

# Survey of knowledge of, and behaviours towards, smoked fish consumption

Area of research interest: [Behaviour and perception](#)

Project status: Completed

Authors: Ipsos

Conducted by: Food Standards Agency and Food Standards Scotland

## Survey on knowledge and behaviours towards smoked fish: executive summary

Results available: Results available

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Research topics: [Social science](#)

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### 'Vulnerable consumers' definition

For this piece of work, 'vulnerable consumers' are consumers who are at higher risk of food poisoning caused by the bacteria *Listeria* when eating ready-to-eat (RTE) smoked fish products (compared to the general population), for example, consumers with weakened immune systems, who are pregnant, and older people particularly those aged over 65. For brevity, this group is referred to as 'vulnerable consumers' throughout the report, except where differences are compared between consumers with weakened immune systems and consumers aged over 65.

### Awareness of RTE smoked fish

- overall, across the UK, awareness and knowledge of hot-smoked fish is low, with 26% saying that they have heard of it and know what it is. A further 17% have heard of hot-smoked fish but don't know what it is. Awareness and knowledge of cold-smoked fish is higher, with just under half (44%) of consumers saying that they have heard of cold-smoked fish and also know what it is. A further 19% have heard of cold-smoked fish but don't know what it is.
- when comparing across nations, awareness of both cold-smoked and hot-smoked fish is higher in Scotland compared to the rest of the UK (59% Scotland vs 43% in the rest of the UK for cold-smoked fish and 40% Scotland vs 25% in the rest of the UK for hot-smoked

fish).

- among those previously familiar with each type of smoked fish, a large majority said that their understanding matched the description provided in the survey (both 91%).
- consumers overall are more divided on whether they knew before participating in the survey that cold-smoked fish and hot-smoked fish were two different types of products. This was also seen among vulnerable consumers.
- however, people in Scotland were also more likely to say that they knew cold-smoked fish and hot-smoked fish were two different types of products before taking part (58% in Scotland vs 47% in the rest of the UK).
- awareness of the risks of food poisoning caused by the bacteria *Listeria* when eating RTE smoked fish is low overall (34% said that they previously knew that some groups of people are at higher risk).
- among vulnerable consumers, those aged 65-75 years are less aware of the risks (27 vs 34% of consumers overall). Conversely, there is greater awareness of these risks among those with a weakened immune system (41%).

## Consumption of RTE smoked fish

- most consumers say that they do not generally prepare cold-smoked (62%) or hot-smoked fish (63%) at home. People in Scotland are more likely to prepare both types of smoked fish at home.
- around half of consumers eat cold-smoked fish (51%) and hot-smoked fish (48%) at least once a year. Consumption patterns differ across nations and vulnerable consumers. For instance, consumption of smoked fish is higher in Scotland and lower among older consumers aged 65-75 across the UK.
- there are differences in the ways consumers report eating cold-smoked and hot-smoked fish: cold-smoked fish is usually eaten cold, without being cooked through beforehand, while hot-smoked fish is usually eaten cooked through until steaming hot.
- ways of consuming smoked fish are generally consistent across UK nations. However, people in Scotland are more likely to report eating hot-smoked fish cold compared to the rest of the UK.
- among vulnerable consumers, those with a weakened immune system are more likely to report consuming cold-smoked fish cooked through until steaming hot.

## Response to risk communications and advice

The following wording was included in the questionnaire to outline the current government advice at the time:

**Current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook RTE smoked fish before eating it to avoid listeriosis.**

- awareness of the current government advice is low, with a minority of consumers being fully aware (15%) and most not aware (60%).
- levels of awareness are consistent across the UK, with similar proportions not aware of the current government advice in Scotland (59%) and in the rest of the UK (60%).
- when comparing different types of vulnerable consumers, older consumers aged 65-75 report lowest awareness of government advice than those with a weakened immune system.
- views are divided among vulnerable consumers who currently eat cold- and hot-smoked fish about whether they would follow government advice to thoroughly cook smoked fish before eating it.

