Rapid Evidence Review:

Comparing the Implementation of International Mandatory Calorie Labelling in the

Out of Home Sector

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1. Executive Summary

This rapid review summarises international evidence on how out of home (OOH) food businesses have responded to mandatory and voluntary menu calorie labelling policies. The review focuses on business compliance, operational and implementation impacts, and changes in the calorie content of menu items. Evidence was identified from peer-reviewed literature published between 2015 and 2025, supplemented by targeted grey literature.

The evidence suggests that mandatory calorie labelling schemes achieve substantially higher levels of compliance than voluntary approaches. In jurisdictions with mandatory requirements, many large chain businesses display calorie or energy information at the point of choice, although compliance is not uniform. By contrast, voluntary provision is consistently low, particularly among smaller and independent businesses. The clearest implementation gap is in digital ordering environments. Several studies found lower and less consistent compliance on online menus and third-party delivery platforms than on in-store menus, even where legislation formally applied to online ordering.

Businesses reported a range of implementation challenges. These included nutritional analysis, recipe standardisation, staff training, menu redesign, maintaining accurate information as menus changed, and navigating requirements across physical and digital platforms. These are recurring demands rather than one-off implementation costs. Enforcement capacity also appears important, with evidence suggesting that local authorities may face resource constraints and competing regulatory priorities.

Evidence on changes in the calorie content of menu items is mixed. Some studies reported modest reductions, particularly among newly introduced items or in calories purchased per transaction. Others reported no change or small increases. Where reductions occurred, they were generally small and inconsistent, and there was limited evidence of systematic reformulation of established menu items. The current evidence base focuses mainly on calorie disclosure, with limited empirical evidence on whether broader nutrient information, such as salt, sugar or saturated fat, would produce different business responses.

For Scotland, the evidence suggests that mandatory approaches are more likely than voluntary schemes to achieve widespread provision of calorie information. However, effective implementation would require clear statutory guidance, technical support for businesses, defined responsibilities across online and offline settings, and sufficient enforcement capacity. Menu calorie labelling may improve transparency, but on its own is unlikely to drive large reductions in the energy content of OOH foods.

2. Background

Foods available out of home (OOH) are often more energy-dense and higher in nutrients of public health concern, including saturated fat, free sugars and sodium. Regular consumption of foods high in energy, fat and sugar can contribute to excess energy intake, and therefore increase the risk of overweight and obesity. Improving the nutritional transparency of the foods available OOH has therefore been identified as a potential policy lever to encourage businesses to reduce the energy content (calories) of foods available OOH through reformulation of recipes and reducing portion size, leading to a reduction in energy purchased and consumed, and potentially reducing the risk of diet-related non-communicable diseases such as cardiovascular disease and type 2 diabetes. Several countries have introduced legislation requiring OOH food businesses to provide energy information (calories/kilojoules) at the point of choice (i.e., visible where food is selected, rather than having to be requested), including the United States, Canada, Saudi Arabia, Australia, Ireland and England (APPENDIX A). In some jurisdictions, additional nutrient information (such as sugar, salt, or fat) is required to be available on request rather than displayed at the point of choice, whereas others mandate that calorie information is directly presented on menus. While these policies share a common aim, they vary in coverage of businesses, presentation requirements, and enforcement approaches. Alongside mandatory approaches, some jurisdictions have implemented voluntary schemes. Mandatory schemes also differ in what must be displayed at the point of choice versus what must be available in other ways. Policies further differ in whether online ordering and delivery environments are explicitly included within the scope of legislation.

The OOH food environment comprises outlets such as restaurants providing sit-in meals, take-aways, quick service restaurants, pubs and bars, cafés and coffee shops, bakery and sandwich shops, convenience stores selling food on the go and other locations where foods can be purchased and consumed OOH including leisure, workplace, travel, vending and garages. In the United Kingdom, among individuals who consume OOH foods, these eating occasions account for around 23% of total daily energy intake.

Following a recommendation by Food Standards Scotland in 2019, and publication of the OOH action plan, the Scottish Government consulted on proposals for mandatory calorie labelling in 2022. Further progress was paused in 2023, following consultation analysis, which found general opposition to mandatory calorie labelling largely due to concerns that this might negatively impact those with an eating disorder. In 2024, Food Standards Scotland (FSS) recommended exploring alternative approaches to nutrition information provision OOH, including options that extend beyond calorie information and models where information is made available on request.

As Scotland considers future options, it is important to understand how similar policies have been implemented elsewhere, particularly in relation to business responses and practical implementation. Across jurisdictions, menu calorie labelling

policies differ in how the implementation and enforcement responsibilities are arranged. These differences are important when interpreting the evidence, because variation in compliance and implementation may reflect differences in policy design and enforcement context, rather than the presence or absence of calorie labelling requirements alone. This rapid review summarises international evidence published since 2015 on OOH food business responses to mandatory and/or voluntary menu calorie labelling. The review focuses on business compliance, the operational and business impacts of implementation, and changes to the calorie content of menu items. Consumer attitudes and behavioural responses are not included, as these have been addressed in previous FSS-commissioned research.

Terminology

Throughout this report, “menu calorie labelling” is used as an umbrella term to describe policies requiring energy information to be provided for OOH food and drink at the point of choice. Where jurisdictions require energy to be displayed in kilojoules (kJ), this is stated explicitly and referred to as “menu energy labelling (kJ)”. Where energy is displayed in kilocalories (kcal), we refer to “calorie labelling”. “Mandatory scheme” refers to statutory requirements with defined enforcement mechanisms, while “voluntary scheme” refers to initiatives without legal obligation. In describing study findings, “business” or “chain” refers to the operating company or brand, while “outlet”, “premises”, or “location” refers to an individual site; the unit of analysis is specified where relevant.

Large chain businesses are not defined using a single threshold across the evidence base. In this report, the term generally refers to multi-site restaurant or food-service businesses that meet the relevant jurisdiction-specific thresholds for menu labelling. These include, for example, chains with 20 or more locations in the United States and Ontario, chain businesses meeting state-level outlet thresholds in Australia, and businesses with 250 or more employees in England. Where an included study uses a different operational definition, this is stated in the text.

