# Food Standards Agency – Consumer understanding of food risk: rare burgers

## TNS BMRB Research

**August 2015**

# Executive Summary

TNS BMRB was commissioned by the Food Standards Agency (FSA) to conduct research into consumer attitudes and behaviours around rare burger consumption – that is, a burger that is not fully cooked through and still pink inside. The FSA considers this a "risky" food, and wants to understand how to communicate with consumers about this risk in order to support informed decision making.

This research aimed to:

- **understand** and **quantify** current attitudes and behaviours around rare burger consumption; and
- **develop** and **test** potential communications about risk, both qualitatively and quantitatively.

The research comprised three phases, including: 8 qualitative Citizens' Forums of 10 participants per Forum; qualitative research conducted with 26 participants via their mobile phones when they were in restaurants, followed up by online discussion; and a survey of 2,708 respondents using the FSA's Consumer Panel. All strands of research engaged consumers from England, Wales and Northern Ireland and took place in June-July 2015.

**Key findings**

Though the majority (68%) of consumers interviewed in the panel survey report that they are not currently eating rare burgers and are unlikely to start, 11% report eating a rare burger at least once a month. Survey respondents were found to hold very different attitudes towards the consumption of rare burgers and different perceptions around the associated risks – informing whether they choose to eat them, where, and how often. Attitudes appear to be driven by individuals' visceral, emotive reactions to raw meat and mince; general concerns or lack thereof around 'risky' foods; beliefs about the relative safety of different meat types; and notions of self-identity (i.e., as 'foodies' or more conservative consumers). These attitudes are important drivers of responses to messaging around risk.

Three groups of consumers emerged in the research, with distinct sets of associated attitudes and behaviours around rare burgers:

**Rare burger Rejecters**

The majority (64%) of burger eaters interviewed in the survey prefer them cooked well done, and would reject a burger served rare or still pink. We describe these as 'Rare burger Rejecters'. For some this was driven by a dislike of the taste, of rare burgers, or by perceptions that rare burgers pose unacceptable risk. In the Citizens' Forums this group tended to be quite risk-averse in relation to food, and in the survey tended to perceive food risks as higher or more severe compared to other respondents. 91% of Rejecters believed a rare burger could potentially be risky. This group tends to believe that all rare/raw meat is inherently risky, and/or that minced meat is a particularly risky food. Rejecters viewed minced meat as more likely to be impure; of lower quality than steak or other beef cuts; and as having high potential for bacterial contamination as it is 'processed' food.

In the Citizens' Forums, Rejecters' reaction to risk messaging focussed on the confirmation of the fact that a rare burger was potentially risky. This was seen to **justify their caution** about consuming rare burgers, strengthening their existing negativity.

**Rare burger Advocates**

By contrast, 12% of burger eaters in the survey have a strong preference for burgers served rare – often preparing rare burgers at home as well as ordering them in restaurants. We have termed these 'Advocates'. More than two-thirds (68%) of Advocates eat rare burgers once a month or more. Overall, they tend to be younger, male, and more affluent.

Advocates in the Citizens' Forums strongly prefer the taste of rare burgers and also believe a rare preparation is a more sophisticated way of eating. They typically identify as 'foodies' or as having an adventurous attitude to food in general.

For the most part, Advocates do not necessarily think they are taking a risk when eating rare burgers; 32% of Advocates stated that rare burgers were completely safe to eat, with only 19% stating they could be potentially risky. Advocates perceive rare mince to be relatively safe,

similar to rare steak. When eating out, Advocates tend to eat rare burgers in higher end food business establishments (such as specialist burger restaurants and gastropubs), and thus assume that their rare burgers have been prepared with good hygiene standards, using high quality beef. In the Citizens' Forums, Advocates described themselves as confident in their own food safety practices and in the quality of the beef they purchase, with 84% of Advocates in the survey making rare burgers at home.

Advocates' views in the Citizens' Forums were strong and emotive. They tend to respond defensively or dismissively to information about risk, with risk messaging sometimes actually reinforcing their existing preferences for rare burger consumption. When advised of the probability of food poisoning from rare burgers, some Advocates perceive the risk as so low so as to almost constitute proof of it safety. However, not all of the people in the Advocates group respond in the same way and there is evidence that risk messaging may in fact spur reflection about rare burger consumption for some of them, as although 55% of Advocates stated that they were just as likely to eat a rare burger after seeing risk information, 33% said that they might choose not to.

**Rare Burger Accepters**

24% of burger eaters in the survey were termed Accepters – who do not have strong preferences about how their burger is cooked, but will tend to accept a burger however it is served. They eat rare burgers less frequently than Advocates, with less than half (39%) stating that they ate rare burgers more than once every three months. Accepters in the Citizens' Forums tend to view rare burgers as a gourmet experience, and like Advocates, trust that the restaurants serving rare burgers are doing it safely. Unlike Advocates, however, they lack confidence in their food knowledge and are keen to 'leave it to the professionals' – just 41% reported having cooked a rare burger at home. This reticence tends to be associated with a view that they lack the requisite skills to cook a rare burger safely.

Accepters are less sure than Rejecters about the risk of rare burgers – in the survey 70% thought they were potentially risky (compared with only 19% of Advocates). Whilst they assume that red meat is safe, and certainly safer than chicken or pork, Accepters in the Citizens' Forums

harbour vague concerns about the safety of eating raw mince; though they are unsure as to what the risks might be.

Accepters thus appear to be more receptive to information about rare-burger risk, in particular the explanation of the reasoning behind this risk and the difference between steak and mince. In response to this information Accepters across all strands of research in the project were more likely to waver in their decision to eat a rare burger, with 49% in the survey stating they thought they would be less likely to eat a rare burger in the future.

### What works in risk messaging

The Citizens' Forums showed that consumers responded best to messages that provided a clear frame of reference: by comparing risks to familiar, known dangers. Furthermore, messages that challenge assumptions and provide new information may be perceived as informative; rather than simply raising anxiety about a risk that wasn't fully understood.

In order to make an informed decision, consumers also need to know the likelihood of the risk. Across all strands of this research, consumers tended to dismiss the risk as negligible when expressed as a percentage: "0.03%"; but paid it more attention when expressed as a ratio: "28 out of 100,000". Any indication of severity of consequences, if included, needs to be proportional to the level of risk – as the presentation of very severe consequences alongside very low likelihood tended to be viewed as incongruous and inappropriate.

## Conclusions and Recommendations

Advocates and Rejecters have strong opinions about rare burgers, and are less likely to consider changing their behaviour in response to risk messaging – although there is some evidence to suggest that well-framed risk messaging does spur some to more conscious reflection and decision making. In contrast, Accepters are less confident in their views, making them more receptive to risk messaging overall.

The findings from this research suggest that messaging should focus on explaining the nature of the risk posed by rare burgers, and challenging the misconception that steak and mince carry similar levels of risk

because they are both red meat. Messaging should also include information about the likelihood of harm, which consumers perceive as key to informed decision making. We would recommend that this is not expressed as a percentage, as consumers appear more likely to dismiss or ignore this form of presentation.

Although it may make some consumers uncomfortable, restaurants could perhaps be an effective channel for delivering communications that disrupt current assumptions about rare burgers. This may be particularly influential in reaching Accepters, who are fairly passive in their consumption behaviour and may already be more receptive to restaurant recommendations.

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# 1. Introduction

The Food Standards Agency (FSA) has a statutory obligation to protect consumers' health and other interests in relation to food. Part of the FSA's strategic remit is to empower consumers to make informed choices around food safety, and to ensure they have the information they need to manage risk effectively where they wish to and where they can. The FSA is committed to providing consumers with clear advice and information about the nature and magnitude of various food-related risks.

As part of this overarching remit, the FSA is developing a new framework for the control of risky foods[1] – that is, foods identified as those where risk is increased, yet which fall within the FSA's risk appetite. In doing so, it must balance considerations around how to provide information in a way which supports effective public-health management whilst minimising costs to food businesses. This kind of framework represents a new approach for the FSA; it seeks to ensure that food business operators and consumers are able take an increased responsibility in managing food risks, placing less onus on government directives to drive change.

As part of this overarching objective, the FSA wishes to **develop new tools and approaches to communicate risk effectively to consumers more effectively**. These communications are likely to include a combination of:

- general consumer advice via the FSA website or other channels;
- product labelling[2] or other information provided at point of sale; and
- information provided on menus or other locations in food service outlets.
- Information provided at point of sale by partners using open data

Achieving effective risk communication is a challenging task – with habitual, ingrained behaviours around food choices tending to spur consumer resistance to changing their views or behaviour.[3] From previous

[1] Risky foods are identified as those foods that pose, or are perceived to pose, risks that are greater than those posed by the majority of foods, that are not subject to specific controls.
[2] E.g., the labels required to be displayed on raw drinking milk in Wales since 2006.
[3] Risk and Responsibility: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014)

research conducted by TNS BMRB and others in this area,[4] we know that **successful risk messaging requires a careful balance between educating and persuading** – not just providing information but also sensitively challenging existing beliefs and behaviours in an emotionally resonant way. We also know that risk information can often fall flat without careful framing – for example, with statistical information often being disputed, or through direct challenge which often resolves in entrenchment of views via the 'backfire effect'.[5] The FSA must also maintain credibility with consumers, providing risk information that is perceived as significant enough to warrant attention and yet avoiding perceived overstatement or causing undue alarm.

This project aims to build on previous research about risk communication by focusing specifically on foods classified as "risky" by the FSA. This research uses the case study of rare burgers,[6] an area where the FSA needs to decide whether the risks, when appropriate food safety management controls are applied, are high enough to lead the FSA to conclude the food should not be available to consumers. This is a particular focus for the FSA, and a priority for applying the "risky foods" framework. The framework for risky foods balances the management of risks to public health, the facilitation of informed consumer choice, and the management of costs to businesses that may be passed on to consumers. This research explores consumers' behaviours and attitudes around rare burger consumption, and also explores how they respond to educational risk messaging - developing and testing risk messages to investigate their effectiveness.

It is important to note that this research is not intended to support consumer behaviour change in the sense of causing people to stop eating

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[4] Consumer Insight for Communications: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014); Risk and Responsibility: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014); S. Copea, et al. 'Consumer perceptions of best practice in food risk communication and management: Implications for risk analysis policy'. *Food Policy*, Volume 35, Issue 4, August 2010

[5] E.G., Gollust, Sarah E., Paula M. Lantz, and Peter A. Ubel (2009). "The Polarizing Effect of News Media Messages About the Social Determinants of Health." American Journal of Public Health 99(12): 2160-2167; Nyhan, Brendan and Jason Reifler. 2010. When Corrections Fail: The persistence of political misperceptions. (prepublication version) Political Behavior 32(2): 303-330.

[6] Meaning burgers that would be considered deliberately less than "fully cooked", including burgers cooked 'rare' / 'medium-rare'.

rare burgers altogether. Current FSA advice to both consumers and food business operators is that minced products should be thoroughly cooked all the way through in order to minimise risk. However, research has shown that consumers often believe risky foods should remain on sale[7] – that it is their right to be informed, but also that they have a 'right to ignore' any provided advice. In this context, the FSA needs to understand whether it is possible to provide information about the risk of rare burgers that strikes the right balance of informing without creating alarm, supporting informed consumer decision making rather than aiming for behaviour change.

## 1.1 Aims of the research

Overall, this research was designed to understand how consumers perceive and make decisions about risky foods – using the case study of rare burgers – in order to inform how the FSA might communicate with the public about this issue and other risky foods. Research aimed to:

- **understand** and **quantify** current attitudes and behaviours around rare burger consumption; and
- **iteratively develop** and **test** potential communications, both qualitatively and quantitatively.

Specifically, this research was designed to:

1. **Establish what consumers understand about "risky" foods** in general, and rare burgers specifically, and the dangers attached to these – exploring:
    - the degree to which rare burgers are currently perceived as risks, and why/why not;
    - how the context in which rare burgers are consumed influences perceptions of risk;
    - whether consumption outside the home leads to replication of practices in the home; and

[7] In a recent online survey of over 1,300 consumers of pasteurised drinking milk, 77% of those sampled believed raw drinking milk should remain on sale. Harris Poll online panel in England, Wales and Northern Ireland commissioned by the FSA and conducted 15-20 November 2012

- the perceived extent of consumer responsibility to manage risk versus that of other organisations (e.g. Government; suppliers; FBOs).

2. **Explore what consumers believe constitutes adequately informed decision making** around "risky" foods, including:
   - how consumers regard risk in relation to the importance of consumer choice;
   - how much information consumers feel they need to know in order to make an informed decision; and
   - the extent to which an understanding of the potential dangers of "risky" foods makes a certain amount of risk acceptable.

3. **Measure current behaviours around rare burger consumption**, in terms of:
   - how many consumers currently eat rare burgers, and how often;
   - where they are eaten; and
   - the kinds of consumer more or less likely to eat them.

4. **Begin to develop communications** will help consumers to make informed decisions about eating "risky" foods, identifying:
   - what specific information is needed to enable consumers to make decisions;
   - what level of complexity is most useful and effective;
   - whether any types of information or specific messages elicit undue alarm; and
   - the format, location and messenger consumers deem most appropriate.

## 1.2 Overview of the research design

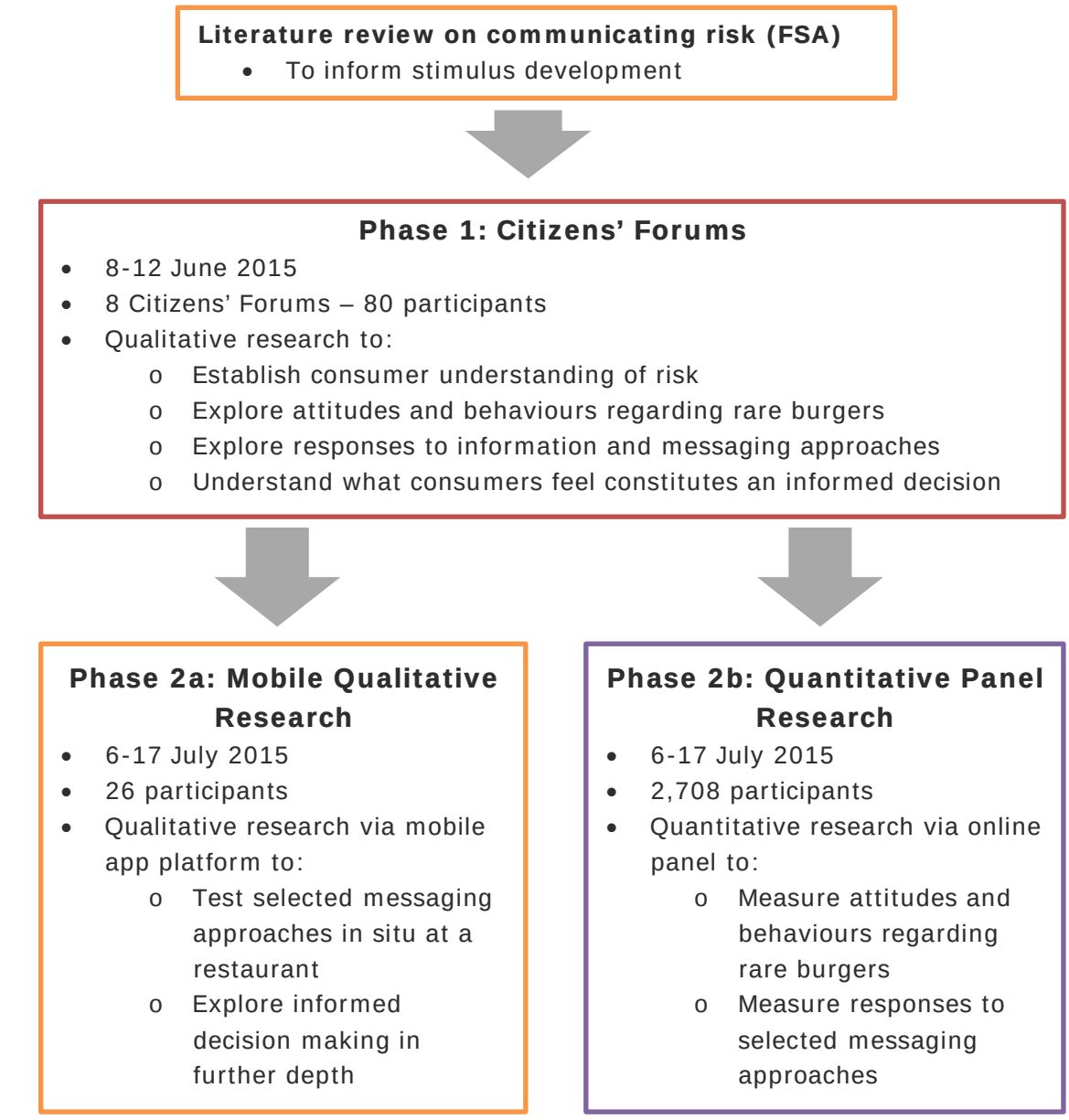
TNS BMRB undertook a multi-phase, mixed-method approach to this research, comprising a brief literature review, qualitative Citizens' Forums, qualitative mobile and online forum research, and an online survey via the FSA's Consumer Panel. This approach was developed in order to:

- take advantage of the FSA's existing data and insight around consumer risk communication;

- provide in-depth qualitative understanding of consumer attitudes and behaviours as well as scaled-up quantitative data – allowing for more robust triangulation of findings;
- explore consumer behaviour and attitudes in a more realistic, relevant context than the typical focus group setting – in the moment of actual decision making around rare burger consumption; and
- iteratively test and develop key information and risk framings for consumer communications.

Our approach is summarised in Figure 1.1, below.

**Figure 1.1: Research design overview**



Qualitative research identifies a range of emergent issues as well as common themes and key differences between different types of participants but is not designed to be extrapolated to a wider population than the research sample. We thus employed the FSA's online **Consumer Panel** in order to take quantitative measures of the attitudes and behaviours of consumers observed in the Forums, and robustly measure them in the wider population. This allowed us to quantify risky behaviour, understand the scale of the potential risk, and to test hypotheses about emerging subgroups – and the interrelationship between attitudes and behaviours.

Having a multi-phased approach means that learning can develop across the phases, both in terms of developing risk-related messages, and continually refining the direction of questioning. Combining three different methodologies across these phases confers a number of benefits, as findings can be triangulated across different modes, adding to the overall robustness and rigorousness of the data. Mixed-method research means that once all data strands have been synthesised, meta-analysis provides holistic oversight of the topic, allowing researchers to validate typologies, themes and associations, and provide explanations.

Further details of the methodology for each of the stages of the research are outlined in the following sections.

## 1.3 Literature Review: Communicating Risk

At the outset of this research, staff working with the FSA's consumer engagement team conducted a brief literature review of the various approaches taken by food standards authorities in other countries in communicating risk. The TNS BMRB team also reviewed previous research conducted by them for the FSA, related to consumer risk communications.[8] This literature review process[9] informed the development of messages that would be subject to further iterative development and testing in the remainder of the research.

[8] This included: Consumer Insight for Communications: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014); Risk and Responsibility: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014)

[9] Further research conducted in the UK was not part of this literature review as the project has a short timeline, and it was beyond the budget and scope for this research.