- overall, more say they would follow the advice for hot-smoked fish than cold-smoked fish, reflecting consumer preferences for how to eat each type of product.
- among vulnerable consumers, those with a weakened immune system are more likely to say they would follow government advice.
- previous knowledge of government advice appears to make some difference to self-reported likelihood to follow the advice when it comes to consuming cold-smoked fish. However, consumption preferences could also be influencing people's attitudes towards adopting the advice.



## Survey on knowledge and behaviours towards smoked fish: background and methodology

In November 2022, the Food Standards Agency (FSA) and Food Standards Scotland (FSS) commissioned Ipsos UK to conduct an online survey to explore UK consumers' knowledge of and behaviours towards smoked fish consumption, particularly among people vulnerable to a higher risk of food poisoning caused by the bacteria *Listeria*. The key research questions were:

- do consumers know that there is a difference between ready-to-eat (RTE) hot-smoked fish and RTE cold-smoked fish?
- how are RTE hot-smoked fish and RTE cold-smoked fish currently consumed?
- would consumers be receptive to cooking advice for RTE hot-smoked fish and RTE cold-smoked fish?

In line with the research questions, the survey covered three broad topics: awareness of RTE smoked fish, consumption of RTE smoked fish, and vulnerable consumers' response to risk communications and advice.

Fieldwork ran from 4th to 8th November 2022 using the Ipsos UK i: Omnibus service, an online platform that provides a nationally representative online sample with participants from Ipsos panels. Ipsos UK surveyed a representative sample of 2,478 respondents aged 16 to 75 living in the UK, including 564 respondents living in Scotland, 85 in Wales, 58 in Northern Ireland and 1771 in England. Due to the high smoked fish market share in Scotland, a boost sample in Scotland was included. This allowed for comparisons between consumers in Scotland and the rest of the UK.

Of the total sample, 2,390 consented to the collection of their personal health-related data. Therefore, the results presented in this report are based only on this group of respondents.

A key element of this survey was to explore the views and opinions of consumers who are at higher risk of food poisoning caused by the bacteria *Listeria* when eating RTE smoked fish products (referred to as 'vulnerable consumers' in this report). This includes people with a weakened immune system, people aged over 65 years and those who are pregnant. People who prepare food for these vulnerable consumers were also included in the survey. Of note, this survey only captured the views and opinions of people up to age 75.

Of those who consented to the collection of their personal health-related data, 605 were consumers in groups considered vulnerable to Listeria: 301 were aged 65-75 (13% of the sample), 17 were pregnant (1% of the sample) and 331 self-reported as having a weakened immune system (14% of the sample).

Both the overall sample and the Scotland sample were weighted to be representative of the UK adult population aged 16-75 on key demographics: age, gender, education and social grade. All the differences which have been commented on within this report are statistically significant unless otherwise stated. This report only comments on key findings from the survey. Further information, including more detailed demographic analysis, is published alongside this report in full data tabulations.

## **A note on the tables used within this report**

Within this report, tables have been used to present some of the findings. Within these tables statistically significant differences are indicated using letters. Each column has been assigned a letter. If a letter is shown below a percentage in the table, this indicates that this figure is significantly different compared to the figure in the corresponding column. Comparisons are only made between variables within the same row. 'EWNI' refers to England, Wales and Northern Ireland.

## **Note on interpreting the data**

Results presented in this report should be interpreted with care. All surveys are subject to a range of potential sources of error including sample imbalances which are not easily identified and corrected through weighting and errors in respondents' interpretation of survey questions and response options. The data reported within this report relies on respondents' self-reported behaviours. Errors could occur due to imperfect recollection, or respondents' tendency to overreport behaviours which are perceived as being desirable and underreport undesirable behaviours. As with all survey research, correlation does not imply causation therefore causality has not been commented on in this report.



