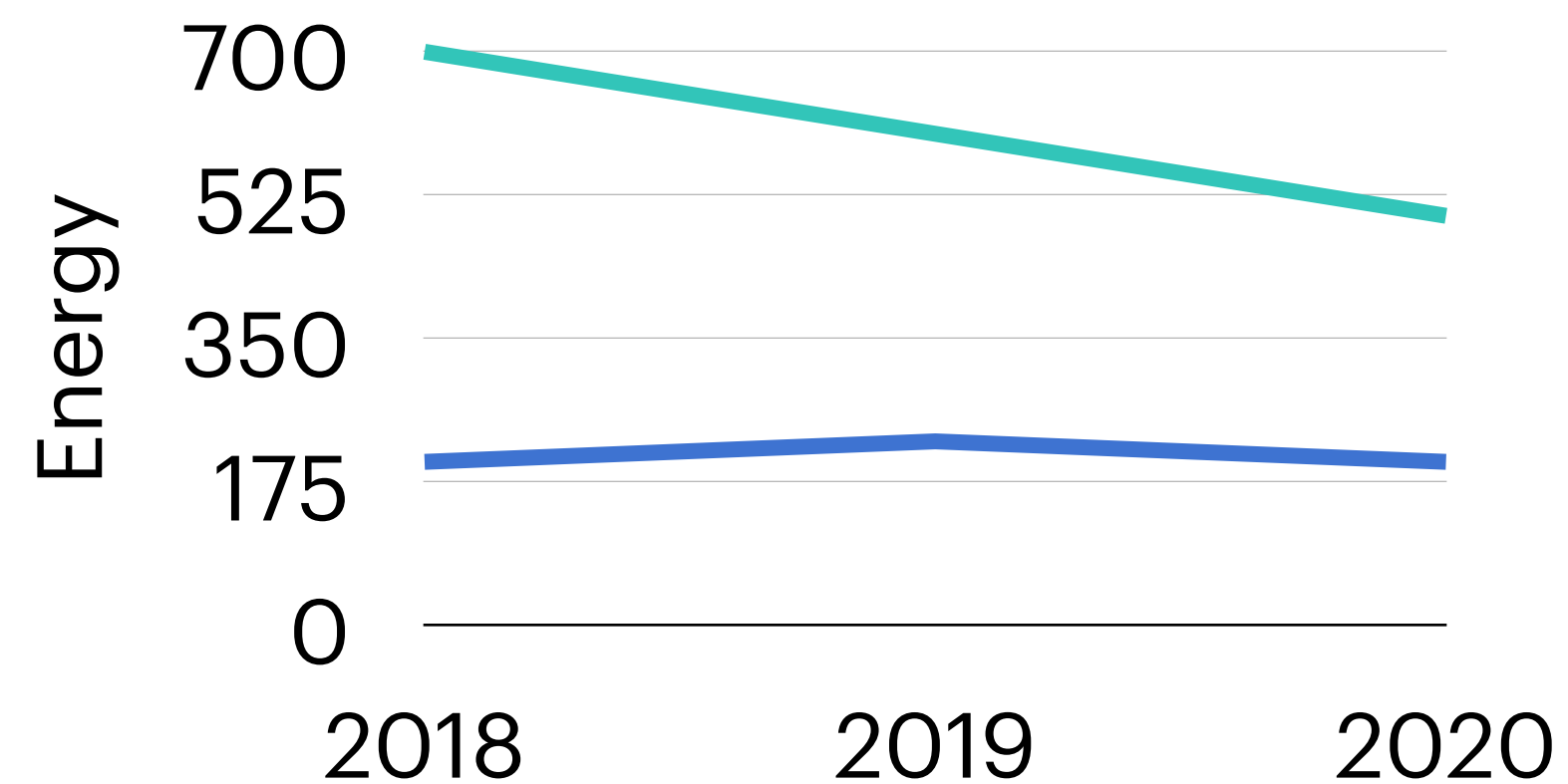
Items available in all three years



Big Mac



Quarter Pounder™ with Cheese



Newly introduced items
reintroduced items
removed items



McPlant



Nacho cheese wedges

2018

?