In collaboration with the FSA, and informed by the literature review process, we then developed a range of educational messages communicating the risk of rare burgers to use as research stimuli for the later research stages.[10]

## 1.4 Phase 1: Citizens' Forums

For the first phase of primary research, we made use of the well-established Citizens' Forums approach. TNS BMRB has employed this approach in a range of previous research projects for the FSA (see further details in Appendix A). Citizens' Forums utilise a qualitative, deliberative group discussion method, whereby during the sessions, expert witnesses or educational materials provide context and in-depth information to the group, informing participants' discussions. The Forum setting facilitates systematic and in-depth testing of complex stimulus materials with consumers, with researchers present to unpick the reasons behind responses. These forums therefore provide a deeper understanding of attitudes than traditional focus group discussions: uncovering existing levels of knowledge; and providing a deeper understanding of how people respond to additional information.

In this research, the Forums aimed to provide a broad understanding of consumers' attitudes and behaviours in relation to rare burgers, and to provide initial feedback on a range of different messaging approaches.

Specifically, they explored:

- consumers' general perceptions around risky foods – e.g., how they define risky foods and which foods they consider to fall within this category;
- consumer attitudes and understanding regarding rare burgers specifically – especially whether or not they are perceived as 'risky';
- consumer behaviour in relation to rare burgers;
- the impact of receiving information about the level of risk involved in consuming a rare burger: on attitudes and likely behaviour; and
- consumer preferences for communication about risk of rare burgers.

We conducted eight Citizens' Forums in total, across England, Wales and Northern Ireland, with between eight and ten participants in each forum.

[10] Further information about the draft messages are contained in Appendix D.

Forum research was conducted between 8th and 12th June 2015, including 75 participants in total. Sessions lasted around 90 minutes.

Our stimuli included a wide range of approaches to communicating risk – i.e. focusing on probability, severity of consequence, etc. – in order to explore variations in consumer response and what kinds of messages were most effective in prompting consumer reflection. Targeted questioning and group discussion helped us to understand why consumers ate or did not eat rare burgers – and also allowed us to start to identify subgroups of respondents who shared particular beliefs or behaviours, helping to develop our typology.

### 1.4.1 Sample

Each Forum involved approximately ten participants. In order to achieve coverage across England as well as the devolved countries, Forums were held in London, Belfast, Cardiff, Oldham and Norwich. The sample was designed to reflect the spread of the local population in each of the research areas in terms of gender, rural/urban location, and socio-demographics. Participants were paid a £40 incentive. More detail on the sampling approach is included in Appendix C.

### 1.4.2 Interim analysis and questionnaire development

Following the Citizens Forums, researchers conducted multi-stage, iterative analysis – beginning with individual-level analysis conducted by each researcher using a standardised analysis template (or pro-forma), followed by a whole-team research debrief to interrogate findings against the research objectives (see Appendix A for more detail).

During the analytical debrief session researchers also explored initial hypotheses emerging from the Forums around how current consumer behaviours linked to differing attitudes about rare burgers and risk more generally, informing the development of initial consumer typologies. Debrief sessions were attended by members of the FSA's Consumer Engagement Team to provide additional insight from past FSA research projects and to help place findings in the policy context.

The initial findings were then validated by individual researchers via review of their own Forum audio recordings. At this point, qualitative verbatims were also gathered.

Full interim analysis from this phase informed 1) the development of the questionnaire for the FSA Consumer Panel survey[11], and 2) the refinement of our initial longlist of educational messages into 4 summary messages to test in Phase 2 of research. These messages were then tested and refined further using mobile qualitative research and online qualitative discussions, as well as the FSA Consumer Panel – described in more detail below.

## 1.5 Phase 2a: Mobile and Online Qualitative Research

### 1.5.1 Approach and rationale

Our next step was to extend our risk communication testing from the qualitative focus group environment to *in situ* testing, in locations where people might eat rare burgers. Building on the learnings from the Citizens' Forums, mobile qualitative research was conducted to:

- validate and extend findings from the Phase 1 sessions with a fresh research sample; and
- explore *in situ* responses to the refined messages to communicate risk.

Specifically, the mobile qualitative research was designed to explore:

1. influences on attitudes and behaviours regarding burgers in the out-of-home context;
2. responses to risk messaging when delivered in the context of a restaurant;
3. deeper understanding of the information required to make an informed decision; and
4. preferred channels for messaging about food risk.

The key advantage of the mobile approach was that it allowed us to interact with participants outside of a structured research environment – where respondents can only comment on their stated intentions, and are relatively removed from the context of eating rare burgers. As research is conducted via a **mobile app**, questions could be answered anywhere – in this case, in a restaurant, before ordering a burger. By conducting *in situ* research of this nature, we were able to 1) test risk messages in an

[11] Specifically, the findings from the qualitative research were used to compile the list of response options for questions around where respondents had eaten rare burgers, and the various factors that would influence their decisions in this area.

environment similar to one where they might actually encounter messaging in the future, and 2) explore how messaging influenced attitudes and actual behaviour when it came to ordering.

Participants were recruited for the study on the basis that as part of research they would 1) visit a restaurant and actually order a burger, and 2) whilst in the restaurant, complete a few response tasks via an app downloaded to their phone. Arriving at the restaurant before they ordered their burger triggered a set of response tasks[12] on a mobile app. Before ordering, participants were then shown one of the 'shortlist' of messages that were developed following the Citizens' Forums. Participants captured their immediate response to the message via audio recording. Once their food arrived, they were asked to take a photo of their burger – allowing the research team to see whether they had ordered a rare burger or not, and providing stimulus for the online discussion board. This method provides insight that gets closer to the actual impact of risk messaging on actual behaviour, rather than relying on stated intention alone. This method does not eradicate research effect, as participants are still aware they are taking part in a research study, for example. However, mobile research puts participants 'closer to the moment' and the context in which decisions are likely to be made, e.g. anticipating food, considering the opinions of peers/dining partners, etc.

After the first stage of the mobile research was complete, participants were then invited to join an **online discussion board** where they responded to questions and probes from the research team, and discussed and compared the messages that they had seen with other participants. Follow-on online discussion allowed us to explore issues in greater depth, facilitated by moderator and participant interaction. This allowed us to validate and extend our *in situ* testing to further refine messaging.

### 1.5.2 Sample

Twenty-six participants from across the UK were recruited to take part in the mobile research. As with the participants in the Citizens' Forums the

[12] These tasks unlocked sequentially to ensure participants completed them in the right order, and asked for photos to be taken to validate they had been completed correctly.

sample was designed to 1) reflect a mix across key demographic variables, and 2) represent a range of views about rare burger consumption, although those who said they would never eat a rare burger were excluded from this phase of the research. The mobile and online research strand thus included Advocates and Accepters only.

Participants were paid an incentive of £60. Further information on sampling is provided in Appendix C.

### 1.5.3 Interim analysis

The qualitative data collected in the mobile qualitative research was entered by researchers into a central analysis framework, containing a summary of the key emerging themes and points of interest from the audio and textual submissions received.

Researchers were in close liaison throughout the forum, with an interim brainstorm held during the fieldwork period to help refine questioning and share emerging hypotheses. A researcher brainstorm was held once fieldwork was completed.

Headline quantitative findings from the Panel survey (see 1.6 below) were also fed into this formal session and further quantitative analysis was conducted – see section 1.6.5 for more detail.

## 1.6 Phase 2b: Consumer Panel online survey

The quantitative element of the research consisted of a 10-minute online self-completion survey, conducted with members of the FSA Consumer Panel.

The FSA Consumer Panel is operated by TNS BMRB and is comprised of a subset of the Lightspeed GMI panel, which consists of members of the general public, aged 16+ and living in the UK. This panel offers a fast, convenient and cost-effective way for the Food Standards Agency to survey large representative samples of members of the general public in the UK. This approach also allows us to survey boosted samples in Wales and Northern Ireland providing robust survey estimates at the nation level.

It is important to note that an online panel approach has some limitations; firstly, there is some non-coverage of the population given that 15% of UK adults do not have access to the internet at home.[13] Secondly, people have to opt-in to join the panel or to participate in particular studies, and this self-selection may introduce non-response bias if these individuals are systematically different from the general population.

Controls are in place to minimise non-response bias, in particular the panel is recruited and maintained to ensure quality and representative sampling.

Panellists are recruited from a range of different sources in order to build a high quality diversified panel and remove any bias that could result from using one or a few recruiting sources. Like all access panels there is panel attrition and this means that the composition of the overall panel is also continuously monitored to ensure that it remains representative; if any particular demographic group becomes under-represented then recruitment is focussed at this group to ensure that the sample remains balanced. To minimise the impact of topic salience, email invitations to the survey are not specific about the questionnaire content and the FSA were not revealed as the end client prior to participation.

Further methodological details on the Consumer Panel are included in Appendix B.

Approximately 30,000 individuals form the FSA Consumer Panel, all of whom have been profiled using the FSA's consumer segmentation[14]. The total sample size for this survey was 2,708 individuals.

### 1.6.1 Sample design

Panellists were invited by email to take part in the survey according to a sample quota based on age, gender and country of residence. Quotas

[13] Ofcom Communications Market Report 2015 - http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr15/downloads/

[14] The FSA Consumer Segmentation is based on respondents' attitude to food and reported hygiene and food safety behaviour. The segmentation was conducted using Wave three of the Food and You Survey data and IPAs TouchPoints 5 data, and has resulted in eight segments.

were designed to represent the general population, with targets sourced from the ONS Mid-Year Population Estimates 2014.

The bands used for the age quota were: 16-24, 25-34, 35-49, 50-64 and 65+. Age and gender quotas were interlocking to be representative of England, Wales and Northern Ireland collectively. Country of residence quotas were applied to ensure boosted samples were achieved for Northern Ireland (n = 200) and Wales (n = 500), to allow for sufficientl base sizes for between-country comparisons.

It is important to note that due to the fact that this study does not use a random probability approach we can only be certain that the sample is representative of the general public for the specific variables which we controlled for using quotas.

### 1.6.2 Questionnaire

The questionnaire covered the following topics:

- perceptions of the level of danger posed by 'risky' foods;
- behaviours relating to the consumption of rare/medium burgers;
- knowledge and understanding of risks of eating rare burgers;
- testing of four types of communications messages; and
- knowledge and concern about chemicals in food.

The full questionnaire is provided in Appendix E.

When reviewing the results, the consideration that interviews do not necessarily capture people's actual practices should be held in mind. The information respondents provide about what they do may not fully correlate with their behaviour. Firstly, there is the risk that social desirability bias means that respondents are reluctant to admit to certain opinions or behaviours. However, the fact that these interviews were conducted as online self-completion should minimise this as there is no interviewer present. There is also the risk that respondents may rush through the survey and miss or misinterpret questions. There are a number of measures in place to try and reduce this, for instance respondents who consistently rush through surveys too quickly are removed from the panel. Lastly, it is possible that respondents' recall may not be accurate and this was a consideration at the questionnaire design. Nevertheless, where behaviour, attitudes or knowledge are referred to, the fact that these are self-reported should be kept in mind.

### 1.6.3 Fieldwork

Fieldwork commenced with a 'soft launch' of the survey on Tuesday 7th July 2015 – i.e., a limited number of invitations were released to respondents to restrict access to the survey. After 10% of the total target number of interviews for the survey were completed, fieldwork was paused and the data was quality checked to ensure that the survey routing was correct and all data was output successfully – no participants were able to access the survey website during this period. Subsequently, fieldwork was resumed and the survey was fully launched by issuing invites to further panellists later that day.

The survey remained open for completion by Panel respondents until Monday 20th July 2015. Respondents were provided with an incentive in the form of "Lightspeed points" which may be redeemed against a variety of high street vouchers.

### 1.6.4 Data preparation and outputs

The data were weighted by age and gender within each of England, Wales and Northern Ireland, and by social grade across all three countries collectively. The data were also weighted by region and country to correct the over-representation of Wales and Northern Ireland relative to England (resulting from the boosted samples for these countries). The weighting targets for age, gender and region were sourced from the ONS Mid-Year Population Estimates 2014; the National Readership Survey was used as the source for the social grade targets. The weighted and unweighted sample profiles are displayed in Appendix C.

Only survey responses which were fully completed were included for analysis purposes. All demographic variables were sourced from the respondents' Lightspeed Panel profiles.

### 1.6.5 Final Summary Analysis

Following all fieldwork, the research team conducted additional analysis of the quantitative and qualitative data in a final research debrief session, and working closely to test and refine the typology, cross-reference findings across different evidence strands, ultimately integrating all three elements of research to provide holistic and robust insight.

## 1.7 Structure of the report

The findings from all three strands of the research are integrated in reporting, which is broken down into the following sections:

- **Chapter 2:** explores current public *behaviours* in relation to rare burgers, including exploration around the scale of rare burger consumption;
- **Chapter 3:** explores participants' *attitudes* towards rare burgers, including whether rare burgers are considered risky, and the impact of environment on consumer perceptions;
- **Chapter 4:** examines how to communicate risk with different groups to best support informed decision making, and the appropriate channels for messaging; and
- **Chapter 5:** presents overall conclusions and recommendations.

Further information about sampling and recruitment, research materials (e.g. questionnaire and topic guide), the messages tested, and the Citizens' Forums approach is contained in the Appendices.

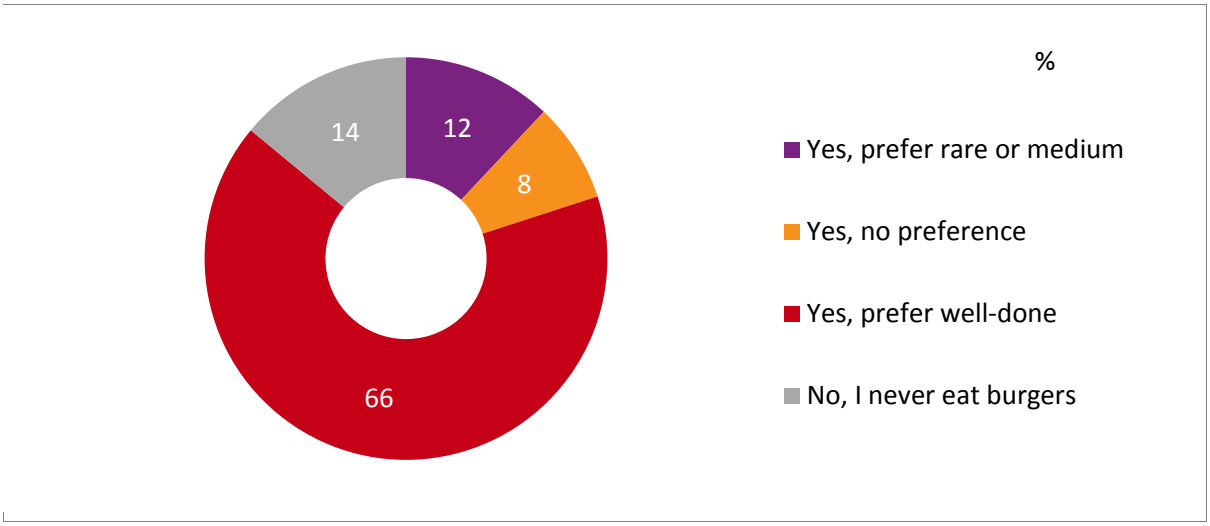
# 2. Current behaviours regarding rare burger consumption

In this section we discuss current behaviours relating to the public's consumption of rare burgers, in terms of: 1) consumer preferences regarding how burgers are cooked; 2) the scope of rare burger consumption; and 3) how rare burger preferences translate into purchasing and consumption behaviour both in and out of the home. We introduce three consumer typologies around rare burger consumption: rare burger Advocates, Accepters and Rejecters, based on responses to questions about consumption of burgers and rare burgers. Further detail on the attitudes and beliefs underlying these behaviours is then presented in Chapter 3.

## 2.1 Consumption of rare burgers

Among all survey respondents, the majority (66%) of participants stated that they preferred burgers served well done. Only around one in ten (12%) participants preferred to eat a burger when it was rare or medium.

**Figure 2.1: Whether respondents eat burgers and how they prefer them to be served**




Source: Risk, Rare Burgers and Chemicals Survey Q2. Do you ever eat burgers? If so, how do you prefer them to be served?
Base: All respondents (2,708)

Citizens' Forum discussions suggested that these attitudes were associated with the following behaviours in relation to the consumption of rare burgers:

- Rare Burger **Rejecters** who would refuse to eat a burger rare;
- Rare Burger **Accepters** display more passive behaviour, accepting burgers as they are served by a restaurant but expressing no strong personal preference; and
- Rare Burger **Advocates** have a strong preference for eating a rare burger, and will often prepare rare burgers at home for themselves as well as order them in a restaurant.

These three typologies were identified amongst the Consumer Panel respondents according to their stated preference, whether they said they would accept a burger served rare or medium, and how frequently they ate rare burgers.[15] This is summarised in the table below.

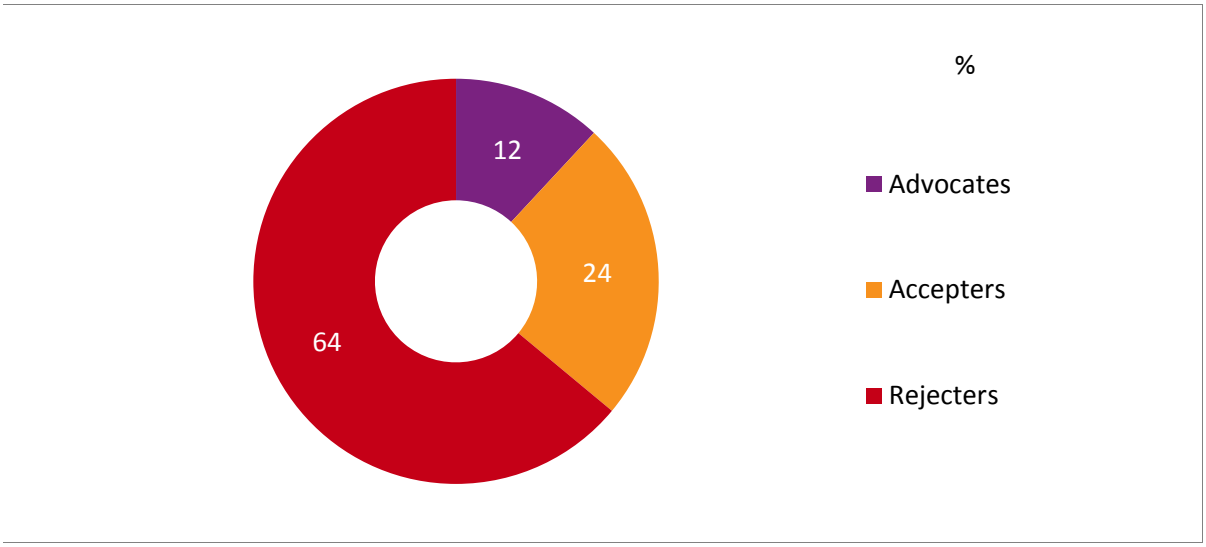
**Table 2.2: Characteristics from the Consumer Panel Survey determining group in typology**

| Characteristics | Rejecters | Accepters | Advocates |
|---|---|---|---|
| *Whether they would eat a burger served rare* | No | Yes | Yes |
| *Preference for how a burger is cooked* | Prefer burgers well done, or have no preference | Prefer well done or have no preference; *or,* | Prefer rare or medium burgers |
| *How frequently they eat rare burgers* | n/a | Prefer rare but eat less than once every 3 months | More than once a year |

[15] Advocates were defined as those who prefer rare or medium burgers and reported eating them more frequently than once a year [Q2 = 1 & Q4 = 1,2,3,4]. Accepters were defined as those who either prefer well done or have no preference and would eat a rare or medium burger if served one [Q3 = 1,2] or those who prefer rare or medium burgers but eat them less frequently than once every three months [Q2 = 1 & Q4 = 5,6,7]. Rejecters were defined as those who said they prefer burgers well done or had no preference but would not eat a rare or medium burger if served to them [Q2 = 2,3 & Q3 = 3,4]

The figure below explores rare burger eating behaviour amongst only the burger eating population – excluding the 14% of respondents who do not eat burgers.