# **Survey on knowledge and behaviours towards smoked fish: Key findings**

## **Awareness of RTE smoked fish**

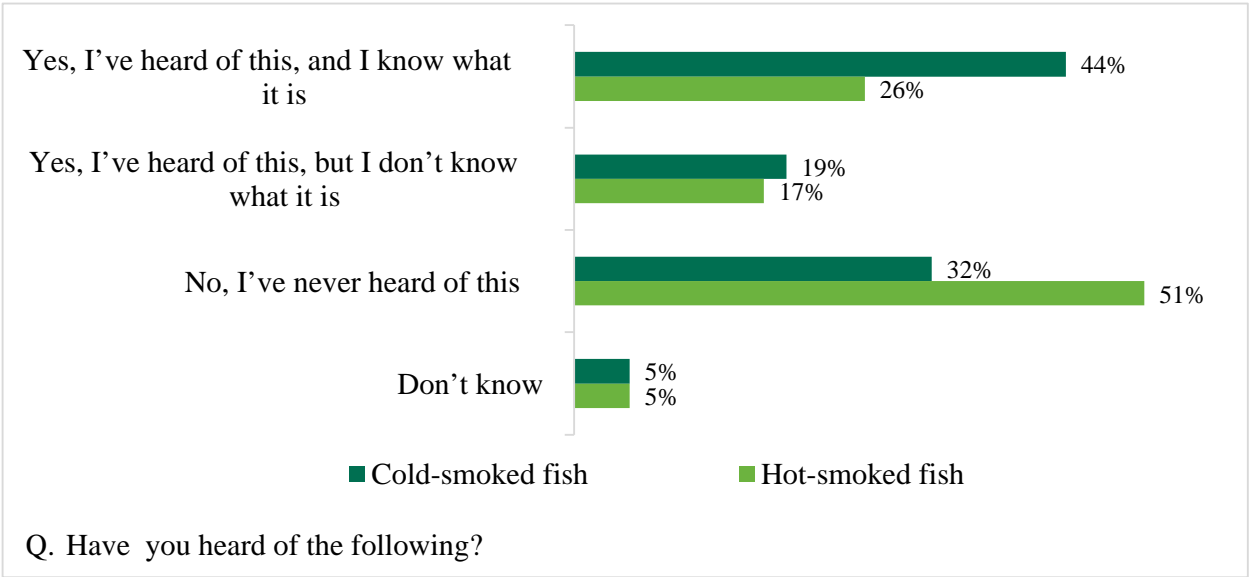
### **Do consumers know that there is a difference between RTE cold smoked fish and RTE hot smoked fish?**

In the UK, awareness and knowledge of hot-smoked fish is low, with most consumers saying that they have either never heard of it (51%) or have heard of it but don't know what it is (17%). Awareness and knowledge of cold-smoked fish was higher, with just under half (44%) saying that they have heard of cold-smoked fish and know what it is. This compares to just over a quarter (26%) who say they have heard of hot-smoked fish and know what it is. This can be seen in

Figure 1.

**Figure 1: Knowledge of smoked fish**

Base: All Adults aged 16-75 in UK (2,390 who consented to the collection of their personal health-related data).



When looking across UK nations, consumers in Scotland are more likely than those in the rest of the UK to say that they have heard and are familiar with cold-smoked fish (59% Scotland vs 43% in the rest of the UK- see Table 1) and those in Scotland are more likely to have heard of hot-smoked fish (40% Scotland vs 25% in the rest of the UK- see Table 2).

**Table 1: Knowledge of cold-smoked fish by nation**

Knowledge statement	Total (A)	EWNI (B)	Scotland (C)
Yes, I've heard of this and I know what it is	44%	43%	59% B
Yes, I've heard of this, but I don't know what it is	19%	19%	15%
No, I've never heard of this	32%	33%	23%
Don't know	5%	5%	3%
Base	2390	1835	555

Base: All Adults aged 16 to 75 in the UK (2,390 who consented to the collection of their personal health related data)

**Table 2: Knowledge of hot-smoked fish by nation**

Knowledge statement	Total (A)	EWNI (B)	Scotland (C)
Yes, I've heard of this and I know what it is	26%	25%	40% B
Yes, I've heard of this, but I don't know what it is	17%	17%	19%
No, I've never heard of this	51%	52%	39%
Don't know	5%	5%	2%
Base	2390	1835	555

Base: All Adults aged 16 to 75 in the UK (2,390 who consented to the collection of their personal health related data)

Awareness and knowledge of smoked fish varies across vulnerable consumers. As outlined in Table 4, when it comes to hot-smoked fish, older consumers (aged 65-75) are more likely to say that they have never heard of it compared to consumers overall (62% vs 51%). Reflecting this, those with a self-reported weakened immune system are more likely to say that they have heard of both types of smoked fish but do not know what they are compared to older consumers (22% vs 13% of consumers aged 65-75 for cold-smoked fish, and 20% vs 11% of consumers aged 65-75 for hot-smoked fish).

