nesta

Exploring users' views on calorie labels on food delivery apps

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Summary

Nesta conducted a qualitative study to explore the range of people's views on calorie labels in food delivery apps (e.g., Deliveroo and UberEats) and to identify opportunities to improve such labels. We asked 20 food delivery app users from the UK to interact with different versions of a simulated takeaway app, each featuring a different calorie label design. As participants were using the app, we asked them to narrate their experience and asked questions to elicit perspectives about the labels. We found that participants had diverse views on calorie labels in food delivery apps and on each specific label design.

Some participants expressed positive views towards calorie labels, including that the labels:

- Empowered them to act on their existing personal intentions and goals
- Supported their right to know more about the food they purchase
- Helped them build nutritional knowledge over time
- Were important for people on a calorie-restricted diet for medical or personal reasons; or
- Informed decisions on the calorie intake in subsequent meals (not just the meals for which they were exposed to calorie labels).

Some participants highlighted potential drawbacks of calorie labels or thought that calorie labels might not effectively inform behaviour, including:

- Interpreting 'low-calorie' labels as an indicator for small portion sizes, poor taste, and low anticipated satiety
- Believing that calorie labels invoked feelings of guilt for 'some' people (e.g., trigger users with disordered eating); or
- Believing that calorie labels would not impact users' behaviour.

Some participants expressed views on specific design features of calorie labels, including:

- The benefit of providing a filter option to switch off/on calorie labels, as this feature was described as a helpful way to protect vulnerable users and gave users agency over when to see labels (as per time, mood, occasion);
- The benefit of using neutral and non-judgemental messaging to protect users' enjoyment of ordering food from delivery apps;
- The value of supplementing calorie labels with other health-related information (e.g., wider nutritional profile of foods), which can help to signal that calorie information is intended as a health-promoting initiative rather than a cosmetic one;
- The guideline that 'Adults need around 2000 calories (kcal) per day' displayed alongside calorie labels:
    - Led some participants to feel reassured about ordering high-calorie meals as they still felt well within their 'calorie budget';
    - was considered by some participants to be too general to be relevant to themselves.
- A summary of total calories ordered in the checkout basket was considered by some participants to be helpful. Some participants thought that depending on how the summary calorie content of a basket was displayed, this feature could exacerbate the risks of triggering feelings of guilt.

Recommendations

Based on the study results, we have generated recommendations pertaining to (1) the design of calorie labels, (2) how to communicate about calorie labels to promote public support for this policy, and (3) what to consider when planning impact evaluations of calorie labels in food delivery apps. These recommendations should be **interpreted as hypotheses based on the range of views expressed by 20 participants** in a simulated environment and should be further tested before scaling.

Recommendations on the design of the labels:

To enhance the effectiveness of calorie labels at reducing excess calorie purchases and to reduce the risk of unintended harm, we suggest considering the following recommendations about their design.

Do:

- Include a filter that allows users to switch calorie labels on and off.
- Provide more detailed nutritional information upon request, if feasible.
- Be visible, clear and follow accessibility guidelines.
- Increase the appeal of dishes with low calorie labels, e.g. by using more appealing names..
- Consider ways of communicating recommended calories per meal (on top of daily recommended guidelines).
- Consider acceptable ways of displaying total calories in a user's basket.

Don't:

- Avoid framing in-app messaging about the calorie content of foods as judgemental.
- If calorie labels are complemented with additional nutritional information, ensure this is presented in a way that does not lead to information overload.

Recommendations for how to communicate about calorie labels:

To enhance the public support for the introduction of calorie labels we suggest considering the following recommendations when communicating about this policy.

Do:

- Emphasise that calorie labels empower customers to implement their own personal intentions and goals.
- Emphasise that calorie labels can help consumers manage calorie intake across all meals consumed over a day, not just the meal ordered in the out-of-home sector.
- Emphasise that calorie labels could help inform the food choices of people who follow a calorie-restricted diet to manage a medical condition.
- Present calorie labels as a way to fulfil customers' rights to information.
- Highlight that calorie labels on delivery apps will standardise practice with other food providers, such as supermarkets.
- Introduce calorie labels alongside a public awareness campaign about the importance of calorie intake for health.
- Disseminate clear calorie calculation guidance for industry.

Don't:

- Allow calorie labels to be construed as a way to prevent consumers from treating themselves.
- Give space to the narrative that calorie labels are primarily used for cosmetic weight management purposes.
- Introduce calorie labels with negative, judgemental, or patronising language to customers.

Recommendations for impact evaluations of calorie labels

Based on our qualitative study, we identified a range of potential mechanisms that we suggest considering when planning impact evaluations of calorie labels. Specifically, we recommend considering:

- Studying the impact of calorie labels on users' overall calorie consumption across all eating occasions, not just out-of-home (OOH) eating occasions. Labels might inform the consumption of meals subsequent to those consumed from OOH sources featuring the labels.
- Analysing how the impact of calorie labels changes over the long-term, as some participants said they might get desensitised to calorie labels over time while others said that calorie labels would build their knowledge over time.
- Studying the specific impact of calorie labels on people with disordered eating.