?

500

2019

?

500

?

2020

500

?

?

Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

- Sugar per serving reduced from 15.28 g in 2018 to 14.41 g in 2020 ($p < 0.05$).
- We also observed a downward trend for energy, and upward trends for salt and saturated fat, but these were not statistically significant

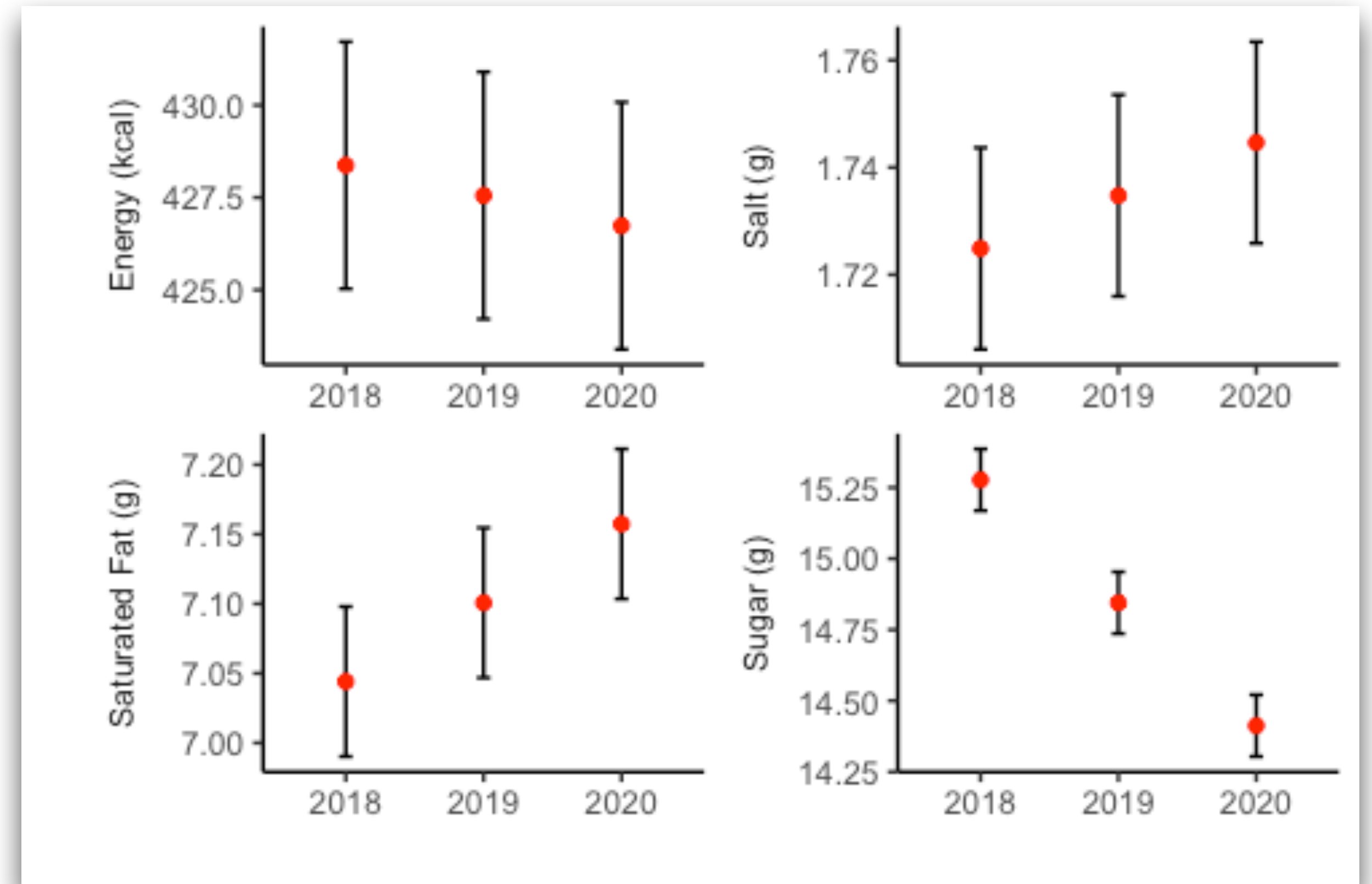