No significant differences in knowledge of smoked fish type were identified among those who reported cooking for someone with a weakened immune system.

**Table 3: Knowledge of hot-smoked fish by vulnerable group**

Knowledge statement	Total (A)	65 and over (B)	Weakened immunity (C)	Any vulnerable group (D)
Yes, I've heard of this and I know what it is	44%	50%	42%	47%
Yes, I've heard of this but I don't know what it is	19%	13%	22% BD	18% B
No, I've never heard of this	32%	33%	34%	32%
Don't know	5%	4%	2%	4%
Base	2390	301	331	605

Base: All adult aged 16 to 75 in UK (2,390 who consented to the collection of their personal health related data)

**Table 4: Knowledge of hot smoked fish by vulnerable group**

Knowledge statement	Total (A)	65 and over (B)	Weakened immunity (C)	Any vulnerable group (D)
Yes, I've heard of this and I know what it is	26%	26%	30%	29%
Yes, I've heard of this but I don't know what it is	17%	11%	20% B	16% B
No, I've never heard of this	51%	62% ACD	47%	52%
Don't know	5%	2%	3%	3%
Base	2390	301	331	605

Base: All adult aged 16 to 75 in UK (2,390 who consented to the collection of their personal health related data).

All consumers were shown the following information about cold-smoked fish:

**‘Cold-smoked’ fish is normally labelled as ‘smoked’ fish on packaging. It has been cured (for example, in salt) and then smoked at a low temperature, but it is not cooked through. RTE cold-smoked fish typically come in thin slices, and it can be eaten hot or cold. Examples include smoked trout slices and smoked salmon slices.**

Likewise, all consumers were shown the following regarding hot-smoked fish:

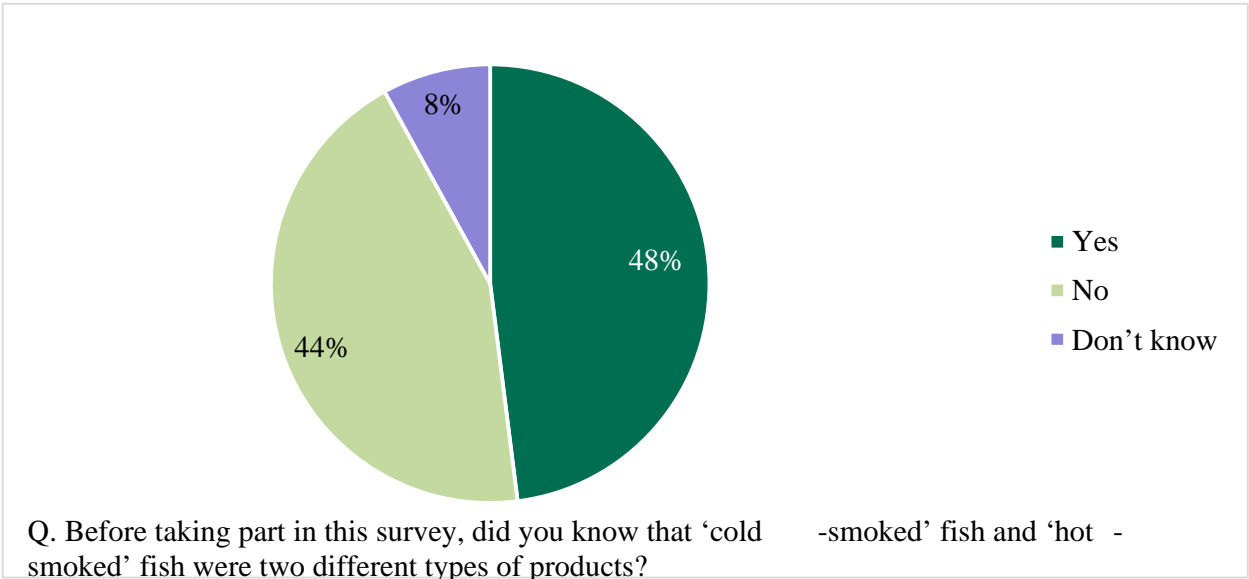
**‘Hot-smoked’ fish has been smoked at a high heat until cooked through. It is usually sold as whole fish or fillets and comes apart in flakes, like regular cooked fish, and it can be eaten hot or cold. Examples include RTE hot-smoked salmon and hot-smoked mackerel.**