3. Aim

The aim of this rapid review is to assess how OOH food businesses have responded to mandatory and voluntary menu calorie labelling policies, with a focus on compliance, operational responses, and impacts on menu offerings.

3.1 Review questions

Compliance and implementation

To what extent do OOH food businesses comply with mandatory and voluntary menu calorie labelling initiatives in jurisdictions where these have been implemented?

Business impact

What operational, financial, and practical impacts are associated with mandatory and voluntary menu calorie labelling in OOH settings?

Changes in calorie content

Is the introduction of menu calorie labelling, whether mandatory or voluntary, associated with changes in the calorie content of food and drinks offered by OOH food businesses?

4. Methods

4.1 Review design

A rapid review was undertaken to identify and summarise evidence on OOH food business responses to menu calorie labelling (energy information at the point of choice). The review followed streamlined methods consistent with the Cochrane Rapid Reviews Methods Group interim guidance. These included single-reviewer screening with second-reviewer consistency checks on a sample of records, targeted grey literature searching, and narrative synthesis of heterogeneous evidence to support policy decision-making within a rapid review timeframe.

4.2 Search strategy

Searches were conducted in December 2025 using PubMed and Web of Science to identify peer reviewed literature published between 2015 and 2025 (inclusive) and in English. No restrictions were applied to study design or outcome measures. Searches were conducted using individual country terms for the United States, United Kingdom, England, Ireland, Australia, New Zealand, Saudi Arabia, South Korea, Germany, France, Canada and Brazil, and were also run without country restrictions to capture multi-country and general studies. Countries were selected based on existing menu labelling legislation (see Appendix A), and/or similarity to the UK dietary context: a broadly comparable high-income, market-based food service environment, making findings potentially informative for policy transfer. In addition, a targeted grey literature search was undertaken using Google to identify relevant non-academic sources, including media reporting, industry commentary and publicly reported perspectives from businesses affected by calorie labelling. Grey literature sources were included where they provided jurisdiction-relevant information on implementation, business responses, operational burden, or stakeholder perspectives directly related to menu calorie labelling. Sources were used to complement peer reviewed evidence on business experience and implementation challenges, rather than as equivalent evidence on effectiveness.

Full details of the database search strategies, including search terms and combinations, are provided in the Supplementary Material.

4.3 Study selection

Records from the database and grey literature searches were collated and duplicates removed. Screening was conducted by a single reviewer at title, abstract, and full-text stages. A second independent team member conducted consistency checks on 10% of title/abstract records and all full-text inclusion decisions.

Studies were included if they examined mandatory or voluntary menu calorie labelling in OOH settings and reported outcomes relating to (i) compliance and implementation, (ii) operational or business impacts, or (iii) changes in the calorie content of food and drink offered following introduction of the policy. Studies focusing

primarily on consumer outcomes, review articles, and publications outside the date range were excluded. Studies were eligible if they addressed calorie/energy information at the point of choice; studies addressing broader nutrient information were included where they related to the implementation of menu calorie labelling policies. Primary and secondary school meal settings were not a target focus of the review; however, institutional food-service settings such as workplace and university outlets were included where they operated as OOH food-service environments.

4.4 Data extraction and synthesis

Data were extracted using a structured template capturing publication details, country or jurisdiction, study design, business setting, data sources, outcomes of interest, and key findings. Where reported, information on future strategies or recommendations was also extracted to inform potential policy considerations.

Given the heterogeneity of study designs and outcomes, findings were summarised narratively. Evidence was organised into three thematic areas identified during data extraction:

- Business compliance with labelling requirements
- Business responses and operational impacts
- Changes in calorie content of menu items following implementation

5. Results

5.1 Overview of included studies

Database searches identified 203 records from Web of Science and 79 records from PubMed. Following duplicate removal and screening, 22 peer reviewed studies and 5 grey literature reports met the inclusion criteria and were included (total n = 27; Table 4.1).

Table 5.1: Screening procedure

Stage	Description
Identification	Web of Science records identified: 203 PubMed records identified: 79 Total records identified: 282 Grey literature identified (Google): 5
Screening	Duplicates removed: 111 Records Screened (title/abstract): 171
Title/Abstract exclusions	Wrong topic: 92 Consumer impact focus: 33 Wrong article type (review, letter): 17 Outside date range: 7
Eligibility	Full-text reports sought: 23 Full-text reports not retrieved: 1 Full-text reports assessed: 22
Analysis	Peer reviewed studies: 22 Grey literature reports: 5
Studies included	Total included records: 27

The peer reviewed studies (n=22) were conducted across a range of countries, with the largest number from England (n=6) and the United States (n=6), together accounting for 55% of peer reviewed studies (12/22). This was followed by Canada (n=4) and Australia (n=3), with a smaller number conducted in Saudi Arabia (n=2) and Ireland (n=1). Mandatory calorie labelling policies were in place in all of these countries except Ireland, where menu calorie labelling was a long-standing voluntary scheme with no statutory requirement. The five grey literature reports (n=5) are described separately and are used to provide contextual insight into business perspectives, implementation challenges, and stakeholder commentary, rather than as equivalent evidence on effectiveness. A summary of countries and the number of studies contributing to each thematic area is provided in Table 4.2.

Study designs included observational audits, cross-sectional analyses, and pre/post comparisons. Evidence was synthesised across three recurring themes: business compliance with labelling requirements, business responses and operational impacts, and changes in the calorie content of menu items following implementation.

Table 5.2: Geographic distribution of included peer reviewed studies (n=22)

Country	Compliance	Business impact	Calorie content changes
Australia	2	0	1
Ontario (Canada)	1	2	1
England (UK)	3	1	2
Ireland	0	1	0
Saudi Arabia	1	1	0
United States	2	1	3
Total peer reviewed articles	**9**	**6**	**7**

Note: This table summarises peer reviewed studies only (n=22); grey literature reports (n=5) are not included.