**Figure 2.3: Proportion of respondents belonging to each burger typology**




Source: Risk, Rare Burgers and Chemicals Survey, derived from Q2, Q3 and Q4.
Base: All respondents who eat burgers (2,279)

This section examines the behaviour of each of these groups in turn, drawing together insight from the Citizens' Forums, Consumer Panel, and mobile online qualitative research data.

The largest group (64% of burger eaters) were Rare Burger **Rejecters**, who stated that they would refuse to eat a burger if it was served rare. For some rejecters this was associated with a dislike of the taste, and by the visual appearance and texture of rare/raw meat (see Chapter 3 for more detail on respondent attitudes). This group tended to prefer burgers served well done, or had no stated preference.

> *"If I'm out I wouldn't say medium I would say well done because I wouldn't want it coming back medium – because that might verge to the rare."* (Belfast)

The next largest group were Rare Burger **Accepters** (24% of burger eaters[16]), who tended not to have a strong preference about how a burger should be cooked. Their behaviour tended to be quite passive; they said they would generally **accept a burger however it was served**, or would follow the recommendations of restaurant staff. They also ate rare burgers relatively infrequently, with less than half (39%) in the survey stating that they ate rare burgers more than once every three months.

> "If they're serving a rare burger, it sounds like they know what they're doing." (Belfast)

A minority of burger eaters (12%)[17] had a strong preference for rare burgers. These Rare Burger **Advocates** were very vocal about their preference in the Citizen's Forums, emphasising the superior taste and texture of a rare burger. Advocates **actively requested** burgers to be cooked rare wherever possible.

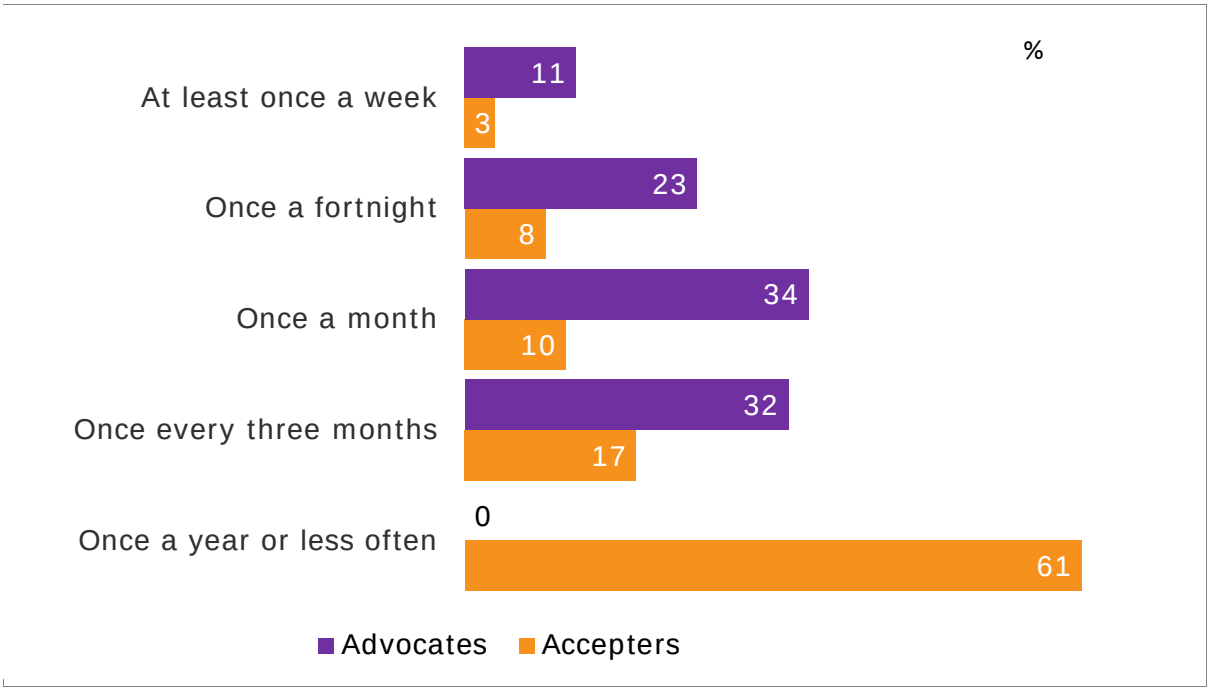
> "I think you destroy the flavour if it's incinerated - and quite often it is if you ask for well done." (Belfast)

Rare burger consumption was fairly high for some in this group - over two thirds of Advocates (68%) in the survey stated that they ate a rare burger at least once a month. For comparison, across all those who would consider eating a rare burger, around a third (36%) of respondents reported eating a rare burger at least once a month.

[16] In the quantitative panel these individuals were identified as those who would accept a rare burger that was served to them despite their stated preference for a well done burger (or lack of preference), and those who preferred rare burgers but stated that they would only eat them once a year or less.

[17] In the quantitative panel, these individuals were identified as those who expressed a preference for eating a burger served rare and consumed a rare burger at least once every three months.

**Figure 2.4: Frequency of consumption of rare or medium burgers by Rare Burger Advocates and Accepters**



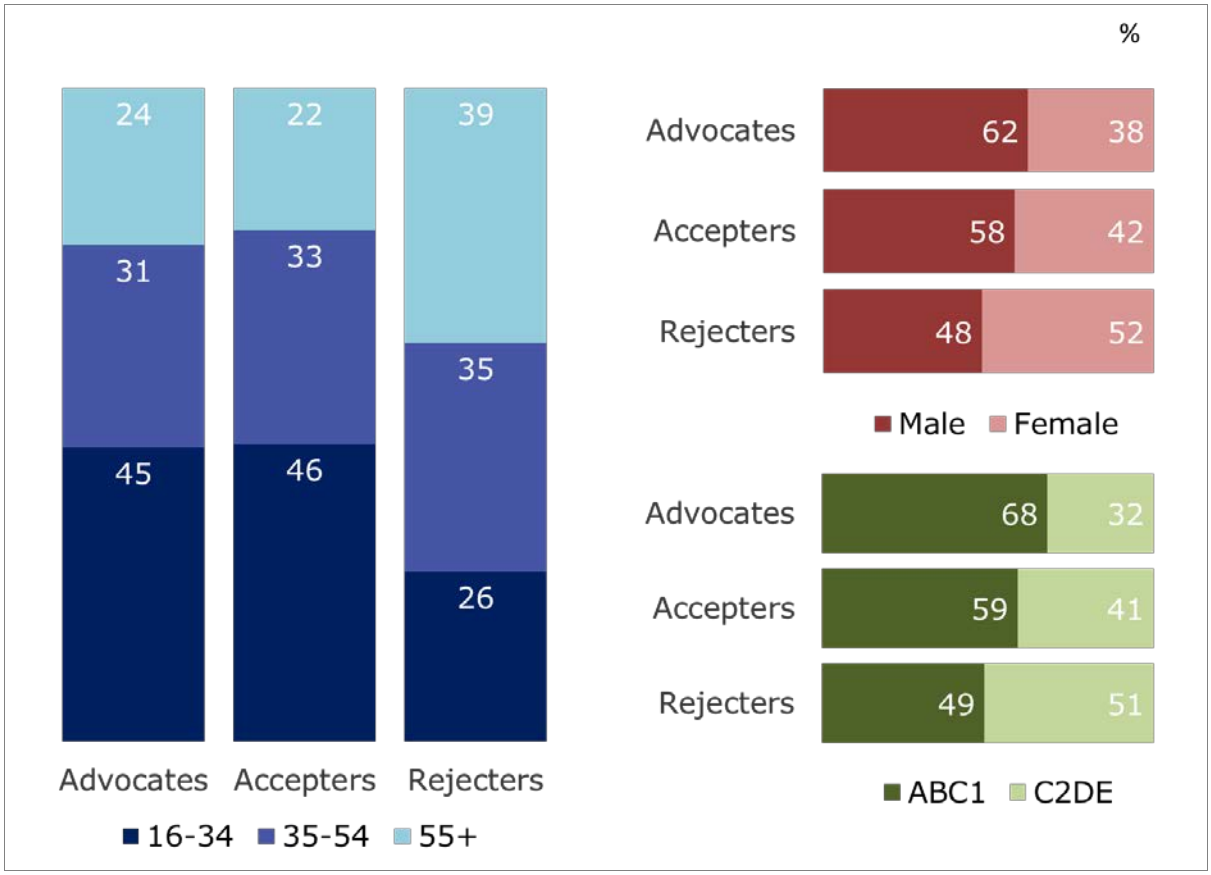

Source: Risk, Rare Burgers and Chemicals Survey Q4. And around how often do you eat burgers which are... - Cooked rare or medium (which are pink inside or have pink or red juices)?
Base: Advocates (253), Accepters (492)

Rare Burger Advocates were more likely to be male (62% compared with 50% of the whole sample) and younger (45% were aged 16-34 compared with 32% on average). Advocates also tended to be from higher Social Economic Grades (SEGs)[18] – over two thirds of Advocates (68%) were from SEGs A, B and C1, compared with 54% of the whole sample. Accepters also reflected these trends (58% male, 46% 16-34, 59% ABC1), but the difference was less pronounced than with the Advocates. Rejecters on the other hand largely reflected the demographics of the population at large (due to the fact that so much of the wider population falls within this type, reflecting findings about consumption of 'pink' burgers through the FSA's Food and You survey[19]).

[18] See Appendix C for more detail on this.

[19] Food and You is a biennial random probability survey of around 3,000 respondents across the UK, with three waves completed to date (in 2010, 2012 and 2014) by TNS BMRB. For more information see: http://www.food.gov.uk/science/research-reports/ssresearch/foodandyou

**Figure 2.5: Demographics of Advocates, Accepters and Rejecter by age, gender and social grade**




Source: Risk, Rare Burgers and Chemicals Survey LSR sample variables
Base: Advocates (253), Accepters (492), Rejecters (1,499)

## 2.2 Where rare burgers are eaten

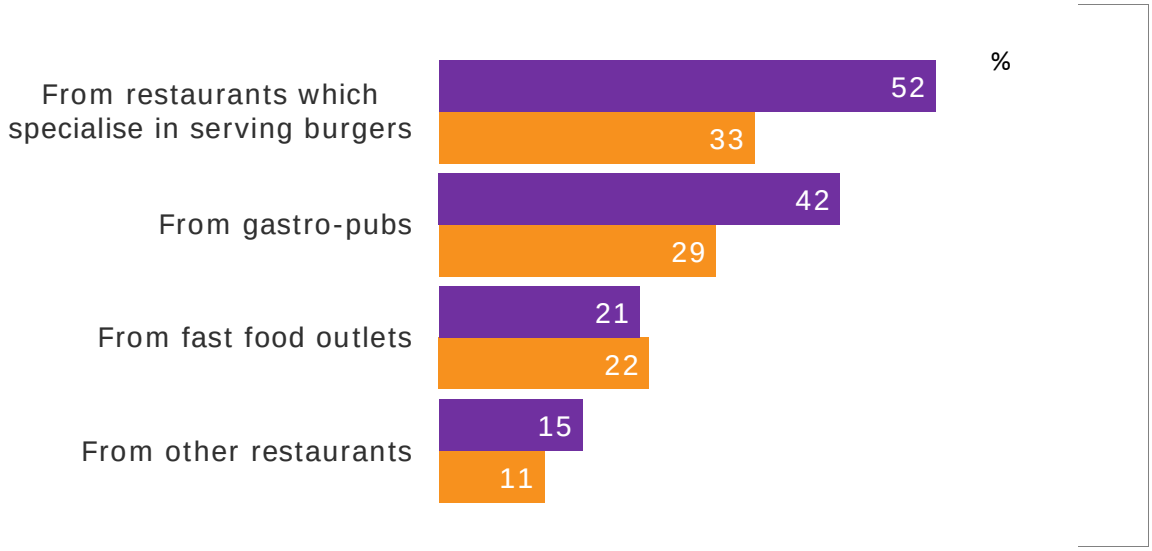
Overall, participants associated rare burger consumption with more upmarket dining. Restaurants that specialised in burgers were the most common type of out-of-home establishment where rare burgers were consumed. Four in ten of those who had eaten a rare burger (40%) stated that they had done so at this kind of venue. The second most frequently identified location to eat rare burgers was ‘gastro-pubs’ - a third of respondents (33%) said they had consumed a rare burger here.

Likewise, in the Citizens’ Forums participants described the types of establishments they thought would serve rare burgers as “trendy”, “upmarket” food businesses, and associated with “European” or “American/diner”-style restaurants. They explicitly excluded fast food settings, stating that they would not consider eating rare burgers in these types of establishments.

"It would be somewhere that would charge quite a lot for their food. It would be a sit-down restaurant, not McDonalds or somewhere like that." (London)

As we will explore in Section 3, participants' assumptions about the overall quality of these kinds of establishments is critical to how they evaluate rare burger risk.

**Figure 2.6: Outlets from which respondents reported having eaten a rare burger**

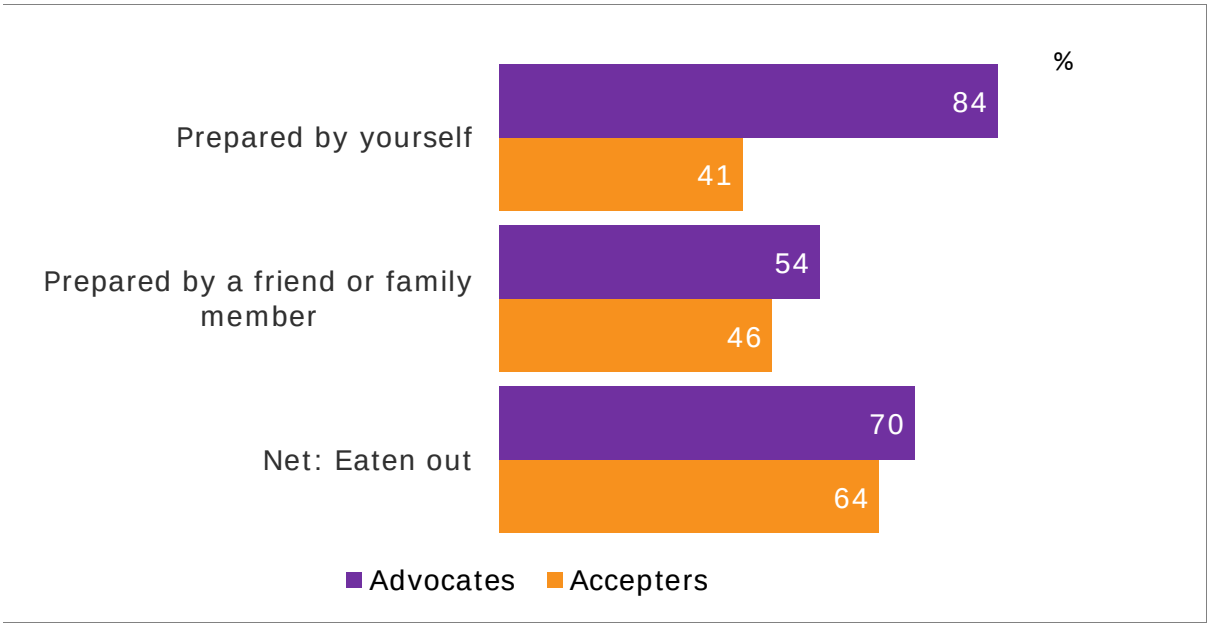



Source: Risk, Rare Burgers and Chemicals Survey Q5. Have you ever eaten rare or medium burgers...
Base: All respondents reported having eaten a rare burger (Advocates: 253; Accepters: 421)

We also explored rare burger eating behaviour in the home, where differences between the three typologies were even more pronounced. Advocates were far more likely to have prepared a rare burger for themselves (84% stated they had done so) than Accepters (of whom only 41% had). Advocates generally had a lot of experience of cooking burgers rare, and some respondents in the Citizens' Forums described learning to do so from family members. The context in which a rare burger was cooked at home varied: in some cases this would be a dish at a formal meal, but others reported preparing burgers rare at more informal gatherings such as barbeques.

"I like to cook a burger rare, because that's just the way [my family has] always been eating our burgers. I'm used to it!" (London)

**Figure 2.7: Source of rare burgers consumed by Advocates and Accepters**




Source: Risk, Rare Burgers and Chemicals Survey Q5. Have you ever eaten rare or medium burgers...
Base: Advocates (253), Accepters (421)

## 2.3 Conclusions

Current consumption habits of rare burgers are fairly mixed in the population, and although the majority of people do not currently eat them, just over a third of people (36%) who eat burgers do eat them rare. This group tend to be younger, male and more affluent, and consumption tends to take place in specialist burger restaurants and gastropubs.

Amongst rare burger eaters there are two quite different patterns of behaviour. Advocates strongly prefer rare burgers – eating them relatively frequently, and both making them at home and seeking them out at restaurants. Accepters exhibit more passive behaviours, not necessarily having strong preferences but tending to accept rare burgers when served.

Behaviour is clearly linked to individual preferences and taste, but also the context in which burgers are served. In the next chapter we examine why this might be, and explore the range of attitudes and beliefs that underlie these behaviours.

# 3. Current attitudes regarding consumption of rare burgers

In this Chapter we explore consumer risk perceptions around rare burger consumption – and the underlying beliefs and assumptions which inform these perceptions.

As we have found in previous Citizens' Forum research, consumer risk perceptions are not driven solely by rational, logical thought processes. A wide range of subconscious biases, assumptions and habits all play a critical role in influencing eating patterns and risk evaluation – e.g. around perceptions of convenience, familiarity, visual assessments,[20] etc. More emotive and subconscious drivers of behaviour are particularly important in understanding food behaviours tied to 'individual taste', or where we observe cultural differences in behavioural patterns.

In this section we will explore how reactions to 'rawness'; the relationship between eating choices and self-identity; and confidence around food preparation all factor into rare burger attitudes. We will then explore how these attitudes and assumptions inform and interact with consumers' understanding of risk around rare burger consumption.

## 3.1 Attitudes to rare burgers

The three groups in our typology had very different attitudes towards rare burgers – with emotive and very visceral reactions underlying their responses. In particular, individuals responded very differently to the image and idea of raw meat and raw beef.