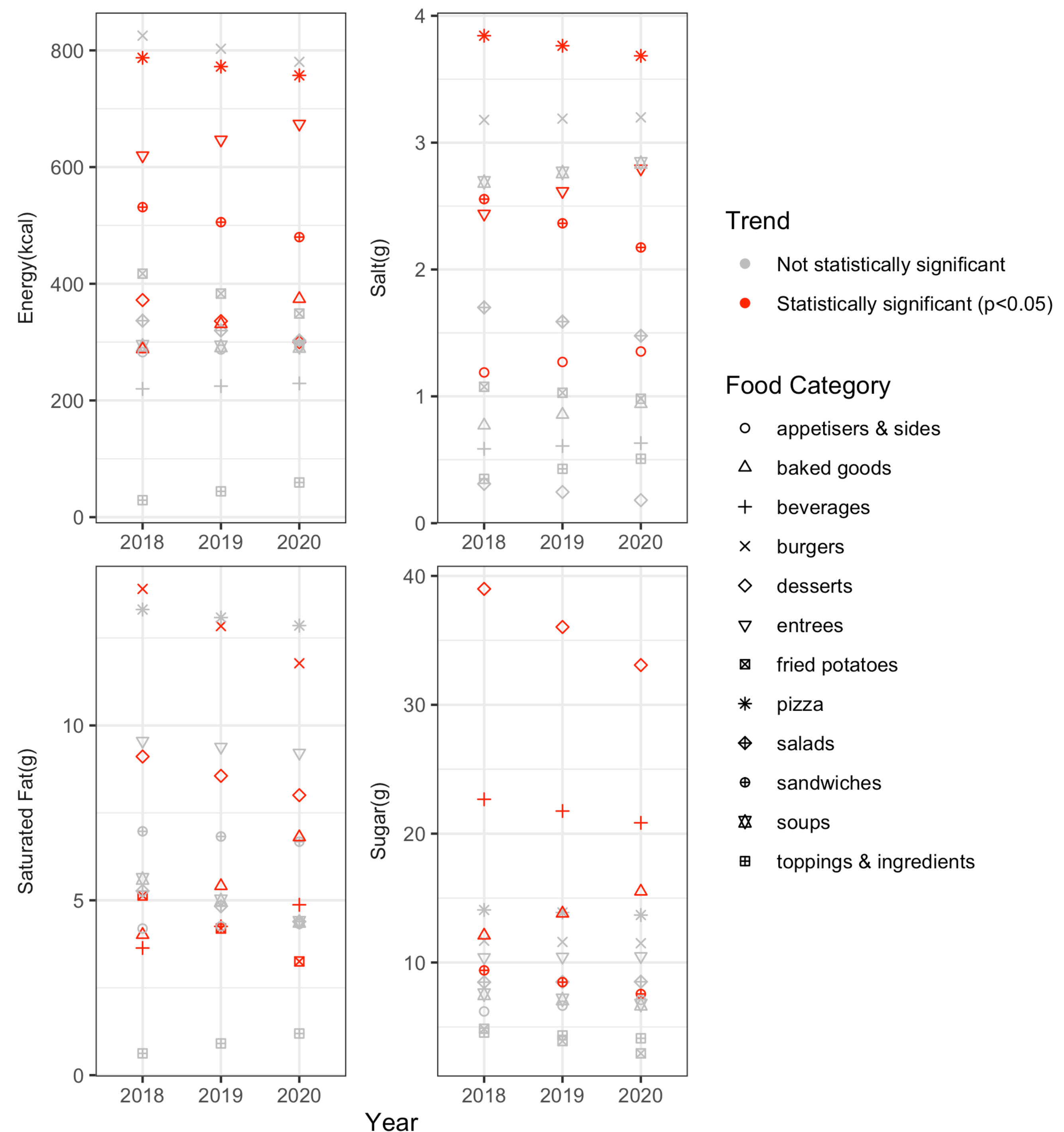
Figure 2 Predicted mean energy (kcal), salt (g), saturated fat (g), and sugar (g) per serving by year, among all menu items. Models were adjusted for children's menu item status, shareable status, food category, and restaurant type. The 95% confidence intervals (CI) are represented by vertical bars, and the predicted mean values are represented by red dots.

Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

All menu items, by food category →

- Changes were **sporadic** and **consistent** across different food categories.
- No significant changes were observed in the nutrient content of salads, soups, and toppings & ingredients.



Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

- Sugar per serving decreased by **0.31g** per year (95% CI= -0.45, -0.17).
- There were no significant changes in salt, sugar, and saturated fat content among core items.

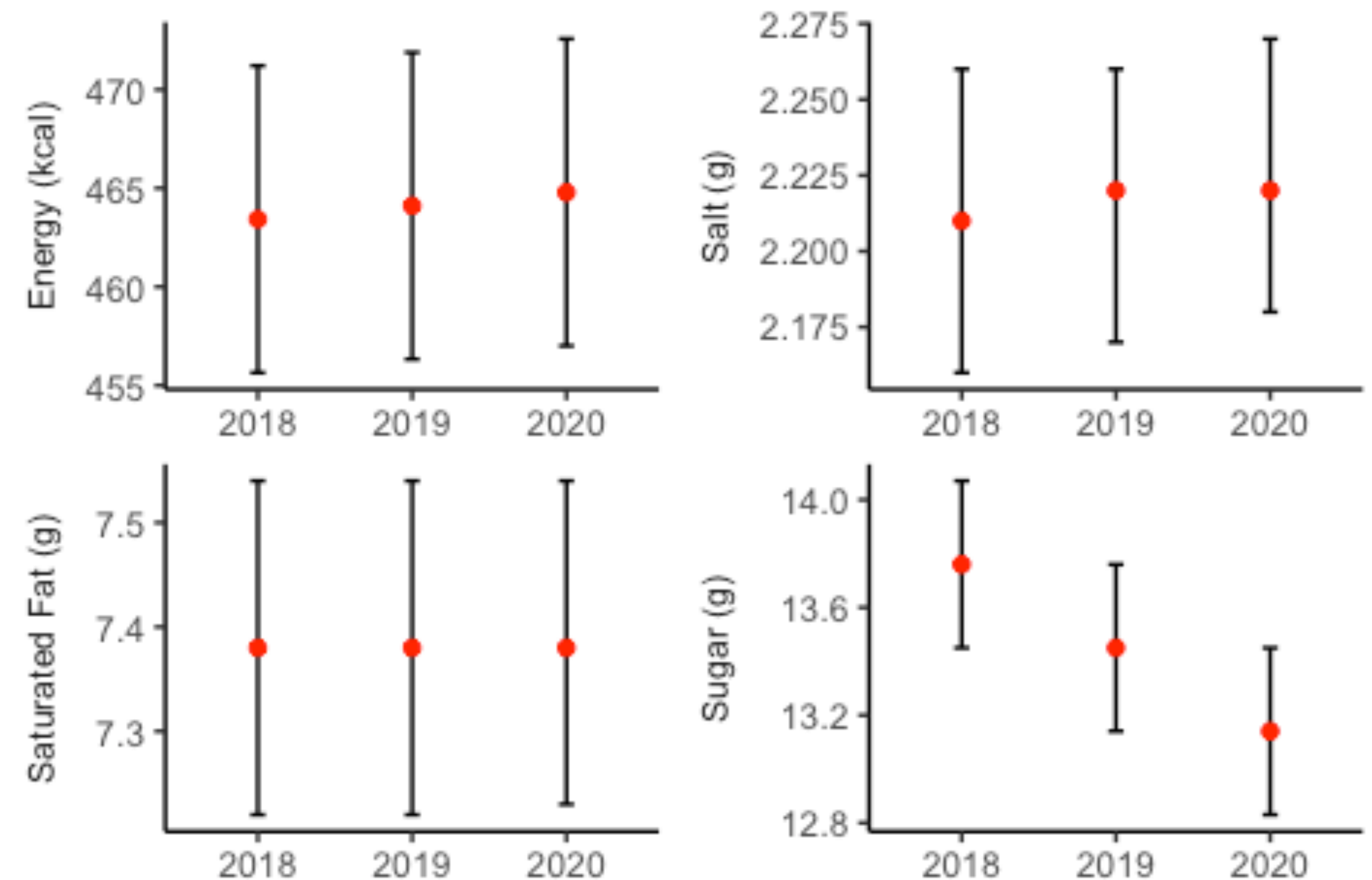


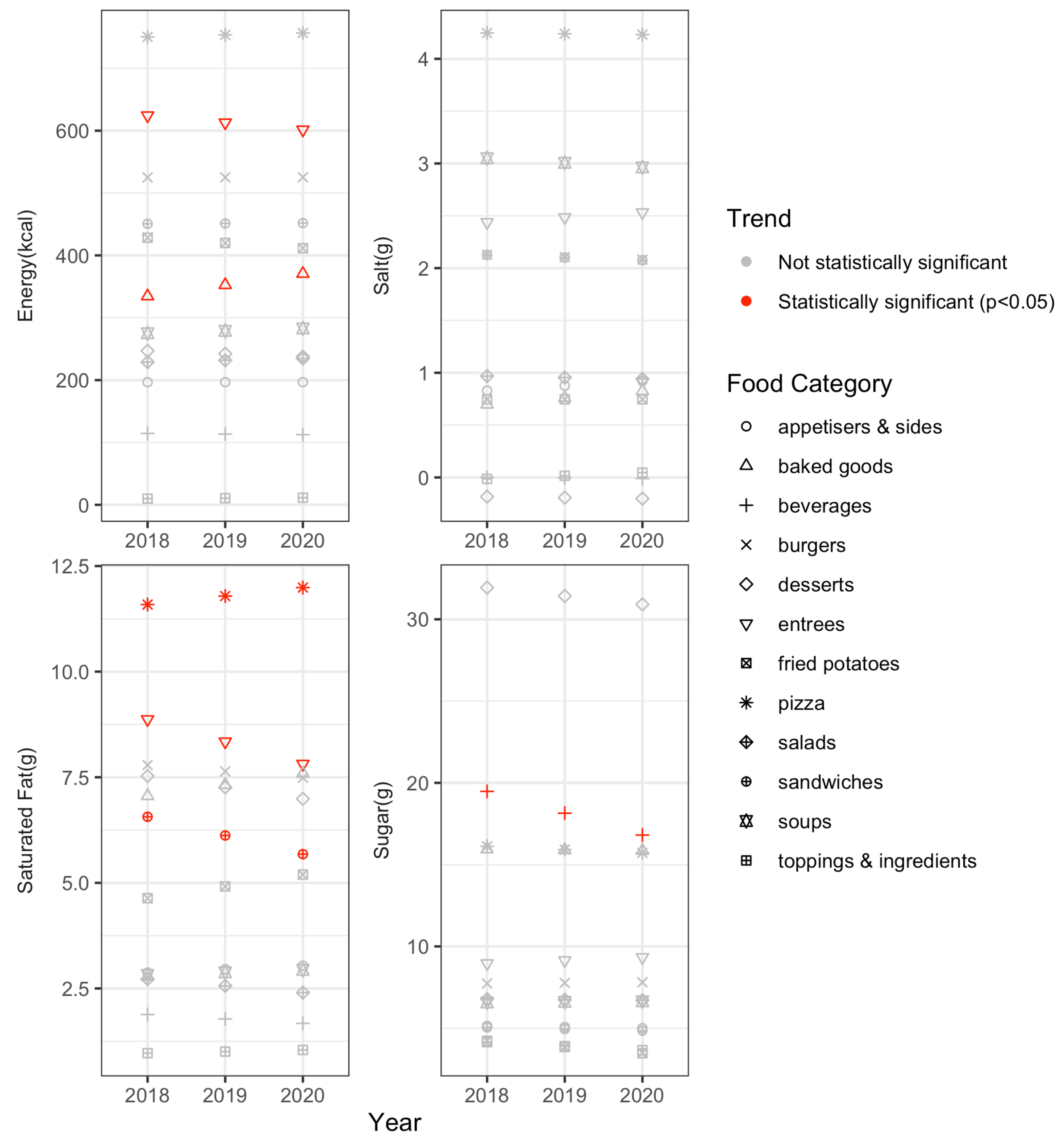
Figure 4 Predicted mean energy (kcal), salt (g), saturated fat (g), and sugar (g) per serving by year, among core items. Models were adjusted for children's menu item status, shareable status and food category. The 95% confidence intervals (CI) are represented by vertical bars, and the predicted mean values are represented by red dots.

Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

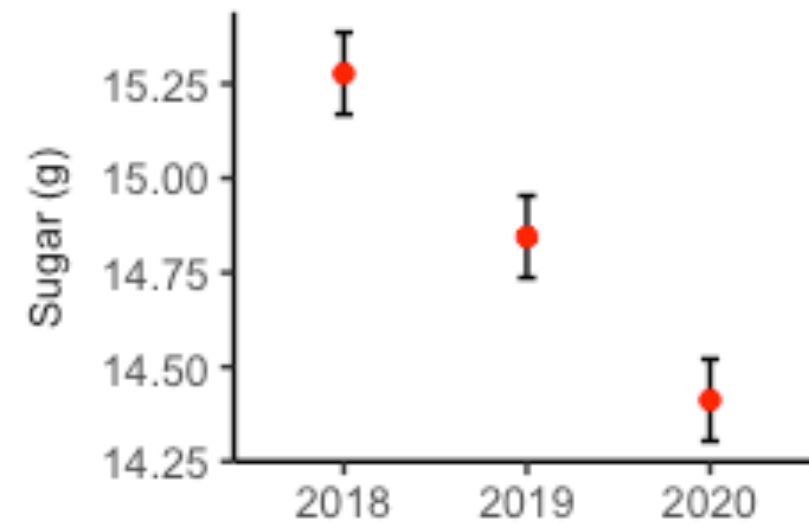
Core items, by food category →

- Saturated fat content of menu items decreased in sandwiches, but increased in pizzas. There was a **downward trend for sugar in beverages**, but no significant trend in salt in any food category.
- There were no significant changes in appetisers & sides, burgers, desserts, fried potatoes, salads, soups, and toppings & ingredients, among core items.