5.2 Business compliance with labelling requirements

Nine studies assessed business compliance with mandatory menu calorie labelling requirements across different countries and settings. Assessment was conducted in terms of the presence, completeness, and in some cases accuracy, of calorie information on menus. Compliance varied across business settings and menu formats, with several studies reporting incomplete or inconsistent provision of calorie information, including missing values, unclear presentation, or inconsistencies between physical menus and online ordering platforms. The policies examined in this review differed not only in whether labelling was mandatory or voluntary, but also in which businesses were covered, whether online ordering was included, what had to be displayed at the point of choice, and how implementation and enforcement were arranged. Direct evidence on enforcement mechanisms was limited; in most studies, enforcement was not measured directly, but its likely influence could be inferred from reported compliance patterns, stakeholder interviews, and descriptions of implementation processes. A summary of key compliance findings by policy context is provided in Table 4.3, and a summary of key legislative features across jurisdictions, including scope, display requirements, and online coverage, is provided in Appendix A. However, while statutory enforcement arrangements could usually be identified from legislation or guidance, very few reviewed studies measured how enforcement operated in practice.

Evidence from the US illustrates how compliance changed during the transition from voluntary to mandatory calorie labelling. Cleveland et al. (2018) reported that prior to federal enforcement, approximately 66% of restaurant chains subject to federal calorie labelling requirements were fully compliant. In addition, a further 13% displayed calorie information on some, but not all, menus or ordering platforms. This partial compliance indicates that calorie information was present in certain formats (for example in-store menu boards) but absent in others (such as drive-through menus or online ordering pages). As a result, compliance was inconsistent across required menu types and ordering formats (for example, present on in-store menu boards but missing from drive-through menus or online ordering pages). In contrast,

an observational study by the same authors (Cleveland et al., 2020) conducted within seven months of mandatory implementation found that 94% of the largest restaurant chains displayed calorie information in line with federal requirements. Among the minority of chains that were not fully compliant with federal requirements (6%), pizza and seafood restaurants were most frequently represented. The authors suggested that these sectors faced particular challenges in calculating and presenting calories for items with multiple customisation options or frequently changing menus.

Similarly high levels of compliance were observed in Australia. Lyndal et al. (2015) audited large chain restaurants across states with and without mandatory menu energy labelling requirements and found that 95% of outlets provided energy information. Importantly, there was no substantial difference in provision between states with mandatory requirements and those without. This suggests that large national chains may have implemented menu energy labelling across all outlets for operational consistency, rather than limiting compliance to jurisdictions where it was legally required. There was substantial variation between chain brands, but not between outlets within the same chain across geographic locations. However, the authors noted variation in visibility and accessibility, with some calorie information displayed in less prominent locations or formats that may reduce consumer noticeability.

In contrast, evidence from England prior to mandatory implementation found that only 17% of 104 large restaurant chains operating in the UK (each with 20 or more outlets) provided calorie information at the point of choice on in-store menus (Robinson et al., 2019). Cafés within the four largest supermarket chains were also included in that analysis. Similarly, Polden et al. (2024) conducted audits of 114 individual food outlets across four geographically and socioeconomically diverse areas in England. Unlike Robinson et al. (2019), which examined chain-level practices, this study assessed calorie labelling at the level of individual premises and focused on point-of-choice display on in-store menus. Prior to implementation, only 21% of outlets displayed calorie information at the point of choice, increasing to 80% after the regulations came into force, although only 15% of outlets met all compliance criteria. A single study from Ireland, where menu calorie labelling is encouraged on a voluntary basis, reported very low provision of calorie information at the point of choice. Fitzgerald et al. (2018) assessed 604 food service businesses and found that only 7% displayed calorie information at the point of choice. Businesses raised concerns about accuracy, time and cost burdens, and questioned consumer demand for such information in the absence of a legal requirement.

Accuracy of calorie labelling in the English OOH sector was examined in detail by one study. Finlay et al. (2025) reported that 56% of assessed menu items had a lower measured calorie content than stated, while 23% had a higher measured energy content. Importantly, 35% of items fell outside the permitted ±20% legal tolerance for energy variability, indicating that even where calorie labelling is present, accuracy cannot be assumed, and that compliance assessments based solely on label presence may overestimate the quality of information provided.

Several studies reported lower or more inconsistent compliance in online ordering environments compared with on-premises menus. Unless otherwise stated, compliance findings described above refer to physical, in-store menus. In Ontario (Canada), Vanderlee et al. (2023) examined online menus and food delivery platforms following implementation of mandatory calorie labelling legislation, which applies to online menus where ordering is possible. Among the 13 largest restaurant chains assessed, 53.8% displayed calorie information for more than 90% of items on their online menus, despite being compliant in-store. Compliance varied across platforms, and only one chain achieved more than 90% item-level calorie labelling across all evaluated online food delivery platforms. The study evaluated multiple third-party delivery platforms used by the same chains, although compliance was not uniform across them. In-store compliance in this study was substantially higher, highlighting a gap between physical and digital environments. Similarly in Sydney (Australia, New South Wales), Cassano et al. (2024) assessed online food delivery platforms and company-owned websites/apps separately. Of 92 mid-sized food outlets (5 to 19 locations within New South Wales), only 2 outlets displayed any calorie information across online delivery platforms. Among large chain outlets, 35% displayed complete calorie labelling on their own company apps. However, on third-party delivery platforms, 23% of large outlets displayed no required calorie information and a further 23% displayed incomplete or inconsistent labelling. In New South Wales, kilojoule labelling is legally required on online menus where food is offered for sale, so these gaps occurred despite a clear statutory requirement. In Saudi Arabia, where mandatory calorie labelling applies to all food establishments and includes digital ordering platforms, Abdulaziz et al. (2023) compared compliance across delivery applications and restaurant-owned websites. On a widely used third-party delivery application, 24.2% of restaurants were fully compliant with menu calorie labelling requirements, while 56.5% were compliant on their own websites. Conversely, 43.3% of restaurants were non-compliant on the delivery application and 32.6% were non-compliant on restaurant websites. Here, “compliant” refers to meeting the national calorie display requirements as specified in Saudi regulation. No significant association was found between compliance and restaurant rating or existing website labelling practices. These findings indicate that even where legislation explicitly requires online menu labelling, compliance is often lower on third-party delivery platforms than on company-owned websites or in-store menus, suggesting that digital ordering environments pose distinct implementation and enforcement challenges.