For Rare Burger **Rejecters** in the Citizens' Forums, there was an automatic negative response to rawness, with individuals in this group

[20] For example, see TNS BMRB's research on Risk and Responsibility – which explores the range of behavioural drivers relevant to food safety choices, including being habitually wedded to 'tried and trusted behaviours'; received wisdom from family practices trusted more than 'official, government sources; using 'rules of thumb' to determine safety.

finding the appearance, texture, and idea of raw meat and blood extremely off-putting. Participants were not always able to articulate the reasons for this discomfort clearly, but said they were related to negative associations with eating cold or undercooked food. Some Rejecters also directly associated undercooked and raw meat with risk, although not all were able to specify what this risk might be; their concern was based more on intuitive 'feeling' than a conscious calculation of risk around rare meat and food safety.

> "If it is pink, it should not be; it should be brown in the middle. I don't know why this is a problem. I just always want my meat to look like it is cooked." (Norwich)

> "I just see it as the blood dripping out. I think about raw, I think about cold." (London)

On the other hand, Rare Burger **Advocates** possessed an almost diametrically-opposed response in the Citizens' Forums, with a strongly positive reaction when thinking about the texture and taste of rare meat. Rare burgers were perceived as superior in flavour to burgers cooked well-done, which were described as "overcooked", "incinerated" and with the "flavour destroyed".

> "I had some friends round, barbequing burgers, and they wanted them done to a cinder, which was very upsetting for me. I don't think you can taste the meat. I think it's ridiculous, it does away with all the natural flavours if you cook it that well." (London)

Eating rare or raw meat was also viewed as a culturally-superior activity, demonstrative of a more sophisticated understanding of how to prepare and enjoy food. Advocates tended to identify as "foodies" and adventurous eaters, and felt that by eating a rare burger, they distinguished themselves as people who were knowledgeable about food.

> "If you go to a nice restaurant and you try to order a nice piece of meat well done, they're going to look at you like you're the devil." (London)

**Accepters** in the Citizens' Forums shared some of the Advocates' perceptions about the positive qualities of a rare burger, but had much

less strong reactions overall. They also had much less strong self-identification around rare burger consumption as a mark of sophistication around food. Accepters tended to see rare burgers as a gourmet product – something “for a special occasion”.

“You’d get a rare burger somewhere like Borough Market. They have lots of gourmet food there.” (Burger Group, London, Male)

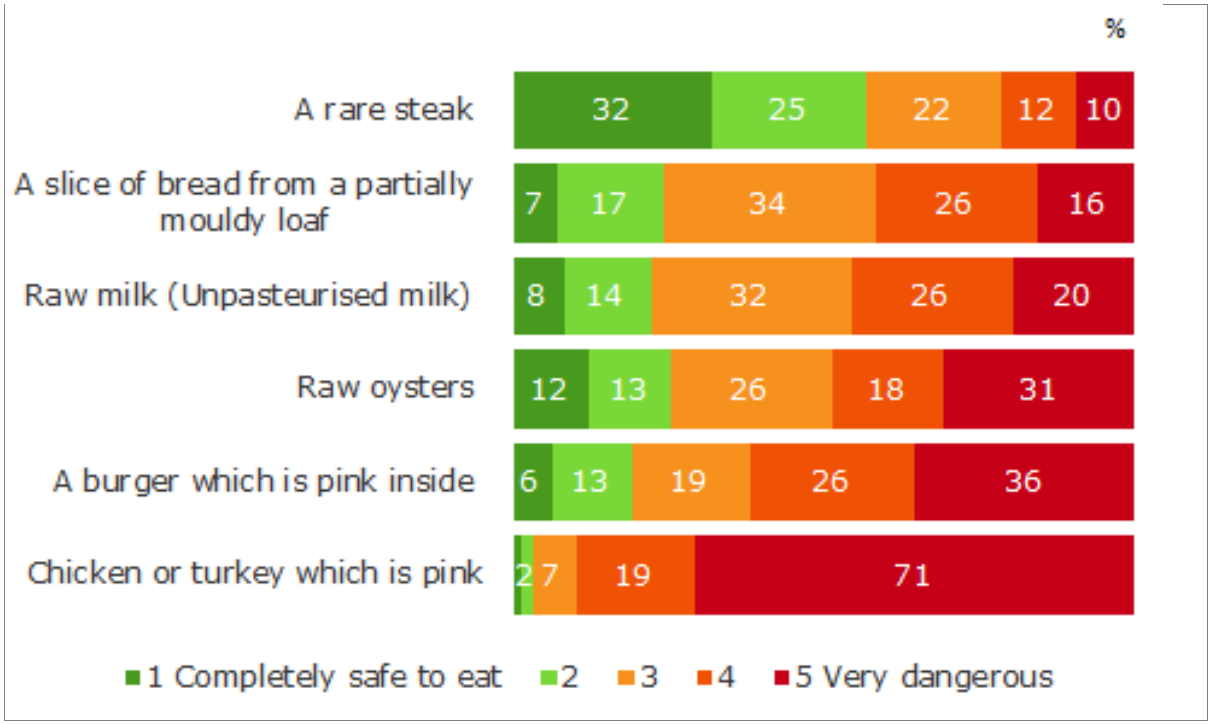
This view had a direct influence on behaviour at home: as seen in Chapter 2, Accepters were much less likely than Advocates to prepare a rare burger for themselves. This was in part linked to a belief that the preparation of a rare burger required professional skills and knowledge – that Accepters did not feel confident that they possessed.

> “I’d eat it rare at a restaurant, but not in my kitchen. We are not professionals.” (Oldham)

## 3.2 Perceptions of risk

The majority of respondents (62%) ranked rare burgers as either 4 or 5 on a scale where 1 is ‘completely safe’ and 5 is ‘very dangerous’, outranking oysters (49%) and raw milk (46%). Only 19% stated rare burgers were completely safe or safe, compared to 25% who gave the same answers for raw oysters, ranked next least safe (See Figure 3.1 overleaf).

**Figure 3.1: Rating of the relative risks to different foods**




Source: Risk, Rare Burgers and Chemicals Survey Q1. Thinking of eating each of the foods below, please use the scale to say how safe or dangerous you would consider this to be, from completely safe to eat (1) to very dangerous (5)
Base: All respondents (2,708)

However, perceptions of the risk of rare burgers differed considerably among groups in the typology. Figure 3.2 below shows that Advocates and Accepters ranked rare burgers as lower risk compared to other risky foods.

**Figure 3.2: Rating of the relative risks of different foods: comparison by respondent typology**

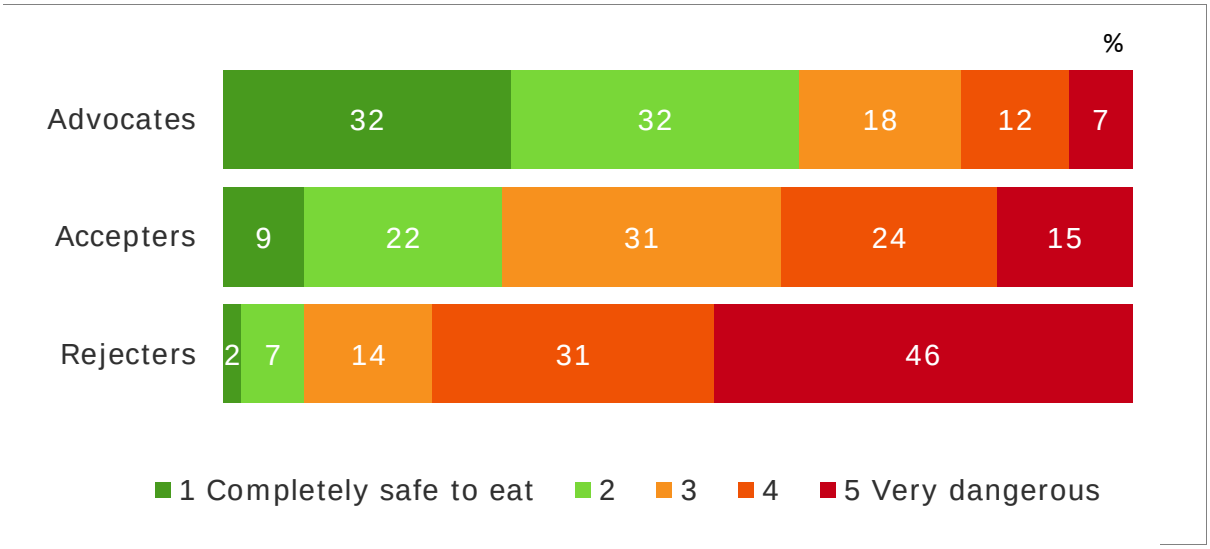
| Advocates | Accepters | Rejecters |
|---|---|---|
| A rare steak | A rare steak | A rare steak |
| **A burger which is pink inside** | A slice of bread from a partially moudly loaf | A slice of bread from a partially mouldy loaf |
| Raw milk (Unpasturised milk) | **A burger which is pink inside** | Raw milk (Unpasteurised milk) |
| Raw oysters | Raw oysters | Raw oysters |
| A slice of bread from a partially mouldy loaf | Raw milk (Unpasteurised milk) | **A burger which is pink inside** |
| Chicken or turkey which is pink | Chicken or turkey which is pink | Chicken or turkey which is pink |


Source: Risk, Rare Burgers and Chemicals Survey Q1. Thinking of eating each of the foods below, please use the scale to say how safe or dangerous you would consider this to be, from completely safe to eat (1) to very dangerous (5)
Base: All respondents (2,708)

Almost all Rejecters (91%) and a majority of Accepters (70%) believed that a rare burger could potentially be risky[21], compared with just around a third of Advocates (36%). A similar proportion of Advocates (32%) stated that rare burgers were completely safe to eat, compared to only 2% of Rejecters.

[21] Here we include as 'risky' any answers of 3 or more out of the 5 point scale offered at Q1, where 1 is 'completely safe to eat' and 5 is 'very dangerous'.

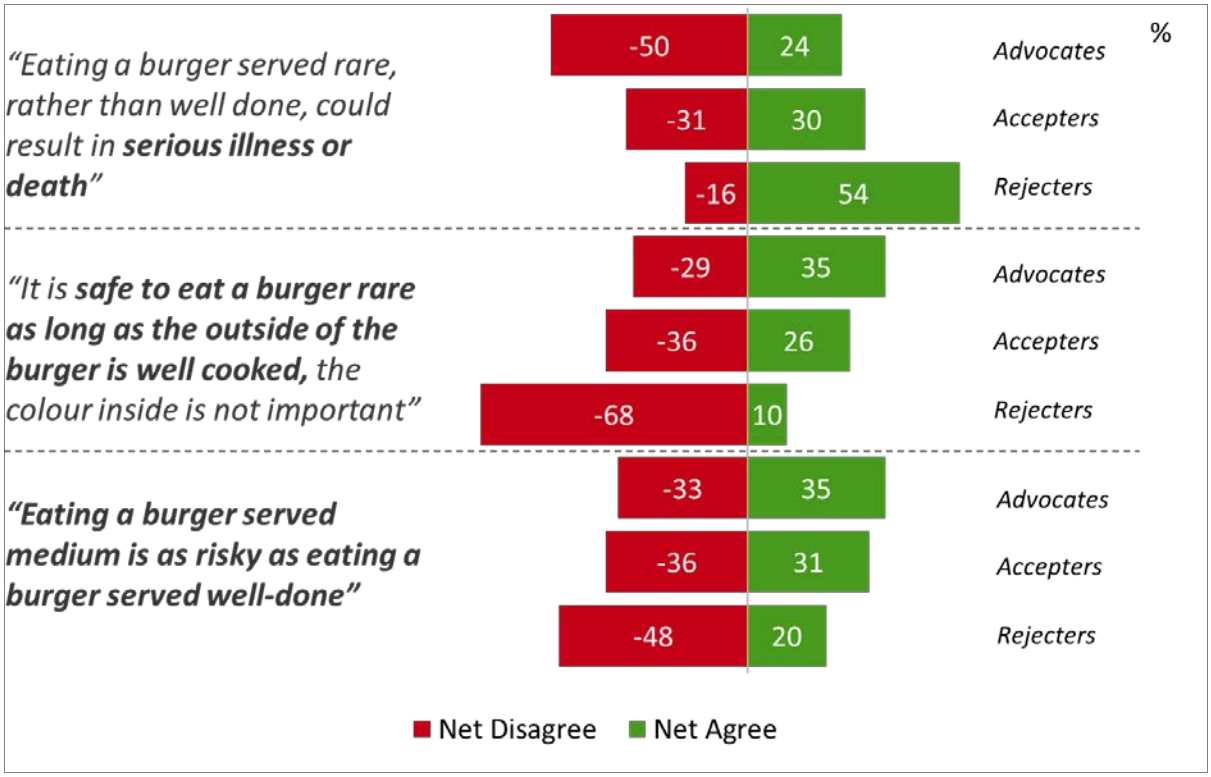
**Figure 3.3: Rating of level of safety of eating a burger which is visibly rare or medium by Advocates, Accepters and Rejecters**




Source: Risk, Rare Burgers and Chemicals Survey Q1. Thinking of eating each of the foods below, please use the scale to say how safe or dangerous you would consider this to be, from completely safe to eat (1) to very dangerous (5). - A burger which is pink inside
Base: Advocates (253), Accepters (492), Rejecters (1,499)

Likewise, Rejecters were much more likely to believe that rare burger consumption could result in serious illness or death; to focus on the colour of cooked meat; and to believe that rare burgers were much more risky than well-done burgers. (Figure 3.4 overleaf)

**Figure 3.4: Knowledge and attitudes regarding risks posed by eating rare and medium burgers, by Advocates, Accepters and Rejecters**




Source: Risk, Rare Burgers and Chemicals Survey Q10. How much do you agree or disagree with the following statements?
Base: Advocates (253), Accepters (492), Rejecters (1,499)

These contrasting risk perceptions were driven by differing underlying attitudes and assumptions around food risk more broadly. The three consumer typologies all had different 'starting points' in terms of thinking about and acting on risk in relation to food safety. We explore these views in the sections below.

### 3.2.1 How do Rejecters evaluate risk?

Discussion of food safety with the Rejecters audience during Citizens' Forums surfaced a very **risk-conscious approach to food in general** – in terms of rare burgers specifically, but also as a more overarching response to other 'risky' foods and meats. In discussions about general approaches to food safety, this group spontaneously discussed the risk of food poisoning relating to undercooked chicken and pork, two meat types deemed as riskier overall. The most safety-conscious individuals in this group were concerned about all undercooked meat and the possibility of dangerous bacteria. This perception that all raw meat presents an inherent risk of food poisoning led Rejecters to consider raw burger

consumption as an unacceptable risk – even for those individuals who actually liked the taste of meat cooked rare.

> "Cooking increases the chances of killing the bacteria, otherwise it is bringing up the food poisoning again - that is an assumption I am making." (Norwich)

> "I associate all raw meat with food poisoning. Even if it's unlikely… safety first." (Cardiff)

Rejecters' risk concerns about rare burgers specifically were also linked to assumptions about the **content and quality of minced beef**. There was a perception amongst some Rejecters that minced meat was likely to be of low quality – in terms of the source and integrity of the meat itself, as well as the processes it had been through. Participants felt that in minced meat the purity of beef was more suspect, referencing the possibility of mince including off-cuts, offal, or non-beef meats such as horsemeat.

Rejecters also viewed mince as less 'pure' as it had been through more production processes, in potentially unhygienic conditions. It was expected that the more the meat had been 'interfered with' by humans or machines, the more likely it was to contain unknown or harmful material. Specific risks cited by participants included the introduction of bacteria and parasites.

> "The more that it's processed the more you feel there's a risk – I don't know exactly, but more hands have touched it or it's been left on the side and flies have got on it or whatever." (Cardiff)

> "I think it's tape worms I'd be worried about or anything in the meat, anything that's alive in there, that horrifies me." (Belfast)

Despite the concerns raised above, Rejecters expected that thorough cooking would minimise any potential harm. They relied on the cooking process to help ensure safety, and thus viewed a well-done burger as the safest way to eat minced beef.

### 3.2.2 How do Accepters and Advocates evaluate risk?

Accepters and Advocates in Citizens' Forums and online discussions shared a set of assumptions that diminished their perceptions of risk around rare burgers.

Firstly, these two groups **believed that beef was a lower-risk meat** overall. Whilst they recognised the threat of food poisoning from eating undercooked chicken and pork, they perceived red meats as inherently safer or 'cleaner' than other meats. Consumers also tended to perceive no difference between steak and minced beef – assuming them to have comparable (very low) levels of risk attached to them.

> "I'd never given it a thought. I've never thought that if I make a burger I might get an infection. I didn't even know you could get an infection from that. I'm worried about the chicken only." (London)

> "Beef is a clean meat, so can be eaten raw." (Norwich)

Secondly, Accepters and Advocates shared the **belief that poor hygiene standards were likely to be the key source of risk** when eating a rare burger, rather than the meat itself. It was expected that any food poisoning or other illness was far more likely to be a result of contamination at the point of preparation. This led to assumptions that it was possible for consumers to mitigate risk by choosing only to eat rare burgers at venues with high levels of hygiene and well-trained staff – an assumption we explore in greater depth in Section 3.3.

> "If the kitchen isn't clean it doesn't matter how good the beef is." (Online Forum)

Risk perceptions were also guided by assumptions about the **quality of the ingredients** being used to prepare food. More so than the Accepters, Advocates believed that preparing food using higher quality beef would safeguard against any danger of infection or other risks introduced at any point during the production or preparation process.

> "I believe, right or wrong, that quality beef will be more bacteria resistant." (Online Forum)

A key difference between Accepters and Advocates was that, despite the range of beliefs and assumptions that diminished their perception of risk, Accepters did nonetheless tend to harbour **vague, ill-defined concerns about undercooked meat**. Although their fears were not as well-articulated as those expressed by Rejecters, they were not as confident in their own safety as the Advocates were. This back-of-mind concern manifested itself in Accepters' reticence to cook a rare burger at home, believing it requires the skills of a professional chef. However, it is not strong enough, or articulated enough, to prevent them eating rare burgers altogether.