After being shown this information about cold-smoked fish and hot-smoked fish, those who said earlier in the survey that they had heard of each type of smoked fish were asked if their previous knowledge matched the information provided. Among those previously familiar with each type of smoked fish, a large majority (91%) said that their understanding matched the description in the survey for both cold-smoked fish and hot-smoked fish. This match between previous knowledge and the description in the survey is similar for vulnerable consumers who had heard of each type of smoked fish. This is also the case for people who regularly cook for vulnerable consumers.

Consumers overall are more divided on whether they knew before participating in the survey that cold-smoked fish and hot-smoked fish were two different types of products (see Figure 2).

**Figure 2: Knowledge of cold-smoked fish and hot-smoked fish as two different products**

Base: All Adults aged 16-75 in UK (2,390 who consented to the collection of their personal health-related data).



There are differences in levels of awareness of the two types of smoked fish products across UK nations. People in Scotland are more likely to say that they knew cold-smoked fish and hot-smoked fish were two different types of products before taking part (58% in Scotland vs 47% in the rest of the UK). This can be seen in Table 5.

As with consumers overall, people with a weakened immune system and those aged 65-75 were also split on whether they knew that cold-smoked fish and hot-smoked fish were two different types of products (47% and 45% respectively said they knew- see Table 6). There are no significant differences in knowledge of fish types between those who cook for a vulnerable person compared to consumers overall.

**Table 5: Knowledge of cold-smoked fish and hot-smoked fish as two different products by nation**

Knowledge statement	Total (A)	EWNI (B)	Scotland (C)
Yes	48%	47%	58% B
No	44%	45%	38%
Don't know	8%	8%	4%
Base	2390	1835	55

Base All adults aged 16 to 75 in UK (2,390 consented to the collection of their personal health-related data ).

**Table 6: Knowledge of cold-smoked fish and hot-smoked fish as two different products by vulnerable group**

Knowledge statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
Yes	48%	45%	47%	48%
No	44%	47%	45%	43%
Don't know	8%	9%	8%	9%
Base	2390	301	331	605