Table 4.3: Summary of compliance findings by policy context

Jurisdiction / study	Policy context	Setting	Main compliance finding	Notes
United States, Cleveland et al. (2018)	Pre-enforcement transition to mandatory	Large chain restaurants	66% fully compliant; further 13% partially compliant	Compliance inconsistent across menu formats and ordering platforms
United States, Cleveland et al. (2020)	Mandatory	Largest restaurant chains	94% compliant	Pizza and seafood chains were most frequently non-compliant
Australia, Lyndal et al.	Mandatory and non-mandatory states	Large chain restaurants	95% of outlets provided energy information	Little difference between states, suggesting chain-wide implementation
England, Robinson et al.	Pre-mandatory	104 large restaurant chains	17% provided calorie information at point of choice	Included cafés within the four largest supermarket chains
England, Polden et al.	Mandatory	114 individual outlets	80% displayed calorie information after implementation; only 15% met all compliance criteria	21% displayed calorie information before implementation
Ireland, Fitzgerald et al.	Voluntary	604 food-service businesses	7% displayed calorie information at point of choice	Very low uptake under voluntary provision
Ontario, Vanderlee et al.	Mandatory	Online menus / delivery platforms	53.8% of chains displayed calorie information for more than 90% of items on online menus	Online compliance lower and less consistent than in-store
NSW, Cassano et al.	Mandatory	Online delivery platforms and company apps	Only 2/92 mid-sized outlets displayed any calorie information on delivery platforms; 35% of large outlets displayed complete calorie labelling on own apps	Third-party platforms showed particularly poor compliance
Saudi Arabia, Abdulaziz et al.	Mandatory	Delivery application and restaurant websites	24.2% fully compliant on delivery application; 56.5% compliant on restaurant-owned websites	Digital compliance lower on third-party platforms than on own websites

5.3 Business responses and operational impacts

Six studies examined business responses to menu calorie labelling requirements, including implementation experiences, operational burden, perceived impacts, and, in some cases, reformulation. These studies used qualitative interviews and surveys.

Essman et al. (2025) interviewed employees in the OOH food sector in England who were involved in delivering calorie labelling requirements. Participants described challenges related to perceived gaps or lack of clarity in government guidance, as well as ongoing menu updates and recipe standardisation required to ensure accuracy of calorie information. Although businesses supported the principle of calorie labelling to protect reputation and maintain customer trust, they believed it would have little impact on customer behaviour as “healthy is more planned, indulgence is spontaneous” or that customers prioritised price over health information when making food choices. Additionally, local enforcement authorities in London reported that responsibility for implementation support and enforcement was distributed across local authorities rather than centrally coordinated, and that limited resources meant calorie labelling enforcement was often deprioritised in favour of more urgent food safety issues. As a result, they were often unable to support all businesses or undertake proactive enforcement beyond responding to complaints.

A study from Saudi Arabia surveyed 41 owners from local and international restaurants after mandatory calorie labelling was introduced. Alkhaldy et al. (2020) reported that 56% supported the policy. Only 46% of restaurant owners knew the reason for implementing calorie labelling. Regarding calculation and display of calorie information, 73% of restaurant owners in the Saudi study reported no major technical problems. However, there was substantial variation in how businesses interpreted and implemented the regulations. For example, some businesses displayed calories alongside all menu items as required, while others omitted calorie information for combination meals, failed to include all accompanying statements required by the regulation, or displayed calorie information less prominently than required. Although 37% of restaurant owners reported noticing reduced sales of higher-energy meals following implementation, these perceived sales shifts did not translate into systematic reformulation or changes to preparation methods.

Several studies examined business-level responses to menu calorie labelling before mandatory implementation in the respective country. Brown et al. (2017) conducted a pilot programme with 22 independent restaurant owners in Toronto (Canada) to test the feasibility of voluntary menu calorie labelling. Participating businesses were asked to standardise recipes, conduct nutrient analysis of menu items, and display calorie information. While 15 restaurants completed some elements of the programme, only 4 completed all components, including recipe standardisation, nutritional analysis, and menu display. Owners recognised potential public health benefits but reported that implementation was resource-intensive, particularly due to time constraints, limited technical expertise, complexity of nutrient analysis, and variability in ingredient sourcing. Many indicated they would require external support or simplified tools to implement menu calorie labelling sustainably.

A second Canadian study from Vanderlee et al. (2016) examined stakeholder experiences two years after implementing a voluntary menu calorie labelling programme. Participants reported that implementation was feasible within highly standardised food-service environments, but emphasised the importance of organisational commitment, internal capacity, and access to nutritional expertise. However, businesses also reported increased staff workload and financial risk, including the cost of nutritional analysis, menu redesign, staff training, and the potential commercial risk of altering popular menu items.

In contrast, Susskind et al. (2024) assessed short-term business outcomes in two US university restaurants following introduction of menu calorie labelling. As calorie labelling might plausibly affect ordering patterns, sales mix, and operational workload, the study examined revenue, profit, and kitchen staff preparation time per order. The authors found no statistically significant changes in revenue or profit, and no detectable change in kitchen staff preparation time per order. However, the study assessed only direct food costs and did not quantify the time or resources required to calculate, verify, and display calorie information.

In Ireland, where calorie labelling remains voluntary, Fitzgerald et al. (2018) examined current display practices and business attitudes. Of 604 surveyed food-service businesses, only 7% reported currently displaying calorie information (38% of chains and 62% of single-outlet businesses among those displaying). Low uptake was attributed to concerns about time constraints (33%), perceived costs (26%), and lack of expertise (14%). A quarter of respondents questioned the usefulness of calorie information for customers. Among businesses that did display calories, 52% believed it promoted healthier eating and 47% believed it enabled informed decision-making. Small and independent businesses reported particular difficulty in conducting calorie analysis, covering the financial cost of nutritional assessment, and maintaining up-to-date information as menus changed. Across respondents, apprehension related primarily to resource requirements rather than opposition in principle.