> "At home I always make sure I kill it! ...Cos you always ask yourself -'is it cooked?' You don't know so you may as well do it till it's black!" (Cardiff)

## 3.3 Impact of venue on perceptions of risk

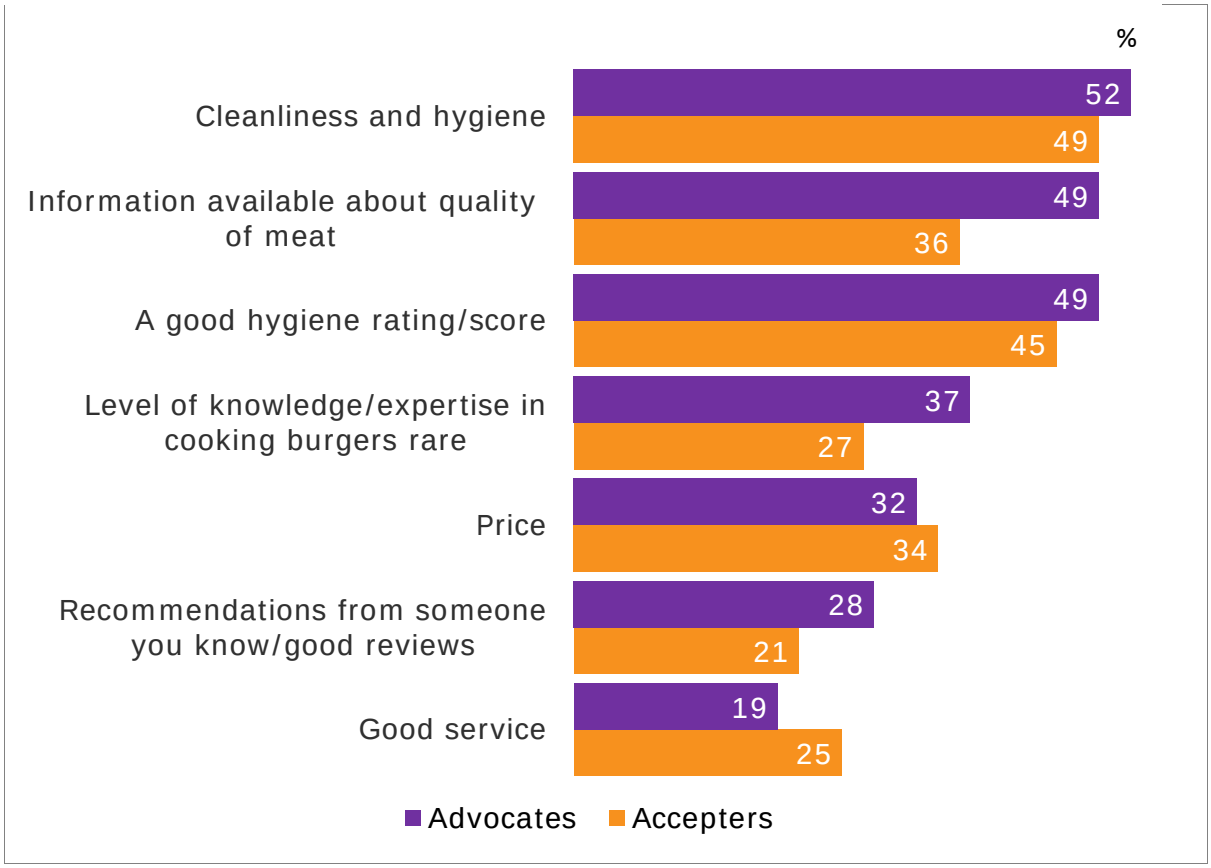
Perceptions of risk were also heavily influenced by the venue at which participants chose to eat a rare burger. All participants agreed that risks would be increased significantly if a rare burger was eaten at a venue which had poor hygiene standards. For Rejecters this was linked to their fears about highly processed foods – it was expected that a less 'reputable' venue would use ingredients in their burgers that had the potential to carry bacteria or other contaminations, making it unsafe to eat there. As discussed in the previous section, an establishment without sufficient food hygiene standards or with untrained staff was seen as one of the key (and possibly only) sources of risk by both Advocates and Accepters. They therefore dismissed the possibility of ordering a rare burger at an establishment that they did not trust to implement proper procedures to protect consumers.

> "You could cook a burger, cremate it then put it on a surface that's got the bacteria and you still get your food poisoning – so it's a question of sticking to where you know they have good hygiene." (Cardiff)

Among Advocates and Accepters there was a belief that carefully selecting the venue for their meal could help to mitigate any risk of illness. Asked about their priorities when deciding to eat a rare burger, both Advocates

and Accepters gave great importance to the cleanliness and hygiene of the venue; 52% of Advocates and 49% of Accepters identified this as an important factor. Advocates also emphasised the importance of having information about meat quality when making their judgments.

**Figure 3.5: Factors considered important by Advocates and Accepters when deciding whether to order a rare burger when eating out**




Source: Risk, Rare Burgers and Chemicals Survey Q7. Which of these factors are important to you when deciding whether to order a rare or medium burger when eating out?
Base: All those who reported eating rare burgers when out; Advocates (170), Accepters (264)

However, for some participants the mere fact that an establishment served a burger rare was taken as an indication of quality and safety. As Advocates and Accepters assumed only high-quality restaurants and establishments would even offer a burger served rare, the restaurant was assumed to have better hygiene practices and better quality ingredients – and, consequently, lower risk (see figure 3.6 below). Accepters – who often took their behavioural cues from restaurants, and who perceive rare burgers as a luxury, gourmet experience – were particular proponents of this view. This kind of logic can arguably be applied to other risky foods sitting in the 'gourmet' category, where expensive/luxury experiences are equated with quality and safety.

**Figure 3.6: Assumptions made about establishments serving rare burgers**

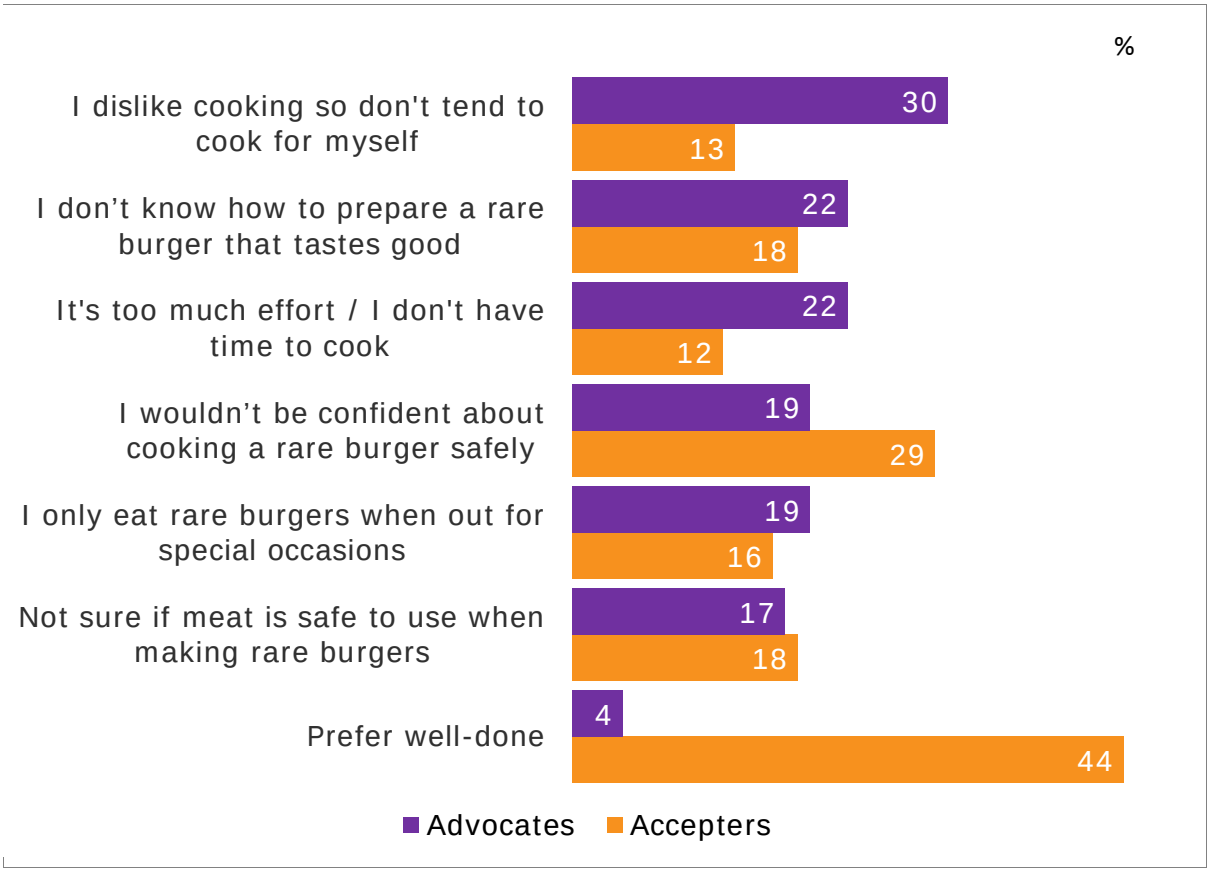

Advocates' assumptions about risk also led to a high proportion of them (84%) making rare burgers at home. As observed in other research conducted for the FSA[22], Advocates saw the home as an environment where they had control over the production of their food and they thus assumed high levels of food hygiene. Particularly relevant for rare burgers is the belief that the risk of rare burgers was significantly reduced by buying only high quality ingredients. It was assumed that these practices reduced (or entirely eliminated) any risk that might be associated with cooking a burger rare.

> "When we cook at home we buy the ingredients fresh and always buy organic meat. It's prepared in a clean kitchen by my hands so I am confident that it's pretty safe." (Online Forum)

Of those Advocates who had not prepared a rare burger for themselves, 49% stated that they had not done so only because they dislike cooking or they don't have time to cook – compared to 22% of Accepters. Accepters cited a preference for well-done burgers (44%) as the reason for not cooking rare burgers at home, with concerns about safety the next most prominent, with 29% stating that they were worried about whether or not they would be able to prepare a rare burger safely.

[22] FSA Risk and Responsibility – TNS BMRB 2014
FSA FHRS Component Scores – TNS BMRB 2014
FSA Consumer Insight Communications – TNS BMRB 2014
FSA Food Hygiene Practices among Black and Ethnic Minority groups– TNS BMRB 2015

**Figure 3.7: Reasons why those who eat rare burgers have not prepared one themselves**




Source: Risk, Rare Burgers and Chemicals Survey Q6. You have indicated that you have not prepared rare or medium burgers for yourself, what do you think are your reasons for this?
Base: All those eat rare burgers but reported not having prepared one themselves; Advocates (43), Accepters (246)

## 3.4 Conclusions

Though rare burgers are considered one of the most dangerous foods in the "risky" category by the majority of participants in the panel survey, there are those who currently perceive them to have a very low risk attached.

Consumers determine the risk in different ways, depending on their general attitude to food risk, how they perceive rare/raw meat and mince, and the degree to which adventurous consumption factors into their self-identity:

- Rejecters perceive all raw/undercooked meat as unsafe, with minced meat being particularly unsafe due to processing, additives

and suspect quality. They feel disgust about the taste and/or concern about the safety of undercooked burgers.

- Advocates perceive rare burgers as safe; consumption denotes cultured tastes and is part of identity-making. Choosing high-quality ingredients and higher-end restaurants bolsters their confidence in and out of home.
- Accepters think rare beef is probably safe (like rare steak), but harbour vague risk concerns that are difficult to articulate. They trust the establishments that serve rare burgers to have high standards and know what they are doing – though they may lack the confidence to prepare rare burgers themselves.

Rejecters and Advocates have strong, extreme views about rare burgers, tied in to their identity as risk averse and careful about food, or adventurous and experimental. These identity-based, entrenched views are likely to be hard to shift.

Accepters however are much more likely to be led by what is presented or made available, trusting that restaurants would not serve food in a way that was unsafe, and being comforted by the ‘gourmet’ aspect of rare burgers, which is read as a signal for quality and thus safety. This group is likely to be more responsive to information as their current position is tentative, underpinned by a back-of-mind concern about risk.

The next section details how these groups responded to information about risk, and recommendations for communication.

# 4. Communicating about the risk of rare burgers

This section begins by exploring some of the general principles about communicating risk that emerged during the Citizens' Forums, which informed the development of messages used for testing in the later qualitative and quantitative phases of the research. It then discusses consumer responses to messaging about the risk of rare burgers specifically, exploring how reactions differed by consumer type. Lastly, this chapter explores what information participants felt they needed to know in order to make informed decisions about risk in relation to rare burgers, and participants' views on the most effective channels for communication.

## 4.1 General principles for communicating about risk

The Citizens' Forums initially tested three approaches to communicating about risk, informed by previous research on the components required for consumers to accept and act on food risk.[23] A full set of messages tested can be found in Appendix D. These three approaches variously focused on:

- **Likelihood of harm**: for example, by indicating a percentage chance of illness, or by giving a proportional comparison between the risk associated with a well done burger and the risk associated with a rare burger.
- **Severity of harm**: for example, by listing specific symptoms of food poisoning, or by specifically naming the possibility of E. coli O157 infection.
- **Degree of control** participants had over the risk: for example, by challenging assumptions of control by emphasising that bacteria cannot be detected through sight or smell alone.

[23] Previous research shows that risks are taken more seriously when people perceive: high likelihood of risk; severity of consequence; absence of control; and risk to others (especially family/children). References: Consumer Insight for Communications: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014); Risk and Responsibility: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014)

From the approaches that were tested in the Citizens' Forums, a number of key principles emerged for communication about risk. Firstly, successful messages provided participants with a **clear frame of reference** by which to judge the information that was being given. For example, messages making references to known dangers such as E. coli were seen to be easier to comprehend than those which made comparisons to other risks with which participants were less familiar (such as comparing relative risks posed by oysters and raw milk).

> "You can imagine E. coli. You know what it is." (Cardiff)

> "[Comparison to raw milk] surely means there's no risk at all - we used to drink milk straight from the cow." (Norwich)

Secondly, messages which offered new and surprising information, or **challenged previous assumptions**, were also seen to be effective at drawing attention and raising awareness. Messages framed in this way were seen as educational and useful for consumers – rather than as simply raising anxiety.

> "That message reassures me – it explains that it is the way that you cook it that makes the difference." (Oldham)

Differences emerged in how participants understood and processed information about likelihood of harm depending on the format in which it was presented. Participants had a tendency to **view risks as less severe when presented as a percentage** (0.03%) than when written out in ratio format (28 out of 100,000); these relatively small percentages were reported to be quite difficult to visualise and comprehend. A proportional comparison between well-done and rare was seen as helpful in bringing perspective, but also prompted questions about the level of risk of the food compared.

> "It's perspective that you can get your head around. You can't visualise 1 in a 100,000. But three times is easy." (London)

Less effective messages were those that participants judged to be **overemphasising potential negative consequences**. Approaches that emphasised the potential severity risked being written off as alarmist or

scaremongering, without being given serious consideration. In particular, mentions of death were seen to be disproportionate and potentially inappropriate.

> 'Death! That puts a more serious slant on it! But it seems like scare tactics." (Cardiff)

However, we know from previous risk communications research for the FSA that these 'knee-jerk' responses can actually signal a useful impact in terms of spurring reflection about risk.[24] For example, follow-up calls with participants who read messaging around food poisoning have shown that although participants initially dismissed messaging about deaths from food poisoning as "over the top," these messages had a high level of recall two weeks later, and had caused some participants to re-evaluate their food hygiene habits.

Conversely, where statistical risk was perceived as so small as to be trivial, messaging again risked being disregarded and even laughed off in some cases. A message needed to contain some credible indication of genuine risk in order to be acknowledged by participants and spur reflection.

> "You could die of a heart attack by the time you ever got ill from one of those rare burgers!" (Norwich)

Furthermore, message testing revealed the importance of ensuring that likelihood and severity of consequences, if communicated together, need to show consistency. For example, communicating an extreme consequence alongside a very low likelihood tended to be ineffective, again drawing into question the appropriateness of messaging. Participants felt that risk and likelihood would need to be proportionate in order to be taken seriously.

[24] Consumer Insight for Communications: TNS BMRB 'Citizens' Forum' research for the Food Standards Agency (2014);

## 4.2 Lessons for messaging about rare burgers

Beyond exploring the broad principles outlined above, we also examined the reactions to the specific messages about rare burgers[25] – and the variations in response across the three consumer types.

The four messages tested in Phase 2a (Mobile Qualitative and Online) and 2b (Consumer Panel Survey) of this research were:

1. **28 out of every 100,000** rare burgers could potentially contain harmful bacteria. That means they are **three times more likely** to contain harmful bacteria than burgers cooked well done.
2. 28 out of every 100,000 rare burgers may contain harmful bacteria **such as E. coli O157** – these bacteria can cause **serious** food poisoning.
3. **0.03%** of rare burgers contain harmful bacteria that you **can't see, smell or taste**. This risk decreases **even more** if the burger is cooked thoroughly.
4. Harmful bacteria can be carried on the surfaces of cuts of meat. A rare steak is seared on the outside, so these bacteria are killed. **Unlike steak**, burger meat is minced together so the **bacteria can remain** unless **fully cooked**. When not cooked thoroughly, 28 out of every 100,000 rare burgers could contain harmful bacteria.

Generally, where new risk information was introduced to the Advocate and Rejecter audiences, this tended only to **reinforce their existing views**. Advocates tended to focus on the low probability of an infection resulting from eating a rare burger, perceiving this as so low so as to almost constitute proof of its safety. On average, 55% of Advocates stated that they were just as likely to eat a rare burger after seeing the risk messaging – with a further 8% saying they would be *even more likely.* However, this means that a sizable minority of Advocates (33%) were sufficiently persuaded by risk messaging to say that they would consider changing their behaviour in the future, suggesting that many would in fact use the provided risk messaging to make informed decisions. Additionally, risk calculations are complex, and the impact of

[25] 9 messages were tested in phase 1, and 4 were taken into further testing in the mobile qualitative work and the quantitative panel. Messages are detailed in Appendix D.

risk messaging is not necessarily immediate; it is possible that the impact of risk messaging may be delayed and thus not registered during the relatively brief time period of the current research.

> "28 out of every 100,000 is pretty good odds, so I'm not worried about it. The message does make me think I should think about it and have it in my mind, but I wouldn't worry about it." (Mobile Task)

> "It's worth the risk. And even if you cook it to 70 degrees, it's still 4 out of the 100,000, no matter what you've done." (London)

Rejecters' reactions to risk messaging conversely focused on the confirmation of the fact that a rare burger was potentially risky. This was seen to **justify their caution** about consuming rare burgers. The information was particularly significant for those who had not previously explicitly made the connection between rare burgers and risk, and had only been rejecting it on the basis of visual appearance and taste. After seeing risk messages, on average 80% of Rejecters on the Consumer Panel stated that they were less likely to eat a rare burger. This is compared with 49% of Accepters, and 33% of Advocates. Given Rejecters were already very unlikely to eat a rare burger, it can be argued that their existing views about rare burgers had become even stronger in response to seeing messaging about risk.

> "At the start of this I thought was I being too careful with checking a burger's cooked but now I've read that I know I was right." (Belfast)

Because of their passive behaviour around the consumption of rare burgers it was the Accepters who had the greatest potential to be influenced by messaging about risk. They already had a tendency to follow the advice that they were given about how it was best for their burger to be served, and were more likely to **factor new information into future decision making**, rather than use it to justify historic behaviour. Where a message was seen to indicate that the risk was minimal, some Accepters indicated that they might consider eating a rare burger more frequently in the future. Conversely, where the message raised perceptions of the associated risk, some Accepters felt they might not continue eating rare burgers.