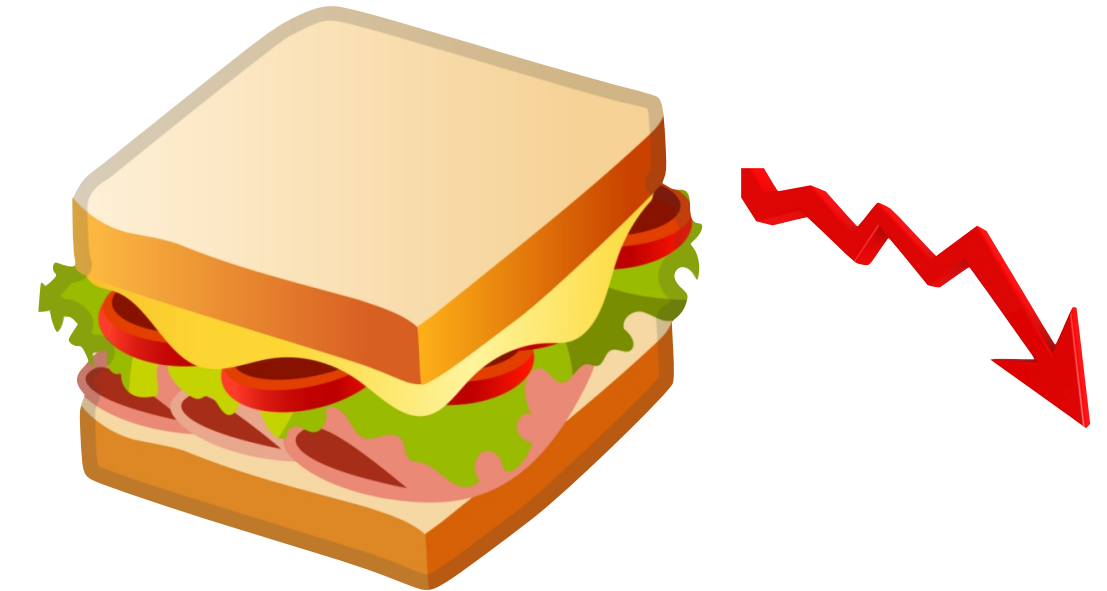


Energy and nutrient trends

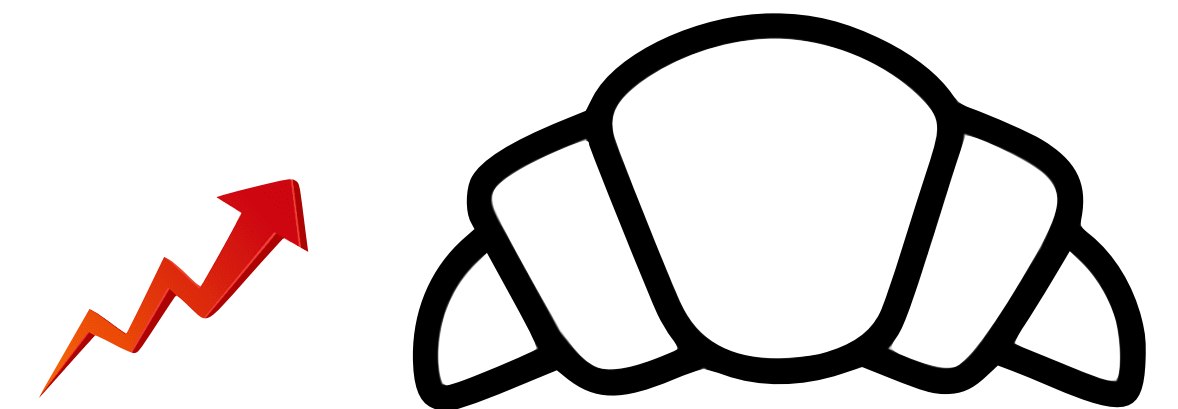
Menu items served by large chain restaurants in the UK, 2018 -2020



Among core items, sugar per serving reduced significantly from 2018 to 2020, especially in **beverages**.



Energy, salt, and saturated fat content in menu items **remained constant overall**



Our results showed that **sugar** content of all menu items and core items declined from 2018 to 2020.

Energy and nutrient trends

Menu items served by large chain restaurants in the UK, 2018 -2020

- Policies focusing on **single nutrient** do not necessarily improve the **nutrient quality** of restaurant food items.
- Our results signal that **little progress** has been made towards a healthier restaurant environment by industry self-regulation between 2018 and 2020, when no mandatory policy for the out-of-home sector has been implemented. More robust policy approaches may be needed to improve the overall nutritional quality of restaurant foods.

Acknowledgement

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MRC
Epidemiology
Unit