Overall, businesses reported ongoing rather than one-off costs, primarily linked to menu updates, reformulation, recipe standardisation, and maintaining accurate calorie information as menus changed. Several studies highlighted the need for clearer operational guidance, access to simplified calculation tools, and ongoing technical support to enable compliance. Enforcement was also described as challenging, with local authorities reporting limited resources and competing priorities, particularly acute food safety issues. From the business perspective, implementation was perceived as resource-intensive due to time constraints, limited in-house expertise, the complexity of nutritional analysis, and the need for external support. These findings suggest that both implementation and enforcement require sustained capacity rather than short-term adjustment.

In addition to peer reviewed studies, grey literature from England provided contextual insight into how businesses and industry stakeholders perceived mandatory calorie

labelling requirements. These sources suggested a mixed picture. Some stakeholders viewed calorie labelling as supportive of transparency and customer trust, while others emphasised implementation burden, increased costs, and concerns about impacts on menu flexibility, creativity, and businesses with less standardised or frequently changing offerings. As these sources were not peer reviewed and often reflected stakeholder or media perspectives, they are used here to illustrate implementation concerns rather than as evidence of effectiveness.

In line with some of the research findings, several sources highlighted that the impact of calorie labelling may vary by business type. Restaurant newsletters and industry commentary noted that "*implementation will also be more challenging for less standardised businesses that cook from scratch*", and that businesses with "*changing or daily menus, frequent specials, or those making use of seasonal or local produce*" may face particular difficulties. Concerns were also raised that this could discourage innovation or the use of local products. Small businesses were reported to face additional challenges related to "*lack of time, expertise and the cumulative burden of regulations*", with some suggesting that compliance could require additional staff. Further important concerns were raised about perceived inequities in scope, including restaurants operating under different legal entities despite being part of the same company, and restaurants located within large hotels exceeding employee thresholds despite operating small kitchens.

5.4 Changes in calorie content of menu items following implementation

Seven studies examined whether the introduction of calorie labelling was associated with changes in the calorie content of menu offerings, using before vs. after, longitudinal, or comparative cross-sectional designs.

Evidence from New South Wales (Australia) and Ontario (Canada) showed no significant reduction in energy content of menu items following the introduction of mandatory labelling. In Australia, Wellard-Cole et al. (2017) analysed new menu items introduced by five major fast-food chains and reported an increase of 17 kJ per 100 g between 2009 and 2015 (approximately 4 kcal per 100 g). While this appears numerically small, many OOH portions exceed 100 g, meaning cumulative differences at the portion level may be larger. The study reported results per 100 g and did not identify systematic reductions in serving size to offset the increase in energy density. Similarly, Scourboutakos et al. (2019) examined 172 restaurant chains in Ontario and reported an average increase of 40 kcal per serving between 2010 and 2017. No significant change was observed for core menu items (those present at all time points). However, newly introduced items were significantly higher in calories per serving (+40 kcal), and limited-time items were significantly higher in energy per 100 g (+74 kJ, approximately 18 kcal per 100 g). Limited-time items showed no difference in calories per serving, suggesting that while energy density increased, serving sizes may have been smaller.

Three US studies examined calorie changes in large chain restaurants, focusing on reformulation trends over time. Bleich et al. (2017) analysed menu data from 44 of

the 100 largest US chain restaurants and reported a decline in mean calories per menu item from 327 kcal to 310 kcal between 2008 and 2015 (per item, not per transaction). Among newly introduced items, there was a non-significant reduction of approximately 67 kcal per item, driven primarily by declines in main courses (−63 kcal) and desserts (−80 kcal). In an earlier analysis comparing chains with and without voluntary calorie labelling Bleich et al. (2015), restaurants displaying calorie information offered menu items with significantly lower mean calories per item (approximately 136 kcal lower) than restaurants without labelling. Although both groups reduced calories in newly introduced items over time, new items from restaurants with voluntary labelling had substantially fewer calories (approximately 182 kcal per item) compared with new items introduced by restaurants without labelling (approximately 110 kcal per item).

The third US study (Petimar et al., 2021) examined transaction-level purchasing data from 104 fast-food outlets across three national chains. The authors reported a reduction of 82 kcal per transaction nearly one year after nationwide implementation of calorie labelling, alongside reductions in total fat (−3.0%), carbohydrates (−5.0%), protein (−5.1%), saturated fat (−1.8%), sugar (−7.0%), fibre (−4.4%), and sodium (−5.0%). These findings reflect changes in calories purchased per transaction rather than reformulation of menu items. When linking restaurant locations to area-level median household income, the reduction in calories purchased per transaction was greater in higher-income areas (95 kcal) than in lower-income areas (49 kcal). This difference therefore reflects variation in purchasing behaviour by area, not differences in the underlying energy content of menu items offered by restaurants in those locations.

In England, two studies assessed the calorie content of menu items in relation to calorie labelling. Theis et al. (2019) compared menu offerings from 42 of the 100 most popular UK restaurant chains four years prior to mandatory implementation. Restaurants voluntarily displaying calorie information (13 restaurants, 31%) offered menu items with 32% lower average calorie content than those without labelling, although this difference was not statistically significant. Additionally, items from these outlets had significantly lower total fat (−45%) and salt (−60%) but higher sugar (+52%). Baked goods were a notable exception, with items from outlets displaying calories higher in energy (+18%), total fat (+74%), sugar (+300%) and salt (+43%). The authors suggested that reformulation may have begun prior to mandatory implementation among some businesses, but changes were inconsistent across menu categories. Essman et al. (2025) analysed menu data from 78 large OOH food chains in England and reported a small reduction of 9 kcal (2%) in mean calorie content six months post-implementation. The largest decreases were observed in burgers (−103 kcal; −11.1%), beverages (−36 kcal; −4.2%) and mains (−30 kcal; −4.2%). Pubs, bars and inns showed the greatest reductions (−52 kcal; −8.8%), followed by sports and entertainment outlets (−49 kcal; −13.4%) and restaurants (−23 kcal; −4.9%). In contrast, calories increased in sandwiches (+88 kcal; +15.8%) and western fast-food/takeaway outlets (+42 kcal; +11%). Changes were primarily driven by removal of higher-calorie items and introduction of slightly lower-calorie items. No significant change was observed for continuous menu items, nor in the

proportion of items exceeding 600 kcal, indicating limited evidence of systematic reformulation.