In conclusion, we identified specific features of and concerns towards calorie labels that governments and industry should consider when implementing this policy in delivery apps. Next steps include iterating on the calorie label designs tested in this study, validating the recommendations presented in this report, and evaluating the impact of calorie labels in a real-world context.

Introduction

Overweight and obesity is a serious public health challenge,[1] and the increase in the use of online delivery apps could be contributing to this problem.[2,3] Calorie labelling is standard for many food sellers in the UK, including pre-packaged foods sold in supermarkets and meals served in large restaurants. Previous research shows that including nutritional labels at point-of-purchase could help promote healthier food choices,[4,5,6,7] but there is limited evidence on how customers would react to calorie labels on food delivery apps. **The purpose of this qualitative study was to document the range of reactions we heard from participants** regarding different designs of calorie labels on food delivery apps.

Methods

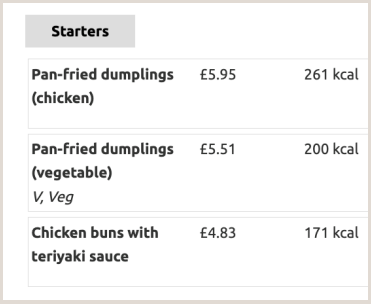
Overview: We conducted individual 'think-aloud' sessions with 20 active delivery app users in the UK. In each session, we asked the participant to narrate their experience using a simulated app and asked questions to elicit perspectives about the calorie labels.

Procedure: Each participant took part in a 60-minute session over video call. During the sessions:

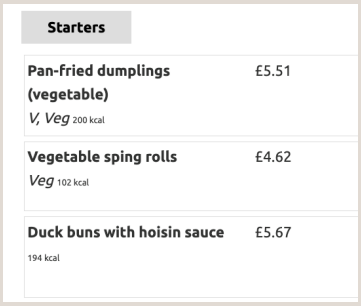
Participants completed a 'think-aloud' activity, in which they built takeaway orders on four different versions of a simulated delivery app (each featuring a different calorie label design) and gave opinions on three restaurant-level calorie tags.

Each version of the app included different ways of displaying calorie information, or different features to assist customers with using the calorie information:

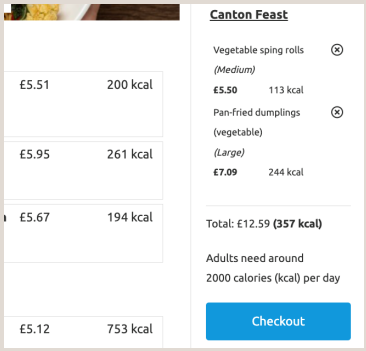
Calorie labels positioned next to price and using the same font as the price



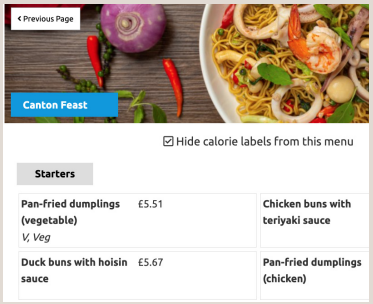
Calorie labels positioned between the product description and the price and using a smaller font than the price



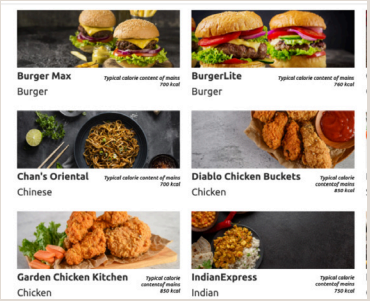
Calorie labels in large font size and positioned next to price with the addition of a total calories purchased shown in the order basket



Calorie labels in large font size and positioned next to price with the addition of a filter switch that allowed participants to hide or show the calorie labels from menus



Tags providing information about the calorie content of restaurant menus on the restaurant selection page



Participants were instructed to describe a typical scenario from their lives in which they would order a food delivery. Participants were asked to narrate their experiences of using the simulated app in real-time, including the trade-offs they considered while creating an order and how they engaged with calorie labels.

Researchers observed the participants' screens as they built the order, scanned through the static designs, and discussed their experiences. We used semi-structured topic guides to prompt participants to reflect on their choices and experiences.Each session was conducted by two researchers, with one researcher leading the interview and the other taking notes.

Sampling: We used the concept of 'information power'[8] to determine a sample size of 20 participants. A panel provider recruited participants and each participant was compensated with £40. We selected participants that were diverse on factors associated with dietary choices and health outcomes in the literature (see 'Sample' table). All participants spoke English, had access to a computer or smartphone, and had used a food delivery app in the previous 30 days.