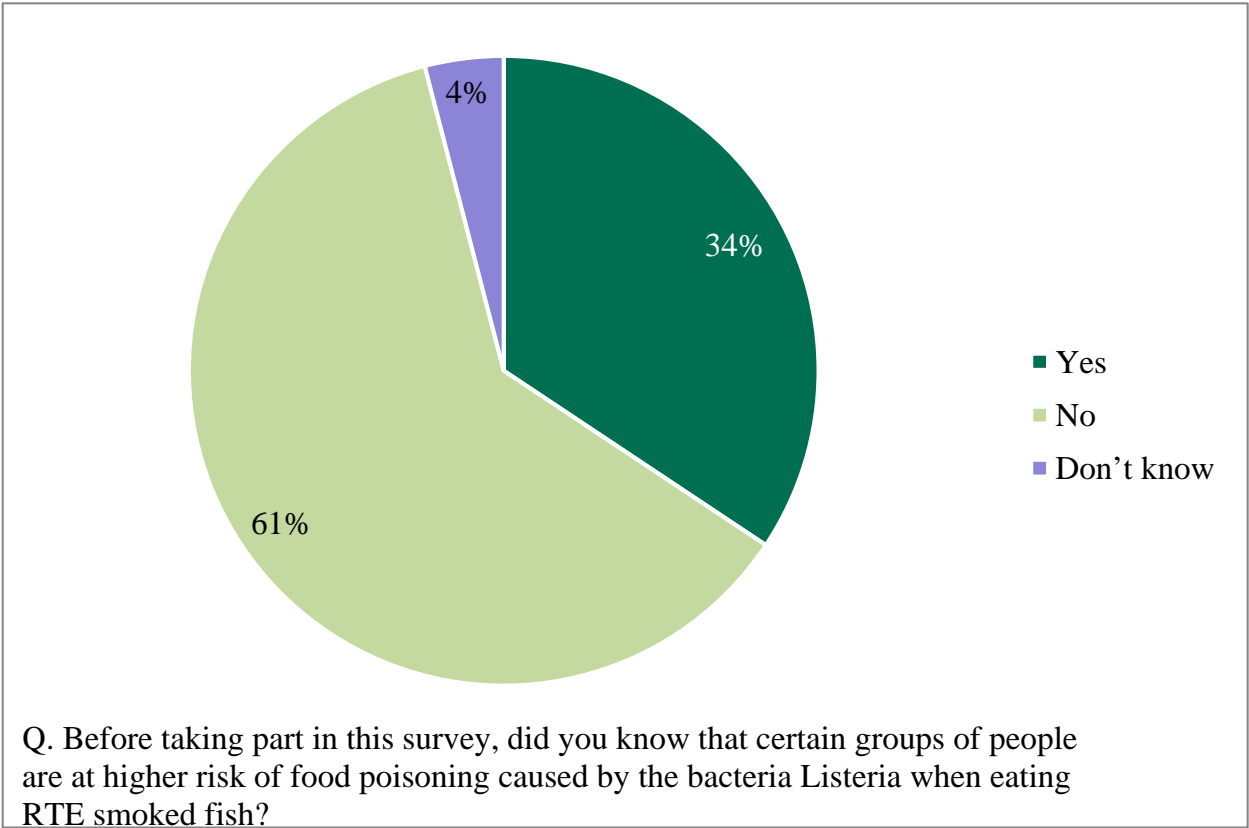
Base All adults aged 16 to 75 in UK (2,390 consented to the collection of their personal health-related data ).

**Awareness of risks associated with consuming RTE smoked fish for vulnerable consumers**

Awareness of risks associated with consuming RTE smoked fish is low overall. Around a third of people (34%) said that they previously knew that some groups of people are at higher risk when consuming RTE smoked fish compared to 61% who said they did not know this.

**Figure 3: Awareness of higher risk of Listeria infection for vulnerable people**

Base: All Adults aged 16-75 in UK (2,390 who consented to the collection of their personal health-related data).



Among vulnerable consumers, older consumers are less aware of the risks associated with Listeria when consuming RTE smoked fish. As seen in Table 7, people aged 65-75 (69%) are



more likely than consumers overall (61%) and those with a weakened immune system (57%) to say that they did not know some groups were at higher risk of food poisoning as a result of consuming RTE smoked fish. Conversely, there is greater awareness among those with a weakened immune system about the risks of food poisoning caused by Listeria when eating RTE smoked fish (41% vs 34% of consumers overall).

There are no significant differences between UK nations or among those who cook for a vulnerable person when it comes to knowledge of the risks of food poisoning from Listeria when eating RTE smoked fish.

**Table 7: Awareness of higher risk of Listeria infection for vulnerable people by vulnerable group**

Level of awareness	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
Yes	34%	27%	41% ABD	36% B
No	61%	69% ACD	57%	61%
Don't know	4%	4%	2%	3%
Base	2390	301	331	605

Base: All adults aged 16 to 75 in K (2,390 who consented to the collection of their personal health-related data)