"'I feel a bit safer now. I feel happier eating the rare one now because the chance of me being one of the 28 is very slim." (Cardiff)

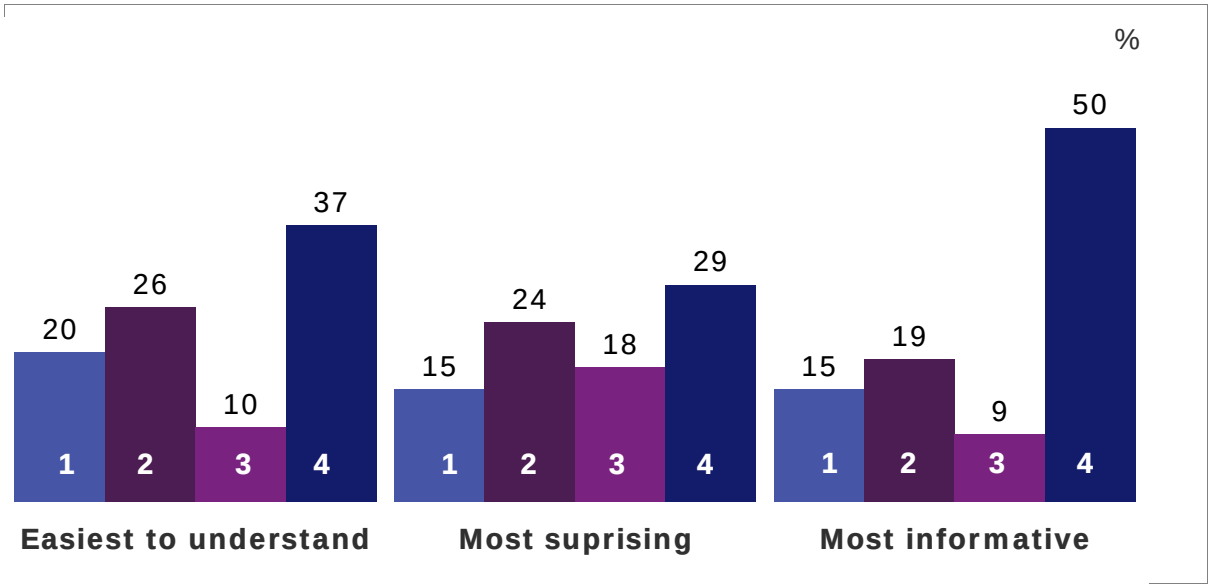
"That's a surprise. It will always be a well done burger for me from now on!" (Norwich)

One of the most effective methods for communicating about the risk of rare burgers was to **explain the difference between a rare burger and a rare steak**. When participants were informed about the fact that a burger can contain bacteria that would have been seared off a rare steak, this triggered a moment of understanding for some. This had particular impact with Accepters who had been harbouring uncertainties about the precise nature of the risk associated with undercooked meats. Accepters felt that this information confirmed their assumption that beef was a relatively safe meat, whilst also explaining the key difference that made rare burgers riskier. Of the four messages tested via the quantitative panel the one that contained this information (message 4 in Figure 4.1 below) was seen across all groups as the most informative – half (50%) of participants felt that this message was the most informative compared to the others tested.

"I didn't know this fact about steak mince not having all the bacteria cooked. It does worry me a little bit and would definitely make me reconsider my order." (Mobile Task)

"I'm being educated and therefore can understand the difference between steak and a burger." (Online Forum)

**Figure 4.1: Proportion of respondents choosing each statement by attribute**




Source: Risk, Rare Burgers and Chemicals Survey Q15. Please consider all of the below statements about eating rare burgers. - Which is the…?
Base: All respondents (2708)

## 4.3 Informed decision making

In order to understand whether communication is effectively supporting informed decision making about food risk, we need to understand what consumers' decision-making process looks like and needs to include. In relation to rare burgers, informed decisions require that consumers are:

- able to **understand the level of risk** in order to work out whether it is acceptable;
- **factoring risk information into their decision**, rather than ignoring, dismissing, or disbelieving it; and -
- understanding what the **provenance of the risk** actually is – for example, via re-framing the issue or challenging perceptions.

Consumers needed to understand why they were being told about a risk they had not previously perceived. By having the risk explained, existing assumptions were disrupted, and respondents paid far more attention to the level of risk as a result. Even if consumption intention or behaviour did not change, their decision to eat rare burgers was now based on an informed decision, rather than passively accepting something served to them.

> "I'm perhaps less confident than I was before...so I may be keener to know the hygiene levels of the restaurant and source of the meat." (Online)

When asked, participants in Citizens' Forums and online discussions felt that an informed decision on rare burgers required information on the reason, likelihood and severity of risk. However they also indicated a desire to have information about the quality of the meat, which they perceived as a key aspect of determining risk. The quality of beef used, the source, and the content of the mince, were all cited as useful information. Aside from information on the meat, participants also would determine risk by choosing hygienic, higher-end food businesses – with some consumers mentioning scores from the Food Hygiene Rating Scheme (FHRS) and customer reviews and recommendations as existing measures that could be used to manage this.

Some participants expressed a concern that by providing information about risk, food business establishments might in some way **divest themselves of responsibility** for ensuring their food was safe. Respondents were clear that information provision could not be at the expense of ensuring continued enforcement of hygiene standards, and perhaps would need some reassurance that this was the case.

> "It seems to suggest the onus is on the customer to be wary. It's fair enough if E. coli could be in any cow, but if E. coli is found only in bad cows, then I don't think that's the customer's problem." (London)

Appetite for information was clearly demarcated by the groups – with Rejecters most supportive of detailed information about risks. Whereas Accepters felt information provision was reasonable, Advocates tended to feel that too much information could lead to unnecessary concern amongst the public.

> "I need as much information as possible, such as where the meat is sourced from, food miles, the risk of E. coli." (Online Forum)

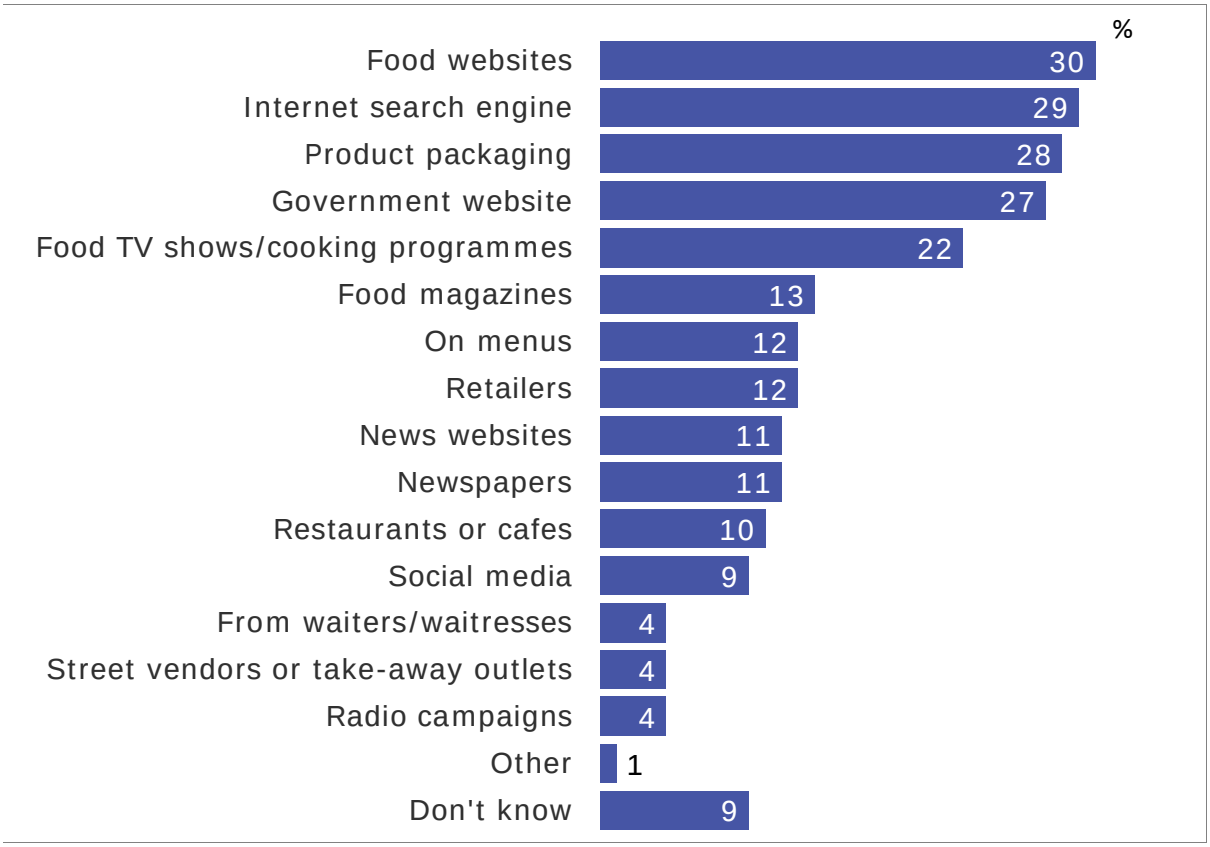
> "How far do you take this? You're not going to have a health warning about a high calorie dessert telling you 'this could make you fat'. I don't see the need for it to be on burgers." (London)

## 4.4 Channels for communication

Though 12% of participants in the survey thought restaurant menus would be a useful source of information, some participants in Citizens' Forums and mobile research were clearly made uncomfortable by the idea of risk information at point of consumption and pushed back against the idea. For Advocates, this negative response was related to the fact that their perception of risk as very low, and they thus saw risk information provision as inappropriate and as potentially causing undue alarm. Accepters – who were less confident about taking risks overall – reported that seeing a risk message could put them off their food and hamper their dining experience. They suggested that the risk message could be in small print at the bottom, and/or online where consumers could seek out more information if they were interested. They felt this gave consumers control over whether they look or not.

Interestingly, 28% indicated that supermarket packaging could instead be a useful channel for communicating risk – perhaps mirroring their relative lack of comfort around home preparation of meat versus restaurant consumption. They felt packaging could help educate consumers, who would then transfer that knowledge into the restaurant setting.

**Figure 4.2: Locations rated as the most useful sources of information about eating burgers rare or medium**




Source: Risk, Rare Burgers and Chemicals Survey Q16. Thinking about sources of information about food safety, where would be the most useful place(s) for you to find information about eating burgers cooked rare or medium?
Base: All respondents who eat burgers (2,279)

Whilst it is perhaps unsurprising that consumers did not wish to have information "forced upon" them in restaurants, this does not necessarily mean it would not be a useful point of consumer communication. This tendency of 'not wanting to know' about food risk is common and much observed in previous work with consumers about many different aspects of food safety[26], especially in relation to eating outside the home. Again, consumers' initial 'knee jerk' negativity may belie a useful impact in terms of spurring consumer reflection; whilst consumers may not enjoy pausing to consider the risk decisions they are making, this disruption of habitual routine is often critical to the development of informed decision-making.

[26] FSA Risk and Responsibility – TNS BMRB 2014 FSA FHRS Component Scores – TNS BMRB 2014

## 4.5 Conclusions

Consumers respond best to messages that provide a clear and familiar frame of reference, comparing risks to known dangers. Further, messages that challenge assumptions and provide new information are received as informative, rather than simply leaving consumers with concerns they feel they do not fully understand.

Our recommended approach for messaging about risk is to include an explanation of the risk, in terms of how minced meat is different to steak, as well as the likelihood of that risk. As the statistics around likely harm from rare meat consumption are relatively small, expressing risk as a percentage might promote dismissal. Any indication of severity of consequences, if included, needs to be proportional to the level of risk. Mentions of death and possibly even E. coli may be too strong, and run the risk of causing unnecessary concern amongst consumers who were unlikely to consider eating a rare burger anyway.

Although resistance was observed amongst some participants to the idea of including messaging on menus, this suggests that such a strategy could be effective in challenging their assumptions and potentially disrupting their habits. It is also important to note that it was the Accepters that felt most uncomfortable with this. Given their generally ‘passive’ behaviour in terms of the extent to which they were led by restaurant actions and recommendations, menu-based information may be an effective opportunity to prompt them to stop, think and choose.

# 5. Conclusions and recommendations

The majority (68%) of consumers are currently unlikely to eat a rare burger, either because they dislike them, or feel uncomfortable with undercooked minced meat. Compared to other risky foods, consumers tend to consider rare burgers as one of the more dangerous.

However, not everyone views rare burger consumption as risky, with 12% of consumers having a strong preference for eating a rare burger. Those who are report currently eating rare burgers exhibit two divergent sets of attitudes, behaviours, and responses to information about risk:

| ADVOCATES | ACCEPTERS |
|---|---|
| **Eat out and at home** | Eat out only |
| **High frequency** | Lower frequency |
| **Actively choosing** | Passively accepting |
| **Confident** | Unconfident |
| **Perceive rare mince as safe** | Back-of-mind view that rare mince is potentially unsafe |
| **Trust establishments that serve them to be high quality** | |
| **Trust that high quality meat lowers risk** | |
| **Risk information tends to entrench views – risk viewed as very low** | Risk information causes some to waver and re-consider |

The offering of rare burgers in specialist, gourmet burger restaurants signifies a ‘green light’ for Accepters, who readily place their trust in professionals of higher-end restaurants. Accepters consequently make assumptions about the quality of beef and the hygiene of the restaurant that tend to allay any concerns about potential risk.

Advocates and Rejecters have strong opinions about rare burgers, and are unlikely to change their behaviour. On the other hand, Accepters are not entirely confident in their views, and their back-of-mind concerns can be harnessed to prompt them to make more active choices.

Risk messaging should focus on explaining the nature of the risk: simultaneously explaining the reasoning that may underlie a discomfort about rare mince, and challenging the misconception that steak and mince carry the same degree of risk because they are both red meat. Messaging should also include an indication of the likelihood of risk, expressed as a probability (but not a percentage – which presents this particular risk as unworthy of notice). Restaurants, already influential on consumer behaviour, could be an effective channel for delivering communications that disrupt current assumptions about rare burgers.

# Appendix A – Citizens' Forums

## 2.1 Citizens' Forum work programme

In December 2005, the Food Standards Agency (FSA) Board agreed to develop more creative and experimental ways of engaging directly with individual consumers and to construct a new model for consumer engagement. Central to this aim was the establishment of a nationwide series of consumer forums to enable the FSA to establish an ongoing dialogue with the public on food standards.

The Citizens' Forums typically use a deliberative method, whereby during the sessions, expert witnesses or educational materials provide context and in-depth information to the group, informing participants' discussions. These forums therefore provide a deeper understanding of attitudes than traditional focus group discussions.

Outlined below are some of the previous Citizens' Forums conducted by TNS BMRB for the FSA:

**Citizens' Forums: Communications Research (2014)**
http://www.food.gov.uk/sites/default/files/food-safety-message.pdf

**Citizens' Forums: FSA Strategy 2015-2020 (2014)**
http://www.food.gov.uk/sites/default/files/fsa-strategy-research-report.pdf

**Citizens' Forums: Acceptability of Trace DNA in processed meats (2013)**
http://www.food.gov.uk/sites/default/files/multimedia/pdfs/tracedna-viewsc.pdf

**Citizens' Forums: Research with consumers and staff delivering official controls (2013)**
http://www.foodbase.org.uk//admintools/reportdocuments/871-1-1614_FINAL_Consumers_Report_260111460_FSA_RDOC.pdf
http://www.foodbase.org.uk//admintools/reportdocuments/871-1-1615_FINAL_Professional_Report_260111460_FSA_RDOC.pdf

**Citizens' Forums: Expanding Food Hygiene Information (2012)**

http://www.food.gov.uk/sites/default/files/multimedia/pdfs/citizens-forum-report-2012.pdf

**Citizens' Forums: Nanotechnology in Food (2011)**
http://www.food.gov.uk/sites/default/files/multimedia/pdfs/publication/fsacfnanotechnologyfood.pdf

All Citizens' Forum discussions are structured using a topic guide. This is an aide memoire that indicates the range of topics and sub-topics to be covered in the Forum. Topic guides are used flexibly, guiding the discussion so that it feels more like a conversation, but using probing techniques to elicit the required information, and heading off any tangential or irrelevant issues that may arise.

**Qualitative Analysis**

Following the Citizens' Forums, qualitative analysis of the data collected drew on a range of evidence sources, including: materials produced during the group research; researchers' recall of the research sessions; audio-recordings of the group sessions; and researchers' in-session notes.

Our qualitative analytical approach is iterative and inductive – building upwards from the views of respondents – incorporating elements of 'grounded theory' analysis. Analysis initially took place informally during fieldwork itself; as our research team worked closely together throughout the fieldwork period, feeding back headline findings to each other as groups were conducted.

Our formal analytical process then began with researchers' individual analysis of their own research sessions against a set pro-forma. In this document, researchers summarised their data from each group (including verbatim quotes) against key research objectives, and began to form initial overarching hypotheses and insights.

The online platform that was used to host the online community and mobile activities has a built in set of tools for analysis. The platform allows moderators to segment and group responses automatically according to pre-existing profile information (e.g. age, gender, message seen in restaurant), or tags applied during the forum (e.g. strong negative reaction to message). This allows quick, versatile, and dynamic

hypotheses exploration, and allows analysis to develop alongside the forum, while it is still live.

Following individual-level analysis, we held a group brainstorm session, led by the project manager and including the full research team. This brainstorm was attended by members of the Consumer Engagement team, who were invited to contribute their views and recall of the research sessions.

In this session, we interrogated findings across the full data-set to identify points of commonality and difference; discussed and debated any initial hypotheses around audience differences and key findings; and considered the implications for the subsequent stages of research. From the Citizens Forums analysis session we refined and developed the messages for testing in phase 2.

# Appendix B – FSA Consumer Panel

### Introduction

The FSA Consumer Panel is an online panel of around 30,000 members of the UK general public that provides a flexible methodology for conducting fast turn-around research. The panel is operated by TNS BMRB using the Lightspeed GMI panel. The FSA Consumer Panel is made up of a subset of this panel, all of whom have been profiled with the FSA consumer segmentation.

### Sample Sources and Recruitment

The Lightspeed GMI panel is composed of people who have made a conscious decision to participate in online surveys through a double opt-in registration process. The activity of the each panellist is closely monitored to ensure effectiveness and usability.

Several methodologies are used by Lightspeed GMI to recruit panellists in order to build a high quality panel and remove any bias that could result from using one or a few recruiting sources by ensuring a diversified panel composition. Lightspeed GMI monitors the composition of their panel regularly and take action to recruit panellists of specific demographic profiles to replace any key groups which are becoming under-represented. Methods used for recruitment depend on who is being targeted but include opt-in email, co-registration, e-newsletter campaigns, and traditional banner placements, as well as both internal and external affiliate networks. Lightspeed GMI measures recruitment sources on multiple metrics to track both activity and engagement by demographic group, which contributes to the quality of data from panellists.

The Lightspeed GMI panel is used solely for research purposes.

### Sample Validation

Technology-driven quality programs are used to prevent fraudulent respondents joining the panel. Lightspeed GMI uses a panellist verification process, Lightspeed RealRespondents, which comprises of a series of real-time checkpoints that new panel registrants pass through while

completing the panel registration survey. Registrants who fail these checks are unable to join the panel.

Checkpoints at the recruitment stage include:

- Proxy detection: detects a proxy server used to mask the registrant's true IP address and past fraudulent activity
- IP Geo-Fencing: locates the registrant's country location via their IP address and determines their eligibility for registration based on country-specific rules
- CAPTCHA: prevents automated programs from joining the site through challenge-response tests
- Email address verification: queries a database to ensure the email address is unique (all registrants must verify their email addresses through a double opt-in registration process)

In addition, registrants' postal address and post code are verified against a current local address directory.