Analysis: We conducted a rapid data-driven thematic analysis based on the notes collected during the interviews. We did not quantify the prevalence of any views.

		Sample (n=20)
Sex	Male	9
	Female	11
Geography	England - South	6
	England - North	4
	Northern Ireland	3
	Wales	1
	Scotland	6
Age	18-27	5
	28-37	5
	38-47	4
	48-57	2
	58+	4
Ethnicity	White	8
	Mixed	1
	Asian	5
	Black	5
	Other	1
Annual household income	Up to £30,499	7
	£30,500-£44,499	4
	£44,500-£60,999	1
	£61,000-£86,999	5
	£87,000 or more	3
Typical no. of orders per month	2 or more	15
	2 or fewer	5

Results

1. General views on calorie labels on delivery apps[9]

This section collates the views and behaviours that participants expressed regarding calorie labels generally, across all the designs.

Main view	Details
1.1. There are multiple mechanisms through which calorie labels could impact (or not impact) food choices on delivery apps.	**Some participants elaborated on how calorie labels can help reduce their excess calorie intake or meet health goals.** 1.1.1: Calorie labels support knowledge formation: Some participants thought that calorie labels can help build knowledge about nutrition over time with regards to different cuisines and dishes. This was considered especially helpful for specific population sub-groups, including children and people who typically consume excess calories. 1.1.2: Calorie labels help users to implement existing intentions: Some participants thought that calorie labels can empower people to implement their personal nutrition goals, such as managing weight, supporting athletic performance, or adhering to medical requirements. 1.1.3: Calorie labels increase motivation to select fewer calories: Some participants thought that calorie labels can motivate reductions in excess calorie intake, particularly for 'routine' food orders, such as those taking place during a week-day or at lunchtime.

Main view	Details
	1.1.4: Calories labels in delivery apps can help inform the calorie intake in subsequent meals: Some participants thought that calorie labels can help people manage calorie intake at meals eaten after they eat a delivery order. For example, knowing that the number of calories consumed in a takeaway meal is high, can motivate reductions in calorie intake of a subsequent meal. **Some participants elaborated on how calorie labels might lead to higher calorie choices.** 1.1.5: Calorie labels facilitate selecting higher calorie meals for satiety and taste: Some participants used calorie labels to select higher calorie options. They feared that low-calorie options would not be tasty or would leave them hungry. **Some participants elaborated on how and in what circumstances calorie labels might fail to promote lower calorie choices.** 1.1.6: Users could be desensitised to calorie labels over time: Some participants thought that over time, long-term exposure to calorie labels could potentially desensitise app users to calorie information. 1.1.7 Users have fixed, rather than fuzzy, preferences: Some participants used delivery apps to order a specific meal and so were not affected by the calorie information. 1.1.8: Calorie labels might not be compatible with situations in which takeaway apps as a treat: Some participants sometimes used delivery apps to treat themselves and did not want to use nutritional information to inform their selection in these circumstances.

Main view	Details
	1.1.9: Calorie labels are incompatible with users' existing weight management strategies: Some participants thought that a focus on calories was incompatible with their personal approach to food selection and weight management (e.g. some participants aimed to manage their weight through exercise rather than reductions in calorie intake or disliked the perceived 'scaremongering' around calories).
1.2. Calorie labels are a corporate responsibility towards consumers.	1.2.1: Calorie labels support users' right to information: Some participants thought customers had the right to know what was in the food they were purchasing and that calorie labels contributed towards fulfilling this perceived 'consumer right'. 1.2.2: Calorie labels are considered the status quo: Some participants already perceive nutrition information on delivery apps as the status-quo level of information to be provided to consumers.
1.3. Calorie labels should be complemented with more detailed nutritional information.	1.3.1: More detailed information would improve the useability of labels: Some participants expressed the desire to see the 'traffic light' labels that are used on packaged foods on delivery apps. They felt that the traffic light label provides more detailed information and a more holistic idea of a foods' health. Some participants noted that a coloured rating system can help to quickly identify healthier options, and they understand the traffic light labels better than calories. 1.3.2: More detailed information promotes greater personal relevance: More holistic traffic light labels also allow people with specific dietary requirements or health conditions to identify foods that are compatible with their diets. 1.3.3: Calories are associated with cosmetic goals: Some participants associated calories with dieting for cosmetic purposes rather than for health purposes. Presenting calorie labels without information on the wider nutritional composition of foods could be perceived as a cosmetic, rather than a health, intervention.

Main view	Details
1.4. Calorie labels are incompatible with the drivers of food choices on delivery apps.	1.4.1: Making choices based on calories is incompatible with treating oneself: Some participants felt that their takeaway experience might be negatively affected by calorie labels. This was linked to the idea that delivery apps are a way to treat themselves and calorie information should not be used to inform choices about treats.
1.5. Calorie labels provoke fears of putting vulnerable populations at risk.	1.5.1: Calorie labels could be a trigger for people with eating disorders: Some participants expressed concerns that viewing calorie labels would negatively impact people with eating disorders' eating behaviours. 1.5.2: Users could experience harm from inaccurate labels: Some participants were sceptical about the accuracy of the calorie information being provided and worried about the potential harm the inaccuracy would cause people who need to follow a very specific diet.