Overall, evidence across jurisdictions suggests that business responses in terms of calorie content are heterogeneous. Some studies report small reductions, often in newly introduced items or at the transaction level, while others report no change or small increases. Where reductions were observed, they were typically in the order of a few kilocalories per menu item or tens of kilocalories per transaction, rather than evidence of large-scale reformulation across existing menus. In several cases, reductions were observed prior to formal enforcement, suggesting that businesses may respond to anticipated regulation. Effects vary by product type and business category, and where changes occur they are generally small and inconsistent. A summary of reported changes in calorie content and the metrics used is provided in Table 4.4.

Table 4.4: Summary of reported changes in calorie content following implementation of calorie labelling

Study / jurisdiction	Metric reported	Main finding	Interpretation
Wellard-Cole et al., NSW Australia	kJ per 100 g	+17 kJ per 100 g	New items became slightly more energy-dense
Scourboutakos et al., Ontario	kcal per serving; kJ per 100 g	+40 kcal per serving overall; limited-time items +74 kJ per 100 g	No evidence of reduction in overall energy content
Bleich et al. (2017), United States	kcal per item	Mean calories per item fell from 327 to 310 kcal	Small decline, more evident in newly introduced items
Bleich et al. (2015), United States	kcal per item	Restaurants with voluntary labelling offered lower-calorie items than those without labelling	Comparative evidence, not post-implementation change
Petimar et al., United States	kcal per transaction	−82 kcal per transaction	Reflects changes in purchasing behaviour, not necessarily reformulation
Theis et al., England pre-mandatory	average calorie content per item	32% lower average calorie content in voluntarily labelling restaurants, not statistically significant	Suggests possible anticipatory reformulation in some businesses

Essman et al., England post-implementation	mean kcal per item	−9 kcal (2%) overall	Small average change; no evidence of systematic reformulation of continuous items

6. Discussion

This rapid review synthesised evidence on how OOH food businesses have responded to menu calorie labelling policies, focusing on business compliance, operational impacts, and changes in menu composition. Compliance was consistently higher in jurisdictions with mandatory requirements than under voluntary schemes, although variability persisted, particularly in digital ordering environments. Operational challenges were both documented and reported by stakeholders. Enforcement authorities described resource constraints and competing priorities, while businesses reported ongoing implementation burdens related to time, technical expertise, nutritional analysis, and maintaining accurate information as menus changed.

Observed changes in menu calorie content were generally modest and heterogeneous across jurisdictions and business types. Where changes occurred, they were more commonly observed in newly introduced items than in reformulation of existing menu items. Reported business responses included recipe standardisation, integration of nutritional analysis into menu planning, removal of some higher-calorie items, and introduction of lower-calorie alternatives. However, evidence of systematic reformulation across entire menus was limited. Most studies focused specifically on calorie labelling; few examined the effects of broader nutrient labelling beyond calorie disclosure.

6.1 Compliance and implementation in practice

Evidence from jurisdictions with mandatory menu calorie labelling indicates that compliance is generally higher than under voluntary schemes but not uniform across settings or formats. In most cases, legislation required the display of energy information in kilocalories (kcal) or kilojoules (kJ), rather than broader nutrient disclosure at the point of choice. While many businesses complied with in-store display requirements, several studies identified gaps in provision in digital ordering environments, particularly on third-party delivery platforms where legal obligations were either less clearly specified or more difficult to enforce.

In this context, “incomplete” compliance refers to situations where calorie information was provided for some, but not all, eligible menu items; where required contextual statements were missing; where information was inconsistently displayed across menu formats; or where online platforms differed from in-store provision. Compliance challenges were therefore observed both within individual businesses across different menu formats, and between physical and digital environments.

From a business perspective, implementation challenges included limited control over third-party platform design, duplication of effort in updating multiple menu

systems, and ongoing requirements to maintain accurate information as recipes and offerings changed. In jurisdictions such as New South Wales and England, legislation explicitly required calorie information to be displayed online where ordering was possible, yet studies still reported lower compliance in digital settings. This suggests that legislative scope alone does not guarantee consistent implementation.

Some studies also assessed the accuracy of labelled calorie information, identifying discrepancies between stated and measured values. These findings highlight practical challenges in nutritional analysis, recipe standardisation, and maintaining up-to-date data, particularly in businesses with frequently changing menus. Compliance therefore relates not only to whether calorie information is displayed, but also to whether it is accurate and consistently applied across platforms.

The Irish experience aligns with broader evidence that voluntary approaches are associated with low uptake and inconsistent implementation, particularly among smaller and independent businesses lacking internal capacity or incentives to adopt non-mandatory measures. In contrast, mandatory schemes are associated with substantially higher baseline compliance with display requirements, although implementation challenges remain, especially in digital environments and in relation to maintaining accuracy over time.

These findings are particularly relevant to the Scottish context, where food purchased for immediate consumption and digital ordering platforms constitute a substantial and growing share of the OOH food environment. Evidence from other jurisdictions suggests that legislative scope alone does not ensure consistent provision or accuracy of calorie information, particularly in online settings. For Scotland, this implies that any future policy development would need to consider not only statutory requirements, but also enforcement capacity, technical support for businesses, and clear guidance. Understanding barriers to feasibility and accuracy is therefore central to designing interventions that can achieve sustained compliance and meaningful reductions in energy purchased or consumed.