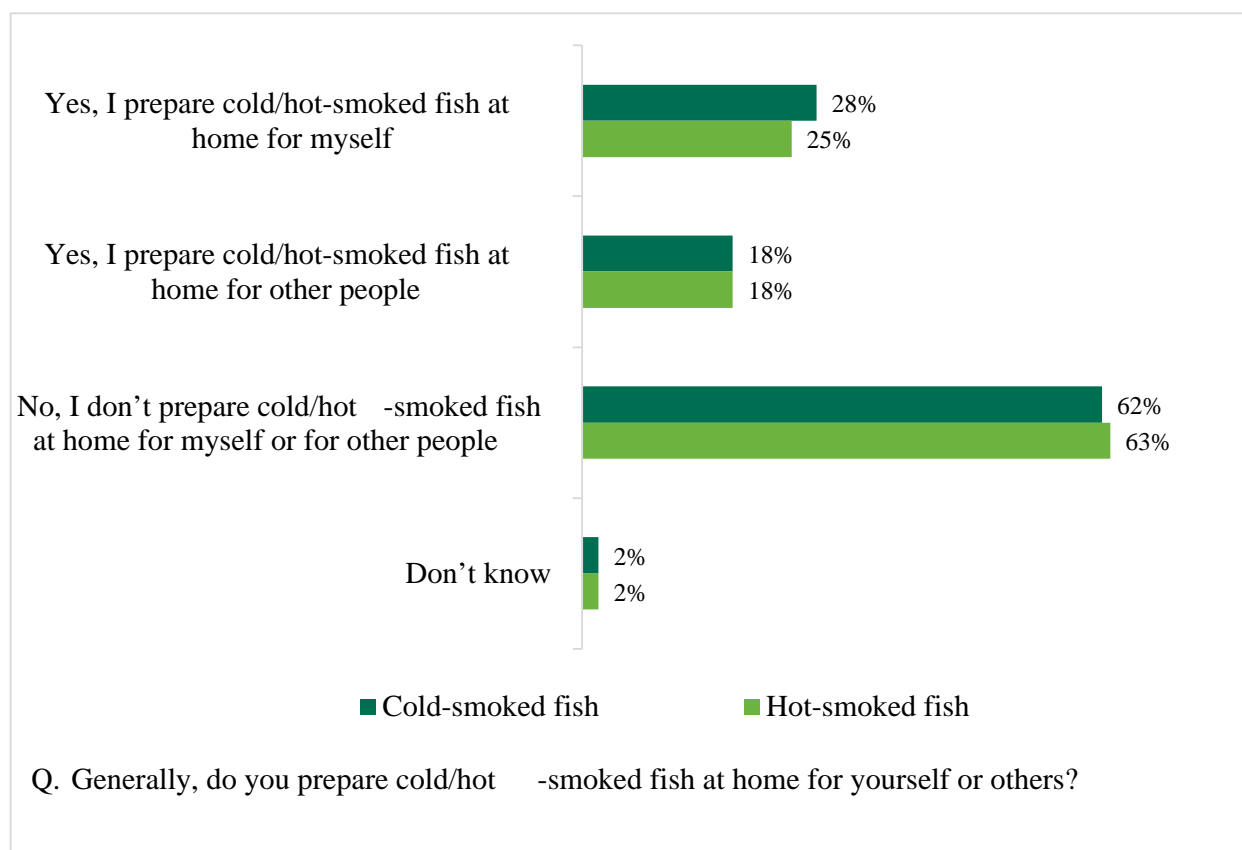
## Consumption of RTE smoked fish

### How are RTE hot-smoked fish and RTE cold-smoked fish currently consumed?

Most consumers say that they do not generally prepare cold-smoked (62%) or hot-smoked fish (63%) at home. Around a quarter prepare either cold-smoked fish (25%) or hot-smoked fish (28%) for themselves at home, and one in five prepare cold- and hot-smoked fish at home for other people (both 18%). This is shown in Figure 4.

**Figure 4: Preparation of smoked fish at home**

Base: All Adults aged 16-75 in UK (2,390 who consented to the collection of their personal health-related data).



People with a weakened immune system are more likely than the overall sample to prepare hot-smoked fish at home for themselves or for others (44% vs 35% of consumers overall). Those who cook for a vulnerable person to *Listeria* infection are also more likely to prepare both cold- and hot-smoked fish for others (28% and 27% respectively vs 18% of consumers overall for both).