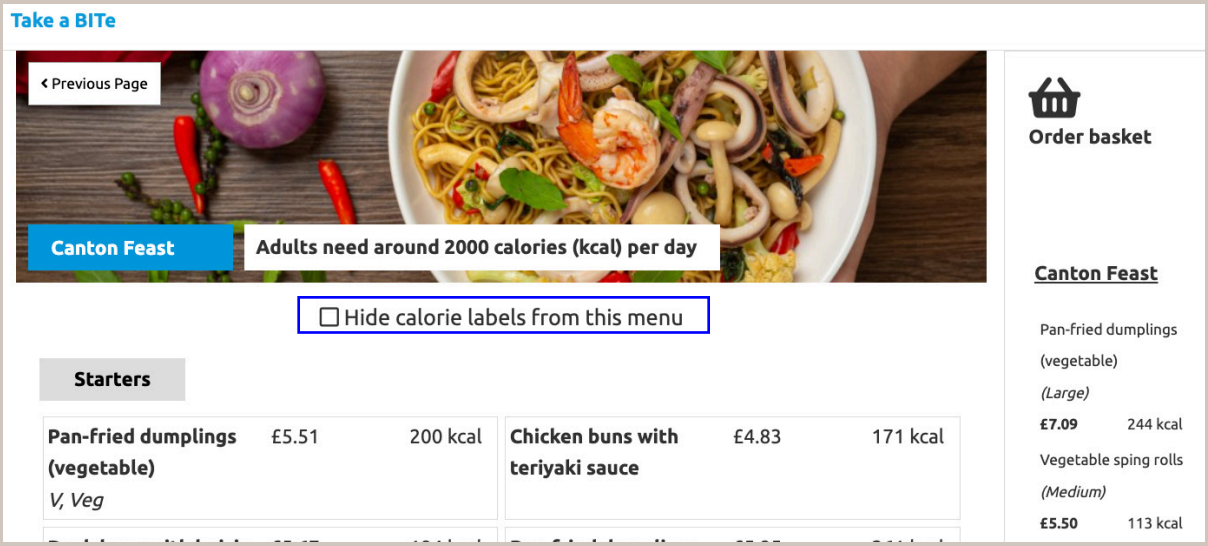
> **If [calorie content] is too high, I would order less food or make sure I have some left over for tomorrow.**
>
> Study participant

> **There's no situation in which I would look at [calories]. I look at nutrients. I prefer the traffic light system.**
>
> Study participant

2. Views on switch on/off filter

Participants used a version of the simulated food delivery app that included a filter switch that allowed participants to hide the calorie labels from menus (from a default 'on' position). Participants also viewed a version of the app with a filter switch that allowed them to show calorie labels (from a default 'off' position). The views in this section represent the opinions and behaviours of participants in regards to these filter switches.

Main view	Details
2.1 The 'switch on/off filters' empowers users.	2.1.1 The filter provides a sense of control: Some participants noted that the ability to show or hide calorie labels made them feel in control. It allowed them to customise the display based on their mood, situation, and goals related to ordering. 2.1.2 The 'switch off' version reduces user burden: Some participants thought the 'switch on' filter version (i.e. not showing people calorie labels unless requested) placed a burden on users and might result in them forgetting to turn the calorie labels on even if they wanted to see calories. These participants thought that seeing calorie labels is important and the labels should be shown to users unless they request to hide it.
2.2 The 'switch on/ off filters' safeguard vulnerable users.	2.2.1 The filter protects vulnerable people: Some participants thought that the filter option protects vulnerable people from viewing triggering information. This applied to both versions of the filter, regardless of whether the calorie labels were presented by default or if they had to be requested. 2.2.2 The 'switch on' version increases protection for vulnerable people: Some participants thought that the 'switch on' filter version (i.e., not showing people calorie labels unless requested) introduced an additional level of protection for vulnerable people.



The on/off label filter within a restaurant menu

Main view	Details
2.3 The 'switch on/off filters' improve the user-experience of the app.	2.3.1. The filter makes the app feel 'friendly': The filter feature was seen to be more 'friendly' to users as it provided users with a way to improve their experience. 2.3.2. The filter is easy-to-use: Some participants noted that it would be easy to switch calorie labels on and off.