6.2 Business response and operational impact

The reviewed studies indicate that businesses have responded to calorie labelling requirements in varied ways. In jurisdictions where legislation had been in place for longer, some OOH food businesses reported integrating calorie labelling into routine menu development and product planning processes, suggesting that implementation becomes embedded over time rather than remaining a discrete compliance task. However, this integration was often accompanied by ongoing operational demands. Costs and resource pressures arose from recipe standardisation, nutritional analysis, menu redesign, staff training, and maintaining up-to-date information as offerings changed. These burdens were reported to be particularly acute for small and independent businesses lacking in-house nutritional expertise or dedicated compliance capacity.

At the enforcement level, several studies and grey literature sources highlighted constraints faced by local authorities responsible for monitoring compliance. Competing regulatory priorities, limited staffing, and resource pressures were reported to reduce the intensity and consistency of enforcement activity. This context is relevant to understanding variation in compliance, as implementation outcomes reflect not only business willingness and capacity, but also enforcement capability and oversight.

Evidence on short-term financial impacts remains limited and context specific. Some studies reported little measurable impact on revenue or staffing time following implementation, although these assessments often did not account for the full costs of nutritional analysis, system changes, and ongoing maintenance. Grey literature from England provides additional insight into business sentiment. While some industry voices suggested that clearer nutritional transparency could enhance consumer trust, others expressed concern that calorie-focused approaches oversimplify food quality and nutritional value. These views reflect broader tensions regarding the framing of calorie information as a proxy for healthfulness.

Overall, the evidence suggests that sustained and consistent implementation depends on support mechanisms such as clear statutory guidance, standardised presentation requirements, access to reliable nutritional analysis tools, and proportionate enforcement. Without adequate support and oversight, compliance may be uneven, particularly in smaller businesses and digital ordering environments.

6.3 Changes in calorie content of menu items

The evidence on changes in menu calorie content following implementation is mixed. Some studies report modest reductions in calories, particularly for newly introduced items or at the transaction level, while others report no change or small increases. Interpretation of these findings is complicated by concurrent trends in product development and consumer demand. In several jurisdictions, reductions were observed prior to formal enforcement, suggesting that changes may reflect anticipation of regulation or broader reformulation trends rather than the direct effect of labelling alone.

Where studies distinguish between “core” or continuously offered menu items and newly introduced products, reductions in calorie content are more commonly observed among new items than through reformulation of existing products. Here, “core” items refer to menu products that are consistently available over time, rather than temporary or seasonal offerings. Changes in calorie content were less evident among these established items.

This pattern may reflect practical and commercial constraints. Reformulating existing menu items can require changes to recipes, portion sizes, ingredient sourcing, pricing structures, and brand positioning, and may carry commercial risks where products are high-selling or central to brand identity. By contrast, introducing new lower-calorie items allows businesses to expand choice without altering established

products. Reductions in average menu calories may therefore arise through product turnover and innovation over time rather than through systematic reformulation of items already available on existing menus.

Some studies also report reductions in calories purchased per transaction. In these cases, observed changes may reflect shifts in consumer purchasing behaviour rather than reductions in the underlying energy content of menu items themselves. Where area-level differences were identified, these reflected variation in purchasing patterns rather than systematic differences in menu composition across locations.

Overall, changes in calorie content appear modest and heterogeneous across jurisdictions and business types, with greater changes observed in newly introduced items than in established menu products. Few studies examined broader nutrient reformulation beyond calories.

6.4 Implications for Scotland and future work

Asking businesses to provide nutrition information for OOH foods requires careful consideration of regulatory design and implementation mechanisms. Evidence from other jurisdictions suggests that mandatory measures are more likely than voluntary schemes to achieve high levels of compliance with display requirements. Voluntary approaches are consistently associated with low uptake and uneven implementation, particularly among smaller and independent businesses.

However, even under mandatory regimes, compliance is not uniform. Gaps have been observed in both on-premises and digital environments, including inconsistencies in presentation, coverage across menu items, and accuracy of information provided. Ensuring clarity in statutory guidance, defining responsibilities across physical and online platforms, and supporting enforcement capacity are therefore central considerations.

The evidence base also highlights important uncertainties regarding effectiveness. While some studies report modest reductions in calories in newly introduced products or in calories purchased per transaction, changes in the energy content of existing menu items are generally limited. It remains unclear to what extent observed reductions are attributable directly to labelling, rather than to broader market trends or anticipatory reformulation.

A further unresolved question concerns whether providing broader nutrition information beyond calories would lead to different business responses. Most available evidence relates specifically to calorie labelling. There is limited understanding of whether disclosure of additional nutrients, such as sugar or salt, would prompt greater reformulation of existing menu items, changes in product availability, or different patterns of consumer purchasing.

Finally, implementation burden remains a key policy consideration. Nutritional analysis, menu updates, staff training, and ongoing maintenance represent recurring

rather than one-off demands. Understanding how these requirements can be streamlined, standardised, and supported, particularly for smaller businesses, will be important for feasibility and sustained compliance.

Based on the current evidence, the highest priorities for further work are understanding the business and enforcement implications of mandatory implementation, and assessing whether provision of broader nutrition information beyond calories would lead to different business responses or greater public health benefit.

6.5 Limitations of the review

This rapid review has several limitations. First, the evidence base is relatively small and heterogeneous, with studies differing in jurisdiction, business setting, outcome definition, and timing relative to implementation. Second, most included studies were observational, pre/post analyses, or qualitative interviews, limiting causal inference about the effects of menu calorie labelling on business practice. Third, direct evidence on enforcement mechanisms was limited, with most studies reporting compliance outcomes or stakeholder experiences rather than measuring enforcement activity itself. Fourth, evidence on business costs and financial impacts was often incomplete, with few studies quantifying the full resource implications of nutritional analysis, menu updates, and ongoing maintenance. Finally, the grey literature included in this review was used to provide contextual insight into business perspectives and implementation challenges, but should not be interpreted as equivalent to peer reviewed evidence on effectiveness.