Furthermore, there are a range of approaches in place which are used to minimise the risk of 'professional respondents':

- Whilst incentives are used to encourage the participation of panellists, these are pitched at such level as to not make it worthwhile to try to 'game' the system.
- In the invitation text for surveys and the question wording used to screen for surveys, care is taken to not give too much detail away to potential respondents. This minimises the risk of panellists entering incorrect information in an attempt to qualify for a survey which they should not be eligible to take part in.
- Technological tools are used to identify and remove potential 'professional respondents.' For example, multiple registrations from one household are identified through:
    - Proxy detection: detects if a proxy server is used to mask the registrant's true IP address
    - Unique MachineID: this is a calculated alphanumeric string based on more than 25 data points collected from a survey respondent's computer and identified by technology systems. This ensures only one registrant per computer can join the panel

**Sampling and Project Management**

Lightspeed GMI monitors the panel composition and variables needed for sample selection by collecting household and demographic information from every panellist. When the criteria for a study are defined, Lightspeed GMI selects panellists based on stored demographic information collected during the registration survey and ongoing profiling surveys. Panellists are invited in batches and during the fieldwork, the batches are closely monitored so that invitations to additional panellists are minimised whilst to completing fieldwork on time.

Panellists who are selected to take part in a survey will be sent an email to the address that they provided when they registered to ask them to participate. Panellists invited to a survey must visit the survey website and enter their email addresses and passwords before accessing the link to the survey. This is more secure than sending the survey link in an email, which could be opened by anybody with access to that mailbox. Panellists do not need to check their email inbox to see which surveys are currently open to them. They can also login to the main Lightspeed website (www.mysurvey.com) to see what they are currently invited to participate in.

For participation on the panel, Lightspeed GMI offers an incentive of 'Reward Points'. Upon completion of a survey, points are deposited immediately into a panellist's account, which gives instant gratification for survey completion. The number of points awarded for survey completion is based on survey length, complexity, and incidence rate. Once a points threshold is reached, panellists may redeem their points for online gift certificates, merchandise, and PayPal cash deposits.

**Panel Management**

The panel is maintained through regular 'panel cleaning'. Lightspeed define their panellists based on the International Organization for Standardization definition which states, "An active panel member is one who has participated in at least one survey, or has updated his/her profile data, or has registered to join the panel, within the last 12 months." If a panellist falls outside of the definition, they are removed from the panel. To ensure that panellists remain engaged and active, Lightspeed GMI uses panel-specific tools, such as frequent polls, featuring an interesting or topical question, which provides panellists with the opportunity to compare their views with the entire panel.

Poor survey data is automatically identified and removed through a series of quality checks. Panellists who consistently provide poor survey data are removed from the panel.

The checks that are in place include:

- Survey speeding: respondents who rush through the survey are identified by comparing survey completion times to the norm
- Grid speeding: respondents who rush through grid questions are identified by comparing grid completion times to the norm
- De-duplication: blocking survey respondents who attempt to complete the same survey multiple times either within a single panel or across multiple panels
- 'Honesty' detector: a unique combination of high and low probability statements as well as a benchmark question to identify 'over-reporters' who are assumed to be dishonest and are blocked from entering surveys

The Lightspeed panel demographic profiling program is ongoing, and the frequency of data refreshment is dependent on the time sensitivity of the data. Most data is systematically updated annually to ensure relevance. The panel demographic profiling information is validated in the screener section of subsequent surveys.

# Appendix C – Sampling and recruitment

## Qualitative sampling: Citizens' Forums and Online qualitative mobile research

The sample for the **Citizens Forums** was designed to reflect the spread of the local population in each of the research areas, as well as coverage across the following variables:

- **Gender** – roughly equal ratio of male and female
- **Age** – a range reflecting general population
- **Ethnicity** – include mix of ethnicities in each group (approximately 10% of total sample)
- **Rural / urban** – including a range of locations reflecting local and surrounding areas in the sampling locations

Recruitment of broadly 'mixed' groups of participants helps to foster the depth of dialogue and debate that comes from wide sharing and discussion of diverging views. In particular, we sampled for a mixture of consumption behaviours, including those who said they would eat a burger cooked rare, and those who would not, in order to ensure discussions covered the full range of attitudes and behaviours. We monitored for level of concern or confidence around food safety, to ensure we did not over-sample consumers with extreme views. Only vegetarians were excluded on the basis that they would never consider eating a rare burger.

In Phase 2a, for the **mobile qualitative research**, participants were excluded if they were vegetarian, if would not consider eating a rare burger, or if they did not have a smartphone. They were also screened for the following attributes, which were monitored during recruitment to ensure a range:

- Preference for how a burger is cooked
- Level of concern or confidence about food safety
- Gender
- SEG
- Age

Respondents were from a wide range of geographical locations, including: Surrey, Essex, Leicestershire, Norfolk, Liverpool, Sunderland, Yorkshire, Manchester, West Midlands, Bristol, and Glamorgan.

## Qualitative recruitment

All recruitment was managed by TNS BMRB's in-house qualitative field team, who are specialists in social research to inform Government policy and practice, and in recruitment for the Food Standards Agency specifically. All recruiters are members of IQCS (Interviewers Quality Control Scheme), adhere to MRS guidelines at all times, and have signed data security agreements in line with ISO27001 the data accreditation held by TNS BMRB.

Field managers were fully briefed on the project and provided with detailed recruitment instructions and a screening questionnaire in order for the recruiter to assess participants' eligibility to take part in the research. Participants were identified using a mix of database and 'free-find' techniques, where contacts are identified using 'on the street' recruitment.

## Quantitative sample: FSA Consumer Panel

**Table A1 Weighted and unweighted sample demographic profile**

| | Unweighted sample | | Weighted sample | |
|---|---|---|---|---|
| | % | N | % | n |
| **Gender** | | | | |
| Male | 46 | 1244 | 50 | 1346 |
| Female | 54 | 1464 | 50 | 1362 |
| **Age** | | | | |
| 16-24 | 12 | 209 | 14 | 389 |
| 24-34 | 16 | 425 | 17 | 468 |
| 35-44 | 15 | 411 | 16 | 425 |
| 45-54 | 17 | 465 | 17 | 454 |
| 55-64 | 19 | 518 | 15 | 411 |
| 65+ | 25 | 680 | 21 | 562 |
| **Country** | | | | |
| England | 74 | 2006 | 92 | 2491 |
| Wales | 19 | 502 | 5 | 135 |
| Northern Ireland | 7 | 200 | 3 | 81 |

## Social Grade Classification

People in the Risk, Rare Burger and Chemicals survey have been assigned social grades based on the occupation of the chief income earner in their household. The following table lists the social grade definitions.

| Social grade | Definition |
|---|---|
| A | Higher managerial, administrative or professional |
| B | Intermediate managerial, administrative or professional |
| C1 | Supervisory or clerical and junior managerial, administrative or professional |
| C2 | Skilled manual workers |
| D | Semi and unskilled manual workers |
| E | Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income, which includes students |

# Appendix D – Qualitative research materials

## FSA Risk and Rare Burgers - Topic guide

**Research objectives**

1. Explore consumer approaches to risk in a general sense, building on what is already known:
    - How consumers understand/determine risk
    - How they make decisions about risk in their daily lives
    - How does this change when it is considered in relation to themselves/someone else e.g. their family
    - How they respond to different ways of describing risk, e.g. different 'models' for presenting risk

2. Establish what consumers understand about "risky" foods – and the dangers attached to these:
    - Current attitudes and behaviours in relation to "risky" foods, including
        - The degree to which these are currently perceived as risks, and why
        - the influence of social norms – e.g. whether the context of where and how they are served in certain kinds of FBOs contributes to a perception of low risk, potentially leading to replication at home
        - extent of personal responsibility to manage risk versus other organisations (e.g. Government; suppliers; FBOs)

3. Understand what communications will help consumers to make informed decisions about eating "risky" foods – and effect a balanced and measured response
    - What level of complexity, and what information specifically, is needed to enable consumers to make decisions
    - To what extent consumers take on complexity and respond accordingly
    - Whether any kinds of messages elicit an extreme response
    - The format, location and messenger deemed most appropriate

4. Explore what it is that consumers believe constitutes an adequately informed decision around "risky" foods
    - How consumers regard risk in relation to the importance of consumer choice
    - How much information consumers feel they need to know in order to make an informed decision
    - To what extent an understanding of the potential dangers of "risky" foods makes a certain amount of risk acceptable

## Background – 4 mins

| | Stimulus / tasks | Approx timing |
|---|---|---|
| **1.1 CHAIR introduction**<br>• Introduce yourself and TNS BMRB – an independent research agency<br>• We are conducting research on behalf of the FSA to explore public awareness and perceptions of food risk<br>• Introduce FSA attendees (if present)<br>• Length – 90 minutes<br>• Research is confidential and anonymous – findings and quotes will be attributed anonymously.<br>• Recording – shared only with the TNS research team.<br>• £40 incentive<br><br>**1.3 Group introductions**<br>• Participants introduce themselves to the group<br>o Name<br>o Who they live with – partner; number / age of children<br>o What they do – work or hobbies | | 2 mins<br><br>2 mins |

## General understanding of risk – 10 mins

### Objectives of this section:

- *To understand attitudes to risk more broadly – how consumers make decisions about risk in their day to day lives; the factors that influence these decisions; how communications about risk are received*

| | Stimulus / tasks | Approx timing |
|---|---|---|
| **2.1 RANKING exercise exploring attitudes to general risk**<br>• Introduce stimulus A<br>• How concerned do participants feel about these risks?<br>o Ask them to rank the risks in terms of how concerning they are.<br>o Why did they rank the risks the way they did?<br>• How do they learn about these risks? *(Spontaneous then probe)*<br>o Personal experience? | HANDOUT A: Comparing Risks | 5 mins |

| | | |
|---|---|---|
| o Family/friend advice?<br>o 'Common sense'?<br>o Media?<br>o Third parties? Government?<br><br>**2.2 COMPARE attitudes to food risk and attitudes to general risk**<br>• What risks do they associate with food? *Flipchart spontaneous responses, then probe for the following:*<br>o Food poisoning<br>o Chemicals<br>o Additives<br>o Allergens<br>o Mislabelled/hidden ingredients (e.g. horsemeat in beef mince)<br>• How concerned do participants feel about these risks?<br>o Ask them to rank the risks in terms of how concerning they are.<br>o Why did they rank the risks the way they did?<br>• Thinking about food risks broadly, how do these compare to other, general kinds of risk?<br>o Comparatively more/less common than other risks?<br>o Comparatively more/less severe than other risks?<br>• Overall, how willing are they to take risks around food?<br>o Does this differ if thinking about taking risks that might involve friends (e.g. cooking a meal for friends)?<br>o Does this differ if thinking about taking risks that might involve family members (e.g. choosing a restaurant for a family meal)? | | 5 mins |

# Behaviour and understanding about rare burgers specifically – 50 mins

**Objectives of this section:**

- *To explore participants' understanding of food risk – what kinds of food risks are most commonly perceived; do consumers perceive different 'levels' of food risk*

- *To explore initial responses and overall understanding of rare burgers and the risks involved in consuming these*

| | Stimulus / tasks | Approx timing |
|---|---|---|
| **3.1 EXPLORE current attitudes and behaviours regarding rare burgers**<br>• Check they are **familiar** with rare burgers. How many in the group know what a rare burger is? *(A burger where the meat is pink or has pink or red juices)*<br>• Have they eaten rare burgers before?<br>o How often?<br>o In what circumstances?<br>• *[Researcher to draw outline person / stick figure in centre of flipchart]* What kind of **person** would they expect to eat a rare burger?<br>o Participants to suggest words that describe someone who would eat a rare burger<br>o What's their attitude towards food?<br>• *[Researcher to draw outline of a building in centre of flipchart]* What kind of **venue** would they expect to serve a rare burger?<br>o What would this venue be like?<br>o What kind of people would go to this venue?<br>• Whether they would eat a rare burger **at home**<br>o Why/why not<br>o In what circumstances; e.g. cooking for self/family; for guests; having a BBQ<br>o *If people do eat rare burgers at home:* have they always done this, or is it a recent development<br><br>• Do they **prefer** their burgers cooked well done or rare (or somewhere in-between)<br>o Why<br>o How strong are feelings about choosing rare vs. well done<br>o Does a restaurant have to suggest the option of a rare burger for them to be interested, or would they actively seek it out/request it<br>• Do they currently consider there to be any **risks** associated with eating a rare burger?<br>o If seen as safe – how do they know/how much have they thought about it before?<br>o If seen as risky – what would they expect the risk to be; and what level of risk?<br>• How does this compare to the 'risk' of eating a rare steak? Why | HANDOUT B: 'Different foods'<br><br>HANDOUT C: BURGER | 15 mins<br><br>8 mins |

| | | |
|---|---|---|
| **3.2 EXPLORE general understanding of "risky" foods**<br>*Researcher to divide group into two sub-groups and introduce stimulus: I'm going to show you a variety of different types of food, and, thinking about how they've been prepared, I want you to tell me which you think are likely to be most risky.*<br>*Participants to rank risks in sub-groups, then discuss as a group.*<br>• Which of the foods shown do they expect has greatest risk?<br>  o How have they determined the ranking<br>  o Can they group the risks – if so what are the categories and how have they been decided<br>  o Are there different risks for different foods – if so what<br>• How do they understand/define the phrase "risky food"<br>• Do they see a distinction between "risky" food and food that is 'dangerous'?<br>• Which of the foods shown in stimulus do they think might be "risky"? Which are dangerous? Why?<br><br>**3.3 Response to STIMULUS with info about risks of rare burgers**<br>*[Hand out Stimulus C to each participant – chart showing burgers cooked at different temperatures for two minutes]*<br>• Based on the colour of the meat, which of these burgers would they prefer to eat? Why?<br><br>*[Hand out Stimulus D page 1, showing potential risk from a burger less than fully cooked using the same chart i.e. number of infected burgers per 100,000 at that temperature]*<br><br>• Is there anything that surprises them in the information?<br>• Would this cause them to **think again** about the previous choice (at Stimulus C)?<br>  o If yes, would they actually choose a different burger from Stimulus C on this basis?<br>  o If no, why not?<br>  o Does this make them think again about a family member eating rare burgers *(can return to this prompt throughout)*<br>• How do they react to being told that rare burgers are a potential risk?<br>  o Confusing?<br>  o Believable?<br>• Do they have any questions about the information in the stimulus?<br>• How severe do they think the risk shown is?<br>• How likely do they think the risk shown is? | TEMPERATURE STIM<br>HANDOUT D: Burger Information | 20 mins<br><br>8 mins |

*[Hand out Stimulus D page 2, explaining difference between a burger (minced, contamination potentially spread throughout the product) and a steak (contamination on the surface, destroyed by searing)]*

- Is there anything new/surprising in the information?
- Do they understand the different level of risk between a rare burger and a rare steak?

*[Hand out Stimulus D page 3, showing detail about the consequences of bacterial infections – e coli and salmonella]*

- Is there anything that surprises them in the information?
  - Did they know that these kinds of infection can come from rare burgers?
- Does this affect how they viewed the previous information (about frequency of infection)?
  - Risk seen as more/less severe than expected?
- Would this cause them to think again about the choice of burger (at Stimulus C)?
  - If yes, would they actually choose a different burger from Stimulus C on this basis?
- Do they have any questions about the information in the stimulus?
- What do they think they could do to mitigate the risks of rare burgers?
  - What might others have to do to mitigate against /educate about the risks of rare burgers? Restaurants? Regulators?
- Do they think these risks apply to all uncooked/rare meats?
  - Probe specifically for: rare steak?
- **Overall**, do those who said earlier that they prefer eating a rare burger still think that they will continue to do so?
  - More/less likely
  - What misgivings do they have?
  - If not, why not?

**3.4 EXPLORE importance of consumer choice – acceptable risk vs. informed decisions**

- Do they think that consumers should be allowed to eat "risky" foods?
  - Why/why not?
- Is the risk of eating a rare burger an 'acceptable risk'?
    - How do they decide what is an acceptable risk
- What is necessary for consumers to make an informed decision around eating "risky" foods?
  - What does an 'informed decision' mean?
  - Do they think that consumers need any more information?
  - If they do need more information, what level of detail?
- Do they feel more or less confident about eating "risky" food in the future, based on what they have learned?

# Communicating about "risky" foods – 20 mins

**Objectives of this section:**

- *To identify messages that may be effective in communicating the risks involved in eating rare burgers*

| | Stimulus / tasks | Approx timing |
|---|---|---|
| **4.1 UNDERSTANDING responses to different ways of communicating**<br>*Researcher to show stimulus E: different approaches to communication about risk. Explain that these approaches include some based on the communications approaches taken by other country's food safety enforcement bodies. Ask them to imagine they are given only this message about the risk of rare burgers – how do they think they would respond and does it allow them to make an informed decision.*<br>*Read out each message to the group one by one, according to rotation, handing them out as you go. Ask the following probes to the group about each one*<br>• What do they like/dislike; note any cause for confusion<br>o PROBE specific aspects of the messages, e.g. preference for % or numbers, impact of level of severity etc.<br>• What does it tell them about risk of rare burgers (higher/lower)<br>• Do they think the message helps them understand the risk i.e. makes it easier to understand.<br><br>**Overall:**<br>• Which of the different approaches shown do they feel is:<br>o The best way of **describing a risk**<br>o The best way of **allowing them to make an informed decision** about rare burgers<br>o Why<br>o Which do people like **the least** and why<br>• Which of these messages do they think would be most likely to affect how they make decisions about eating rare burgers?<br>• Which of those are most/least likely to be ignored?<br>• If they had to pick one/two of the approaches from any of the stimulus, that they would combine in order to create an overall 'best' message, which would they choose?<br><br>• Where would they expect to see this information? *(Spontaneous then probe)*<br>o Labels | STIMULUS E: Messaging Approaches | 15 mins<br><br>5 mins |

| | | |
|---|---|---|
| o Menus<br>o Other 'point of sale' locations<br>o FSA website<br>o Other websites<br>o Advice from GPs/others<br>• Preferable for information to come from retailer, government, or another source?<br>*[Researcher note: please challenge respondents if national TV campaign suggested – unlikely that FSA will execute such a campaign]* | | |

## THANK AND CLOSE – 2 mins

- What would they say to a friend about whether they should eat a rare burger; why
- Any final comments for FSA

- THANK AND CLOSE

## Detailed stimulus used in Citizens' Forums (Stimulus D)

The figures below represent the average number of E.coli O157 infections expected per 100,000 servings of a burger when cooked at each of the four temperatures shown previously.

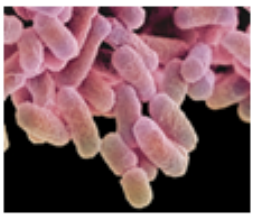
**28 infections per 100,000**

**26 infections per 100,000**

**9 infections per 100,000**

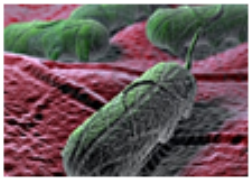
**4 infections per 100,000**

Stimulus D – Burger Information



**E coli O157:**

- E coli is a pathogen that is difficult to detect in food –it is infectious even in small doses.
- According to NHS advice, symptoms of an e coli O157 infection include severe stomach cramps, vomiting, and diarrhoea that may be bloody.
- The symptoms usually last up to seven days if there are no complications, but some infections can be severe and may be life threatening.
- In 5-10% of cases infected with a toxin-producing strain (such as O157), severe kidney-related complications may arise, leading to the need for renal replacement therapy.