> **I don't want to know about the calories on a weekend. I want to pretend it's not there. But during the week for lunch, I definitely want to see it.**
>
> Study participant

3. Views on '2,000 calories (kcal) per day' guidance

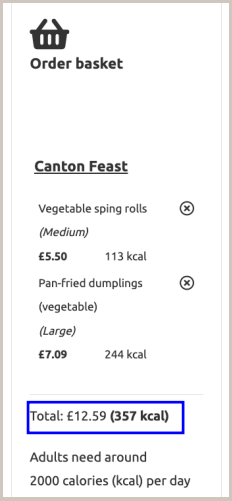
Participants used a version of the simulated food delivery app that included a message highlighting a daily recommended calorie intake of 2,000 calories. The views in this section represent the opinions and behaviours of participants in regards to that message.

Main view	Details
3.1 There are multiple mechanisms through which the '2,000 kcal/ day' could impact (or fail to impact) food choices.	**Some participants thought that the '2,000 kcal/day' guideline helped them to order fewer calories.** 3.1.1 The guidance increases motivation to reduce calories: Including the guidance on the app helped participants evaluate the number of calories they were ordering and motivated some participants to reduce their order. 3.1.2 The guidance invites users to reflect on their calorie consumption from previous meals: Some participants mentioned that the message prompted them to consider how many calories they had already eaten that day, and to pay more attention to the calorie content of each dish. **Some participants' interpretation of the '2,000 kcal/day' guideline might lead them to order more calories.** 3.1.3 The guidance introduces the risk of underestimating other calories consumed: Some participants gave low estimates for the

Main view	Details
	number of calories they consume from other sources throughout the day. This led some participants to believe they can consume many calories from their takeaway without exceeding the guideline. 3.1.4 The guidance causes users to anchor to 2,000 calories: Some participants did not fully consider that the 2,000 calorie figure is for the whole day, rather than one meal. Comparing the calorie content of individual meals against the daily calorie recommendations led some participants to feel reassured about the calorie content of high calorie orders, as they felt they were still well within their 'calorie budget'. **Some participants felt that the '2,000 kcal/day' guideline was not applicable to them personally.** 3.1.5 The guidance is not perceived as personally relevant to users: Some participants disregarded the guideline when ordering their meals because it does not take personal factors into consideration, such as sex, activity levels etc.
3.2 Acceptability of the '2,000 kcal/day' figure varied across participants.	3.2.1. The guidance is a helpful benchmark: Some participants felt that the guidance is a good estimate to understand how much people should be eating, even if the actual number differs somewhat by person. 3.2.2 The guidance is trustworthy and consistent: Some participants considered the guidance to be trustworthy because it is based on science or it matches what their doctor told them. 3.2.3 Including the guidance on the app interface is perceived as lecturing and accusatory: Some participants felt the message was lecturing them and placing the blame for high-calorie meals on consumers. The message caused unwelcome feelings of guilt.

4. Views on Basket summary of calories purchased

Participants used a version of the simulated food delivery app that showed the total calories purchased in the order basket. The views in this section represent the opinions and behaviours of participants in regards to this basket summary feature.



Main view	Details
4.1 The basket summary provides a helpful service to customers	4.1.1 The basket summary facilitates decision making: Some participants liked the basket summary because it saves them from having to do calculations when comparing their order against daily intake guidance or personal goals. Some participants removed items from their basket if their order didn't match their calorie target. Some participants used it to meet other calorie consumption goals (including increasing calorie intake). 4.1.2 The basket summary signals the importance of calories: Some participants thought the basket summary signals to users that calories are an important metric to consider.
4.2 The basket summary triggers negative emotions	4.2.1 The basket summary induces feelings of guilt: Some participants said that the basket summary induces feelings of guilt and detrimentally affects the takeaway experience more than seeing the calories in each item separately. 4.2.2 The basket summary could trigger people with eating disorders: Some participants worried that seeing the summary could be a trigger for people who are overly conscious about calories or have an eating disorder (although they did not feel directly triggered themselves).

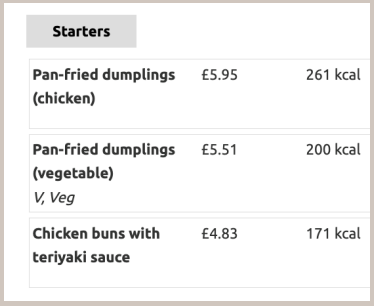
Main view	Details
4.3 The basket summary's usability could be improved.	4.3.1 The basket summary is not an accurate estimate of individuals' calorie consumption: Some participants noted that the total calories shown in the basket summary would not reflect the consumption of each person (when ordering for multiple people) or each meal (when ordering for multiple meals). They felt it would be difficult to calculate the calories in each individual meal. 4.3.2 The bold font gives calories unjustified prominence: Some participants felt that the total calories are not important enough information to be shown in bold text.