7. Conclusion

This rapid review examined how OOH businesses have responded to menu calorie labelling policies across a range of jurisdictions. The evidence indicates that mandatory schemes are associated with substantially higher levels of compliance than voluntary approaches. In mandatory settings, studies commonly reported high levels of calorie display on in-store menus, for example 80% of outlets displaying calorie information after implementation in England and 94% compliance among the largest US chains after federal implementation, whereas voluntary provision remained low, for example 7% of businesses in Ireland and 17% of large UK chains before implementation in England. Compliance nevertheless remained variable, particularly across digital ordering platforms and in relation to accuracy of information provided. Implementation also involves ongoing operational demands, and enforcement capacity influences consistency of application.

Observed changes in menu calorie content following implementation are generally small and heterogeneous. Where reductions were observed, they were typically in the order of a few kilocalories per menu item or tens of kilocalories per transaction, rather than evidence of large-scale reformulation of existing menus. Reductions are more commonly observed in newly introduced products or in calories purchased per transaction than through systematic reformulation of established menu items. In several contexts, reductions appear to pre-date formal enforcement, suggesting that labelling operates alongside broader market and policy influences rather than as a standalone driver of reformulation.

The current evidence base focuses predominantly on calorie disclosure. There is limited empirical assessment of whether providing broader nutrient information would lead to different reformulation practices, product availability, or consumer purchasing behaviour. Similarly, the resource implications for businesses and enforcement authorities are not consistently quantified.

These findings suggest that menu labelling can improve transparency and achieve high levels of compliance under mandatory regimes but is unlikely on its own to drive large reductions in the energy content of OOH food choices. Further research is needed to examine longer-term effects, broader nutrient impacts, and implementation models that balance effectiveness with feasibility.

Appendix A: Key elements of Out of Home (OOH) nutrient labelling regulation from jurisdictions included in the rapid review

Jurisdiction	Voluntary / Pre-mandatory phase	Mandatory enforcement	Businesses in scope	Information required	Display rules specified	Online / delivery included
Australia – New South Wales	No formal voluntary phase	1 Feb 2011 (12-month phase-in before penalties)	Chain food businesses with ≥20 outlets in NSW **or** ≥50 outlets across Australia (with specified exemptions)	Energy (kJ) per standard item + required reference statement: "Average adult daily energy intake is 8,700 kJ"	Yes – kJ must appear close to item name or price and meet prominence rules	Yes – applies to online menus and third-party ordering platforms
Australia – South Australia	No formal voluntary phase	23 Feb 2012 (12-month implementation period)	Chain businesses with ≥20 outlets in SA **or** ≥50 across Australia (with exemptions)	Energy (kJ) per item + 8,700 kJ reference statement	Yes – must appear on menus including drive-through; prominence rules apply	Yes – explicitly includes electronic / internet menus
Australia – Victoria	Voluntary uptake reported prior to law	1 May 2018	Chain businesses with ≥20 outlets in VIC **or** ≥50 across Australia (incl. chain supermarkets)	Energy (kJ) per item + 8,700 kJ reference statement	Yes – must be adjacent or close to item name/price; applies to printed and electronic menus	Yes – explicitly includes takeaway and online menus
Australia – Queensland	No formal voluntary phase	24 Mar 2017	Chain businesses with ≥20 outlets in QLD **or** ≥50	Energy (kJ) per item + 8,700 kJ	Yes – kJ must match price display	Yes – includes online ordering websites and apps

Jurisdiction	Voluntary / Pre-mandatory phase	Mandatory enforcement	Businesses in scope	Information required	Display rules specified	Online / delivery included
	(12-month legislative lead-in)		across Australia (with exemptions)	reference statement	prominence and appear adjacent	
Australia – Australian Capital Territory	No formal voluntary phase	1 Jan 2013	Chain businesses with ≥7 outlets in ACT **or** ≥50 across Australia (catering exemption applies)	Energy (kJ) per item + 8,700 kJ reference statement	Yes – same font/size as price/name; adjacent placement required	Yes – includes internet and phone ordering menus
Ontario (Canada)	No formal voluntary scheme (law passed 2015)	1 Jan 2017	Food service chains with ≥20 locations in Ontario (with exemptions)	Calories on menus + required contextual statement; additional nutrition info available on request	Yes – calories must appear next to item name or price; formatting rules apply	Yes – applies to online menus/apps where ordering and pricing are shown
Saudi Arabia	Reported voluntary introduction 2017	1 Jan 2019 (calorie labelling); expanded requirements from 2025	Food establishments broadly	Calories on menus (later expanded to broader nutrition disclosures)	Yes – menu-based disclosure required	Yes – delivery applications reported as included
England	No formal voluntary scheme (smaller businesses	6 Apr 2022	Businesses with ≥250 employees (with exemptions	Calories (kcal) at point of choice + required reference	Yes – must be clearly visible and legible at point of choice	Yes – explicitly includes websites, mobile apps and remote providers

Jurisdiction	Voluntary / Pre-mandatory phase	Mandatory enforcement	Businesses in scope	Information required	Display rules specified	Online / delivery included
	encouraged pre-2022)		and franchise counting rules)	statement ("adults need around 2000 kcal a day")		
United States (Federal)	Final rule published Dec 2014; compliance delayed	7 May 2018	Chains with ≥20 locations operating under same name and offering substantially the same items	Calories on menus/menu boards; additional written nutrition information available on request	Yes – calories adjacent to item; required statements specified in regulation	Yes – includes menus on the Internet; treatment of third-party platforms clarified in FDA guidance
Ireland	Government-led voluntary menu calorie labelling initiative (no legal requirement; guidance and support promoted by FSAI and Department of Health from 2012)	No mandatory enforcement date (voluntary only)	All food-service businesses encouraged to participate; no statutory size threshold	Calories on menus (voluntary, not legally required)	Guidance suggests placement at point of choice and clear legibility, but these are not statutory requirements	Not mandated; dependent on business participation (no legal requirement for online menus/delivery)