**Salmonella:**

- Salmonella is a bacteria that lives in the guts of animals. Symptoms of an infection include diarrhoea, stomach cramps, vomiting and fever.
- Symptoms usually last for four to seven days. Those who are seriously ill may need hospital care because dehydration caused by the illness can be life-threatening.

Stimulus D – Burger Information

**Why is rare burger riskier than rare steak?**

Bacteria can get on food during the preparation process – including production and transport.

This bacteria is carried on the surface of food, and is killed by high temperatures during cooking. A steak is fully seared on the outside even when cooked rare, so any bacteria carried by the steak will be killed.

Unlike steak, burger meat is minced together, meaning the bacteria is no longer just on the surface but may be found anywhere inside. So even if the bacteria on the outside are killed, the bacteria inside can remain unless fully cooked all the way through.

Stimulus D – Burger Information

## Longlist of messages tested in Citizens' Forums (Stimulus E)

**0.03%** of 'rare' burgers are likely to contain harmful bacteria, which could give you **serious** food poisoning.

Rare burgers are considered to be a risky food. Other risky foods include **raw oysters** and **raw (unpasteurised) milk**

**28 out of every 100,000** 'rare' burgers could potentially contain harmful bacteria. Eating one could cause serious illness and **even death**.

Rare burgers are not cooked throughout. Harmful bacteria are killed by **thorough cooking**, so they are more likely to still be there.

'Rare' burgers are **three times more likely** to contain harmful bacteria than those cooked 'well done'.

Rare burgers can contain harmful bacteria that cause illness.
**80% of people** say they never eat burgers or sausages when the meat is pink.

If you ate a rare burger a day for **36 years**, you'd probably get food poisoning from it **twice** – with a well done burger this would only be once.

Uncooked burgers may contain harmful bacteria such as **E. coli O157** – if left 'rare', these bacteria can cause serious food poisoning.

28 out of every 100,000 'rare' burgers contain harmful bacteria that you can't **see, smell or taste**. Only thorough cooking will remove them.

## Shortlist of risk messages testing in Phase 2: the mobile qualitative phase and Consumer Panel

1. **28 out of every 100,000** rare burgers could potentially contain harmful bacteria. That means they are **three times more likely** to contain harmful bacteria than burgers cooked well done.

2. 28 out of every 100,000 rare burgers may contain harmful bacteria **such as E. coli O157** – these bacteria can cause **serious** food poisoning.

3. **0.03%** of rare burgers contain harmful bacteria that you **can't see, smell or taste**. This risk decreases **even more** if the burger is cooked thoroughly.

4. Harmful bacteria can be carried on the surface of cuts of meat. A rare steak is seared out on the outside, so these bacteria are killed. **Unlike steak**, burger meat is minced together so the **bacteria can remain** unless **fully cooked**. When not cooked thoroughly, 28 out of every 100,000 rare burgers could contain harmful bacteria.

# APPENDIX E – Risk, Rare Burgers and Chemicals Quantitative Survey

**Q1** **Matrix**

We would like to ask you some questions about your attitudes to eating different types of food.

Thinking of eating each of the foods below, please use the scale to say how safe or dangerous you would consider this to be, from completely safe to eat (1) to very dangerous (5).

**Random**

| | 1 Completely safe to eat | 2 | 3 | 4 | 5 Very dangeous |
|---|---|---|---|---|---|
| Chicken or turkey which is pink, or has pink or red juices | ○ | ○ | ○ | ○ | ○ |
| Raw Oysters | ○ | ○ | ○ | ○ | ○ |
| Raw milk (Unpasteurised milk) | ○ | ○ | ○ | ○ | ○ |
| A burger which is pink inside | ○ | ○ | ○ | ○ | ○ |
| A slice of bread from a partially mouldy loaf | ○ | ○ | ○ | ○ | ○ |
| A rare steak | ○ | ○ | ○ | ○ | ○ |

**Q2** **Single coded**

Do you ever eat burgers? If so, how do you prefer them to be served?

**Flipped**

1 ☐ Yes, prefer rare or medium (meat inside is pink or has pink or red juices)
2 ☐ Yes, prefer well-done
3 ○ Yes, no preference **Exclusive*
4 ☐ No, I never eat burgers
↳ GO TO Q8

ASK ONLY IF Q2=2,3

**Q3** **Single coded**

If a burger was served to you rare or medium (with pink meat or pink or red juices) how would you be most likely to respond?

**Random**

1 ○ I would be happy to eat the burger as served
2 ○ I would feel a bit concerned or unhappy but eat the burger as served
3 ○ I would request that the burger was cooked until well-done
↳ GO TO Q8
4 ○ I wouldn't eat it
5 ○ don't know **Position fixed*

ASK ONLY IF Q3=1,2,5 OR Q2=1

**B1 : Eat burgers rare** **Begin block**

**Q4** **Matrix**

And around how often do you eat burgers which are...

| | At least once a week | Once a fortnight | Once a month | Once every three months | Once a year | Less than once a year | Never |
|---|---|---|---|---|---|---|---|
| cooked rare or medium (which are pink inside or have pink or red juices)? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| cooked well-done? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

ASK ONLY IF not Q4 ST=1 & SC=7

**Q5** **Multi coded**

Have you ever eaten rare or medium burgers...

Please select all that apply

1 ☐ Prepared by yourself
2 ☐ Prepared by a friend or family member
3 ☐ From fast food outlets
4 ☐ From gastro-pubs
5 ☐ From restaurants which specialise in serving burgers
6 ☐ From other restaurants

ASK ONLY IF not Q5=1

**Q6** **Multi coded**

You have indicated that you have not prepared rare or medium burgers for yourself, what do you think are your reasons for this?

Please choose all the reasons that apply

**Random**

1 ☐ It's too much effort / I don't have time to cook for myself
2 ☐ I wouldn't be confident about cooking a rare burger safely
3 ☐ I don't know how to prepare a rare burger that tastes good
4 ☐ I only eat rare burgers when out for special occasions
5 ☐ I dislike cooking so don't tend to cook for myself
6 ☐ I am not sure if meat I buy is safe to use when making rare burgers
7 ☐ Prefer well-done

ASK ONLY IF Q5=3,4,5,6

**Q7** **Multi coded**

**Min 1 | Max 3**

Which of these factors are important to you when deciding whether to order a rare or medium burger **when eating out**?

Please choose up to three factors

**Random**

1 ☐ Price
2 ☐ Recommendations from someone you know/good reviews
3 ☐ Cleanliness and hygiene
4 ☐ Good service
5 ☐ A good hygiene rating/score
6 ☐ Information available about the quality of the meat (e.g. 100% beef)
7 ☐ Level of knowledge/expertise in cooking burgers rare

**B1 : Eat burgers rare** **End block**

**Q8** **Single coded**

How informed or uninformed do you consider yourself to be about food safety?

**Flipped**

1 ○ Very well informed
2 ○ Well informed
3 ○ Not well informed
4 ○ Not at all informed
5 ○ don't know

**Position fixed*

Scripter notes: REVERSE SCALE

**Q9** **Matrix**

To what extent are you concerned or unconcerned by each of the following issues?

**Random**

| | Very concerned | Fairly concerned | Neither concerned nor unconcerned | Fairly unconcerned | Very unconcerned | Don't know |
|---|---|---|---|---|---|---|
| Food poisoning such as Salmonella and E.Coli | ○ | ○ | ○ | ○ | ○ | ○ |
| Genetically Modified (GM) foods | ○ | ○ | ○ | ○ | ○ | ○ |
| Food hygiene when eating out | ○ | ○ | ○ | ○ | ○ | ○ |
| Food hygiene at home | ○ | ○ | ○ | ○ | ○ | ○ |
| Chemicals present in food | ○ | ○ | ○ | ○ | ○ | ○ |

Scripter notes: FLIP ANSWER SCALE

| Q10 | Matrix |
|---|---|

How much do you agree or disagree with the following statements?

**Random**

| | Definitely agree | Tend to agree | Neither agree nor disagree | Tend to disagree | Definitely disagree | Don't know |
|---|---|---|---|---|---|---|
| Eating a burger served rare, rather than well done, could result in serious illness or death | ○ | ○ | ○ | ○ | ○ | ○ |
| It is safe to eat a burger rare as long as the outside of the burger is well cooked, the colour inside is not important | ○ | ○ | ○ | ○ | ○ | ○ |
| Eating rare steak is as risky as eating a rare burger | ○ | ○ | ○ | ○ | ○ | ○ |
| It doesn't matter how well a burger is cooked, if the meat could potentially be contaminated with harmful bacteria | ○ | ○ | ○ | ○ | ○ | ○ |
| Eating a burger served medium is as risky as eating a burger served well-done | ○ | ○ | ○ | ○ | ○ | ○ |
| Probably less than a tenth (1 in 10) of rare burgers contain bacteria that could cause food poisoning | ○ | ○ | ○ | ○ | ○ | ○ |
| It is safe to eat steak rare as long as the outside of the steak is well cooked, the colour inside is not important | ○ | ○ | ○ | ○ | ○ | ○ |

Scripter notes: FLIP ANSWER SCALE

| T1 | Text |
|---|---|

We are now interested in your views about different ways in which the risks of eating burgers served rare can be communicated to the general public.

Please consider the following information about eating burgers served rare.

Scripter notes: RANDOMISE ORDER OF FOLLOWING FOUR 'FACT' QUESTIONS

**Q11** **Single coded**

STATEMENT 1
"28 out of every 100,000 rare burgers could potentially contain harmful bacteria. That means they are three times more likely to contain harmful bacteria than burgers cooked well done."

Thinking about this statement, please say whether you are...?

**Flipped**

1 ○ less likely to eat a rare burger
2 ○ as likely to eat a rare burger
3 ○ more likely to eat a rare burger
4 ○ don't know **Position fixed*

**Q12** **Single coded**

STATEMENT 2
"28 out of every 100,000 rare burgers may contain harmful bacteria such as E. coli O157 – these bacteria can cause serious food poisoning."

Thinking about this statement, please say whether you are...?

**Flipped**

1 ○ less likely to eat a rare burger
2 ○ as likely to eat a rare burger
3 ○ more likely to eat a rare burger
4 ○ don't know **Position fixed*

**Q13** **Single coded**

STATEMENT 3
"0.03% of rare burgers contain harmful bacteria that you can't see, smell or taste. This risk decreases even more if the burger is cooked thoroughly."

Thinking about this statement, please say whether you are...?

**Flipped**

1 ○ less likely to eat a rare burger
2 ○ as likely to eat a rare burger
3 ○ more likely to eat a rare burger
4 ○ don't know **Position fixed*

**Q14** **Single coded**

STATEMENT 4
"Harmful bacteria can be carried on the surface of cuts of meat. A rare steak is seared out the outside, so these bacteria are killed. Unlike steak, burger meat is minced together so the bacteria can remain unless fully cooked. When not cooked thoroughly, 28 out of every 100,000 rare burgers could contain harmful bacteria."

Thinking about this statement, please say whether you are...?

**Flipped**

1 ○ less likely to eat a rare burger
2 ○ as likely to eat a rare burger
3 ○ more likely to eat a rare burger
4 ○ don't know **Position fixed*

**Q15** **Matrix**

Please consider all of the below statements about eating rare burgers.
STATEMENT 1
“28 out of every 100,000 rare burgers could potentially contain harmful bacteria. That means they are three times more likely to contain harmful bacteria than burgers cooked well done.”
STATEMENT 2
“28 out of every 100,000 rare burgers may contain harmful bacteria such as E. coli O157 – these bacteria can cause serious food poisoning.”
STATEMENT 3
“0.03% of rare burgers contain harmful bacteria that you can’t see, smell or taste. This risk decreases even more if the burger is cooked thoroughly.”
STATEMENT 4
“Harmful bacteria can be carried on the surface of cuts of meat. A rare steak is seared out the outside, so these bacteria are killed. Unlike steak, burger meat is minced together so the bacteria can remain unless fully cooked. When not cooked thoroughly, 28 out of every 100,000 rare burgers could contain harmful bacteria.”

Please select one answer per row

| | Statement 1 | Statement 2 | Statement 3 | Statement 4 | Don't know |
|---|---|---|---|---|---|
| Which is the easiest statement to understand? | ○ | ○ | ○ | ○ | ○ |
| Which statement do you find most surprising? | ○ | ○ | ○ | ○ | ○ |
| Which statement makes you feel most informed about the risks of eating rare burgers? | ○ | ○ | ○ | ○ | ○ |

Scripter notes: RANDOMISE ORDER OF DISPLAY OF FACTS

ASK ONLY IF Q2=1,2,3

**Q16** **Multi coded**

Thinking about sources of information about food safety, where would be the most useful place(s) for you to find information about eating burgers cooked rare or medium?
**Min 1 | Max 3**

Please choose up to three factors

**Random**

| | | | |
|---|---|---|---|
| 1 | ○ | Retailers (e.g. supermarkets) | |
| 2 | ○ | Restaurants or cafes | |
| 3 | ○ | Street vendors or take-away outlets | |
| 4 | ○ | Newspapers | |
| 5 | ○ | News websites | |
| 6 | ○ | Food TV shows / cooking programmes | |
| 7 | ○ | Food magazines | |
| 8 | ○ | Food websites | |
| 9 | ○ | Radio campaigns | |
| 10 | ○ | Internet search engine | |
| 11 | ○ | Social media | |
| 12 | ○ | Product packaging | |
| 13 | ○ | Government website | |
| 14 | ○ | On menus | |
| 15 | ○ | From waiters or waitresses | |
| 16 | ○ | don't know | *Position fixed |
| 17 | ○ | other, namely... | *Open *Position fixed |

**Q17** **Single coded**

We are interested in your thoughts and opinions about chemicals in food.
How well informed do you feel about chemicals in food?

**Inverted**

| | | | |
|---|---|---|---|
| 1 | ○ | Very well informed | |
| 2 | ○ | Well informed | |
| 4 | ○ | Not well informed | |
| 5 | ○ | Not at all informed | |
| 6 | ○ | don't know | *Position fixed |

**Q18** **Matrix**

Where do you think chemicals in food could come from?
Do you think they could be...

**Random**

| | Yes | No | I don't know |
|---|---|---|---|
| unintentionally or unavoidably present natural chemicals? | ○ | ○ | ○ |
| deliberately added to the food by producers? | ○ | ○ | ○ |
| unintentionally or unavoidably present man-made chemicals? | ○ | ○ | ○ |

ASK ONLY IF not Q18 ST=2 & SC=2

**Q19** **Multi coded**

Why do you think that chemicals would be **deliberately added** to food? Would this be to…

Please select all that apply

**Random**

| | | | |
|---|---|---|---|
| 1 | ☐ | improve the taste, colour or texture of food | |
| 2 | ☐ | prevent or treat disease in plants or crops when growing them | |
| 3 | ☐ | make the food cheaper to produce | |
| 4 | ☐ | improve the shelf life of the food (make it last longer) | |
| 5 | ☐ | prevent or treat diseases in animals reared for meat | |
| 6 | ☐ | make the food safer | |
| 7 | ☐ | improve the health of people who eat it | |
| 9 | ☐ | other reasons | *Position fixed |
| 8 | ○ | don't know | *Exclusive *Position fixed |

ASK ONLY IF not Q18 ST=2 & SC=2

**Q20** **Single coded**

How concerned are you about chemicals **deliberately added** to food?

**Flipped**

| | | |
|---|---|---|
| 1 | ○ | Very concerned |
| 2 | ○ | Fairly concerned |
| 3 | ○ | Neither concerned nor unconcerned |
| 4 | ○ | Not concerned |
| 5 | ○ | Not at all concerned |
| 6 | ○ | Don't know |

ASK ONLY IF not Q18 ST=3 & SC=2

**Q21** **Multi coded**

Do you think that **man-made chemicals** could be **unintentionally or unavoidably** present in food in any of the following ways?

Please select all that apply

**Random**

| | | | |
|---|---|---|---|
| 1 | ☐ | through cooking food at high temperatures | |
| 2 | ☐ | by smoking food to cook it | |
| 3 | ☐ | due to environmental pollution | |
| 4 | ☐ | through other processes during the production of the food | |
| 5 | ☐ | transferred from the food packaging | |
| 6 | ☐ | other ways not mentioned above | *Position fixed |
| 7 | ○ | don't know | *Exclusive *Position fixed |

ASK ONLY IF not Q18 ST=1 & SC=2

**Q22** **Single coded**

How concerned are you about **unintentional or unavoidable man-made chemicals** in food?

**Flipped**

1 ○ Very concerned
2 ○ Fairly concerned
3 ○ Neither concerned nor unconcerned
4 ○ Not concerned
5 ○ Not at all concerned
6 ○ Don't know

ASK ONLY IF not Q18 ST=1 & SC=2

**Q23** **Multi coded**

Do you think that **natural chemicals** could be **unintentionally or unavoidably** present in food in any of the following ways?

Please select all that apply

**Random**

1 ☐ Through mould growing on crops
2 ☐ Through plants naturally producing toxic substances
3 ☐ Through heavy metals getting into food
4 ☐ Other ways **Position fixed*
5 ○ don't know **Exclusive *Position fixed*

ASK ONLY IF not Q18 ST=1 & SC=2

**Q24** **Single coded**

How concerned are you about **unintentional or unavoidable natural chemicals** present in food?

**Flipped**

1 ○ Very concerned
2 ○ Fairly concerned
3 ○ Neither concerned nor unconcerned
4 ○ Not concerned
5 ○ Not at all concerned
6 ○ Don't know

**Q25** **Multi coded**

Do you think that any of the following health problems could be occur due to eating chemicals present in food?

Please select all that apply

**Random**

1 ☐ Cancer
2 ☐ Kidney damage
3 ☐ Gastrointestinal problems
4 ☐ Reproductive disorders
5 ☐ Suppression of the immune system
6 ☐ Poisoning
7 ☐ Hormone system problems
8 ☐ Other health problems
9 ☐ None of these *Position fixed*
10 ☐ Don't know

**Q26** **Single coded**

Do feel confident that you know who regulates the chemicals in food?

**Random**

1 ○ Yes
2 ○ No

**Q27** **Matrix**

How much do you agree or disagree...

Please select one answer per row

**Random**

| | Definitely agree | Tend to agree | Neither agree nor disagree | Tend to disagree | Definitely disagree | Don't know |
|---|---|---|---|---|---|---|
| The chemicals in food are well regulated | ○ | ○ | ○ | ○ | ○ | ○ |
| I don't know enough about the chemicals present in food | ○ | ○ | ○ | ○ | ○ | ○ |
| The benefits of adding chemicals to food outweigh any risks | ○ | ○ | ○ | ○ | ○ | ○ |
| I worry about possible long term health effects due to chemicals in food | ○ | ○ | ○ | ○ | ○ | ○ |
| Man-made chemicals in food are more dangerous than natural chemicals | ○ | ○ | ○ | ○ | ○ | ○ |

Scripter notes: FLIP SCALE