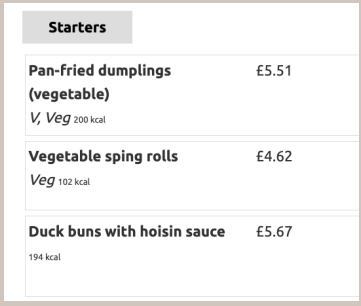
> **If [calorie content] is too high, I would order less food or make sure I have some left over for tomorrow.**
>
> Study participant

> **There's no situation in which I would look at [calories]. I look at nutrients. I prefer the traffic light system.**
>
> Study participant

5. Views on font and positioning of calorie labels

Participants used versions of the simulated food delivery app with calorie labels shown in (a) large font size and positioned next to the food prices using the same font size as the price and (b) positioned between the product description and the price and using a smaller font compared to the price. The table below covers the views participants had on these design options.





Main view	Details
5.1. The font size and position of calorie labels could affect their impact.	5.1.1. Large and prominent labels simplify information processing: Some participants described using a large font and positioning the labels right next to the price as positive features, as it might allow for quicker identification, easier information processing, and using the information under time pressure. 5.1.2. Large and prominent labels unduly inflate the importance of calories compared to other nutritional information: Some participants described using a large font and positioning the labels right next to the price as unduly inflating the importance of calorie information compared to other nutritional information that was considered equally important, such as allergens and dietary restrictions.

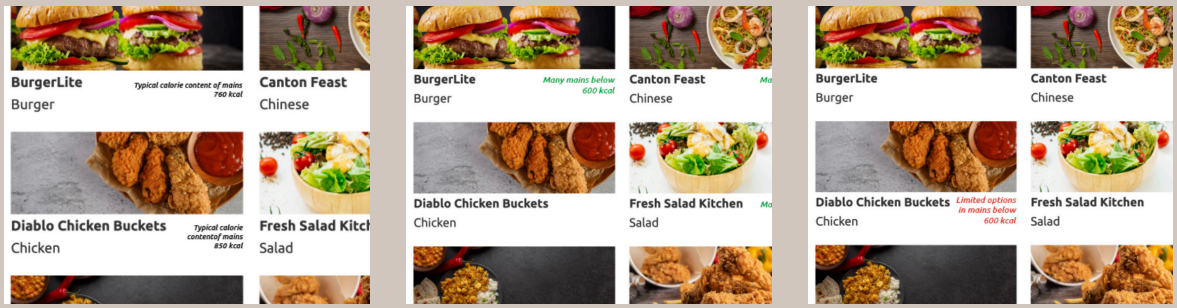
Main view	Details
	5.1.3 Calorie labels could crowd the app interface: Some participants worried that calorie labels could make the app interface too busy and negatively impact the user experience of the app.
5.2. The font size and position of calorie labels affect their acceptability.	5.2.1 Large fonts are more inclusive: Using a larger font for the labels was considered more inclusive by some participants, since it is more legible. 5.2.2 Large and prominent labels are less deceptive: Using a larger font for the calorie labels and positioning the labels next to the price was more acceptable for some participants, as using smaller fonts and positioning the labels within the product description was perceived as a way to purposefully hide the information from users. 5.2.3 Small and less prominent labels allow more personal agency: Using a small font and positioning the labels within the product description was more acceptable to some participants, as it was perceived as promoting personal choice and agency for users. 5.2.4 Product description is the natural location for calorie labels: Positioning the labels within the product description was seen as a 'natural' placement for this information on the app by some participants, since it aligns with the formatting of other health-related information, such as allergens and dietary restrictions.

The small font is more discreet and feels like it's more like a choice to look at it.

Study participant

6-9. Views on restaurant-level tags

Participants viewed mockups of the simulated food delivery app where calorie information was provided on the restaurant-selection page. The table below covers participants' opinions regarding seeing calorie information on the restaurant-selection page. The subsequent tables in this section report participants' opinions about the individual tags.



Main view	Details: restaurant-level tags (general)
6.1 There are several mechanisms through which restaurant calorie-tags could impact (or not) food choices on delivery apps.	6.1.1 Restaurant level calorie tags help to quickly identify restaurants with lower calorie options: For each tag, some participants who were calorie-conscious said they would use the tags to select restaurants with healthier options. Some participants felt that the tags would help them quickly narrow down which restaurant to select. 6.1.2. Low calorie tags provide licensing to order more items: Some participants interpreted low 'typical' calorie count to mean that they can order more dishes from that restaurant without exceeding their recommended calorie intake.

> **[The tag] makes your decision easier…It can limit what you actually look at in the first place, because looking at all the menus can be overwhelming.**
>
> Study participant

Main view	Details: 'Typical calories' restaurant-level tag
7.1 The 'typical calories' tag is acceptable.	7.1.1. The 'typical' tag aids restaurant selection: Some participants felt that the 'typical calories' tag would help users select a restaurant that fits their calorie needs. Some participants preferred this tag above the other tag options because it provided more detailed information. 7.1.2 The 'typical' tag is a neutral indicator: Some participants felt that the 'typical calories' tag was neutral information, and avoided generating a negative or positive impression of any restaurants.
7.2 There are multiple ways to interpret 'typical'.	7.2.1. 'Typical' means 'average': Some participants considered 'typical' to mean 'average' . These participants said they expected low-calorie options within the menu, even if the typical number of calories is high. 7.2.2. 'Typical' means 'majority': Some participants considered 'typical' to mean 'most'. These participants thought most mains offered by tagged restaurants would be close to the 'typical' number of calories shown on the tag.

Main view	Details: 'Many' restaurant-level tag
8.1 The acceptability and perceived trustworthiness of the 'many' tag varied across participants.	8.1.1. The 'many' tag is a natural piece of information for restaurants to provide. Some participants noted that it feels natural for restaurants to be offering this information. The tag was perceived as providing information to participants without being too 'in your face'. 8.1.2. The 'many' tag is choice constraining. Some participants worried that the tag would be swayed to pick a restaurant or dishes they wouldn't like and would have a bad experience. 8.1.3. The 'many' tag is a marketing tool for restaurants: Some participants suspected that restaurants pay for the privilege of being tagged. This affected the perceived trustworthiness of the tag.
8.2 There are multiple ways to interpret 'many'.	8.2.1 'Many' means 'some': Some participants expected that there are at least some main courses below 600 calories at tagged restaurants. 8.2.2 'Many' means 'more than other restaurants': Some participants expected that there are many more main courses that are under 600 calories at tagged restaurants than at others.
8.3 There are multiple ways to interpret 'under 600 calories'.	8.3.1. 'Under 600 calories' is a marker of healthfulness: Some participants interpreted 'under 600 calories' to mean that the options were healthy and used this information to guide their decision. The green coloured fonts invited selection of tagged restaurants. 8.3.2. 'Under 600 calories' is a marker of portion sizes: Some participants assumed that the portion sizes served by restaurants must be small.

> **I might be swayed [by the tag] and I wouldn't like it and it would make my experience worse.**
>
> Study participant

Main view	Details: 'Limited options' restaurant-level tag
9.1 The acceptability of the 'limited' tag varied across participants.	9.1.1 The 'limited' tag preserves user choice: Unlike the 'many' tag, some participants felt that the 'limited' tag was not unduly influencing them to choose a low-calorie option. 9.1.2 The 'limited' tag is a negative message: Some participants found the message to be overly negative. 9.1.3. The 'limited' tag is unfair to tagged restaurants: Some participants thought that the 'limited' tag isn't fair to the tagged restaurants because it would hurt their business.
9.2 The 'limited' tag could influence choice.	9.2.1 The 'limited' tag is a warning: Some participants thought that the 'limited' tag could prevent them from choosing the tagged restaurants. The 'red font' in which it was presented was interpreted as a heuristic for having to exercise caution.
9.3 The 'limited' tag is misinterpreted or considered confusing.	9.3.2 'Limited' means 'some': Some participants found the wording difficult to follow or to interpret as intended. Specifically, some participants interpreted the tag to mean that the restaurant does have low-calorie options.

Recommendations

Based on the study results, we have generated recommendations pertaining to (1) the design of calorie labels, (2) how to communicate about calorie labels to promote public support for this policy, and (3) what to consider when planning impact evaluations of calorie labels in food delivery apps. These recommendations are hypotheses based on the range of views expressed by 20 participants and should be further tested before scaling.

1. Recommendations for how to communicate about calorie labels:

To enhance the public support for the introduction of calorie labels we suggest considering the following recommendations when communicating about this policy.

Do:

- Do implement a filter that allows users to switch calorie labels on and off to provide agency to the consumers and improve acceptability. (See views 1.1.3, 1.1.9, 1.4.1, 1.5.1, 2.1.1 - 2.3.2, 4.2.1, 4.2.2)
- Do design calorie labels to be visually appealing and follow accessibility guidelines to enable users to view, understand and interact with calorie labels (See view 5.2.1)

Don't:

- Don't frame in-app messaging about the calorie content of foods as judgemental (See views 9.1.2, 3.2.3, 4.1.1 - 4.3.2).
- Don't allow calorie labels to contribute to information overload. (See view 5.1.3)

Do:

- Do highlight that low-calorie meals could be tasty and provide satiety. It may be helpful to explore further strategies to increase the appeal of such dishes. (See views 1.1.5, 6.1.2)
- Do present a recommended guideline for calorie intake per meal, rather than only outlining the recommended daily calorie intake. (See views 3.1.1, 3.1.3, 3.1.4, 3.1.2)
- Do consider acceptable ways of including a total calories label for the basket summary. (See view 4.2.1 - 4.3.2)
- Do consider how to supplement calorie labels to provide more detailed nutritional information, without contributing to information overload. (See views 1.3.1, 1.3.2, 1.3.3)
- Do consider restaurant-level tags that provide calorie information early in the restaurant selection process, following further testing of this concept (See view 6.1.1)

2. Recommendations pertaining to how to communicate about calorie labels:

To enhance public understanding of and support for the introduction of calorie labels, we suggest considering the following recommendations for how to communicate about this policy.

Do:

- Do emphasise that calorie labels empower customers to implement their own personal intentions and goals pertaining to health and weight. (See view 1.1.2)
- Do emphasise that calorie labels could help inform the food choices of people who follow calorie-restricted diets to manage a medical condition. (See views 1.1.2, 1.5.2)
- Do present calorie labels as empowering customers to manage intake across all meals consumed over the day, not just meals ordered on apps. (See views 1.1.1, 1.1.4)
- Do present calorie labels as a way to fulfil customers' rights to information about the products they purchase and as an industry responsibility to provide this information to customers. (See view 1.2.1)
- Do highlight that calorie labels on delivery apps will standardise practice with other food provision channels, such as supermarkets and large restaurants. (See views 1.2.1, 1.2.2)
- Do highlight that calorie labels can enable consumers to build nutritional knowledge over time. (See view 1.1.1)

- Do introduce calorie labels alongside a public awareness campaign about the importance of calorie intake for health and the use of daily intake guidelines for individuals. (See views 1.1.1, 1.1.9, 1.3.3 3.1.1, 3.1.2)
- Do provide calorie calculation guidance for industry to ensure accuracy and consistency, and increase trusts in the labels among customers. (See views 1.1.2, 1.5.2, 3.2.2)

Don't:

- Don't allow calorie labels to be construed as a way to prevent consumers from treating themselves. (See views 1.1.8, 1.4.1)
- Don't support the narrative that calorie labels are primarily used for cosmetic weight management purposes. (See view 1.3.3)
- Don't introduce calorie labels with negative, judgemental, or patronising language to customers. (See views 1.4.1, 1.5.1, 3.2.2,4.1.1- 4.3.2)

Interestingly, no participant commented on **the potential for calorie labels to incentivise industry to develop healthier products** for their customers. Highlighting this potential mechanism of action could be another way of increasing public support for this policy.

3. Recommendations pertaining to how to communicate about calorie labels

Based on our qualitative study, we identified a range of potential mechanisms that we suggest considering when planning impact evaluations of calorie labels. Specifically, we recommend considering:

Studying the impact of calorie labels on customers' overall calorie consumption across all eating occasions, not just out-of-home (OOH) eating occasions. Labels might inform the consumption of meals subsequent to those consumed from OOH sources featuring the labels (See view 1.1.4);

Analysing how the impact of calorie labels changes over the long-term, as some participants said they might get desensitised to calorie labels over time while others said that calorie labels would build their knowledge over time (See views 1.1.1, 1.1.5, 1.1.6);

Studying the specific impact of calorie labels on people with disordered eating (See views 1.5.1, 4.2.2).

Strengths, limitations and conclusion

The strengths of this study include:

- **Researchers directly observed participants' behaviour**. By watching participants navigate through the app, researchers were able to observe how participants built their orders in the different versions of the app, and compare those behaviours to participants' expressed opinions.
- **Researchers recorded participants' opinions in real-time.** By having participants narrate their thoughts and opinions while they navigated the app, researchers were able to capture participants' reactions that may have been lost if participants were asked to recall them later. It also allowed researchers to follow up and explore participants' reactions while they were still experiencing them.
- **A diverse sample:** Recruiting participants that were diverse on characteristics typically associated with eating behaviours allowed us to capture a wide range of perspectives.

The limitations of this study include:

- **We cannot quantify the prevalence of any opinions or behaviours displayed by participants.** The goal of this study was to define the range of opinions and behaviours that delivery app customers might display, not to quantify the prevalence of those opinions and behaviours among the customer population.
- **The think-aloud activity was conducted in a simulated environment.** Participants were aware that they did not have to pay for, or consume, the food they ordered. Additionally, the simulated app might not have had all the features present in real delivery apps. For example, some participants noted that the simulated app did not indicate delivery times, which they said typically impacts restaurant selection.
- **Participants were not necessarily in the same emotional state** that they would be in when ordering a takeaway.
- The study was **conducted only with participants who spoke English** and had access to a device to run the simulated app.
- The **recommendations are hypotheses** generated from the analysis of 20 qualitative think-aloud sessions and should be **tested before being rolled out.**

In conclusion, in this study we identify specific features and concerns that governments, industry, and other public health organisations should consider when implementing calorie labels in food delivery apps. Next steps include iterating on the calorie label designs tested in this study, validating the recommendations presented in this report, and evaluating the impact of calorie labels in a real-world context.

Footnotes

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8. Malterud K, Siersma VD, Guassora AD. Sample Size in Qualitative Interview Studies: Guided by Information Power. Qual Health Res. 2016 Nov; 26(13):1753-1760. doi: 10.1177/1049732315617444. Epub 2016 Jul 10. PMID: 26613970
9. To avoid quantification when reporting on our results, we use 'some participants' to indicate that one or more participants in the study expressed the opinion or behaviour.

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