People in Scotland are more likely to prepare both types of smoked fish at home, in keeping with their greater familiarity with these products. As such, those in Scotland are also more likely to say that they prepare cold-smoked fish at home for other people (23% vs 17% for the rest of the UK), and this is similar when it comes to preparing hot-smoked fish at home for themselves (34% vs 24% for the rest of the UK).

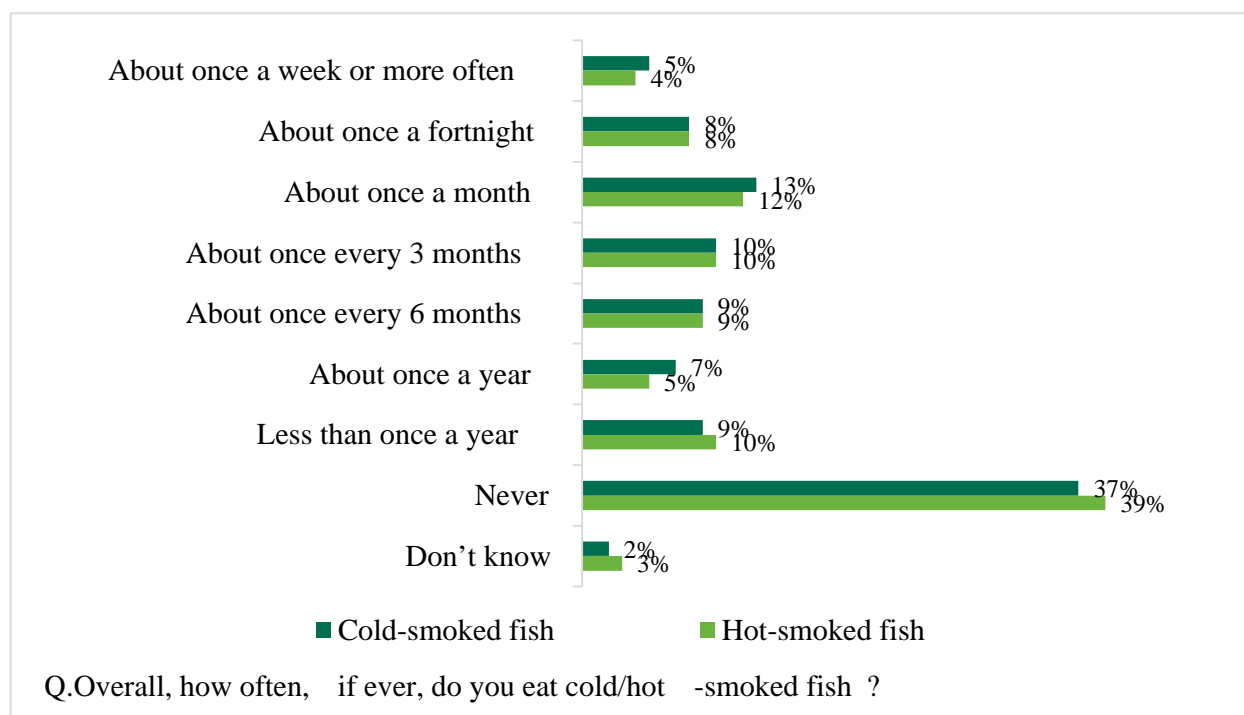
Reported consumption of both types of smoked fish products is similar. Around half of consumers eat cold-smoked fish (51%) and hot-smoked fish (48%) at least once a year, either at home, with friends and family, eating out or buying food to take away. Figure 5 shows reported consumption frequency of both cold-smoked and hot-smoked fish. In line with other findings, among vulnerable consumers, people aged 65-75 are the least likely to consume hot-smoked fish at least once a year (45%).

Consumption of smoked fish is also higher in Scotland compared to the rest of the UK. Most consumers in Scotland say that they consume both cold-smoked fish (59% vs 51% in the rest of the UK) and hot-smoked fish (60% vs 47% in the rest of the UK) at least once a year.

No significant differences were identified regarding consumption frequency among those who cook for a vulnerable person to *Listeria* infection.

### Figure 5: Consumption of smoked fish

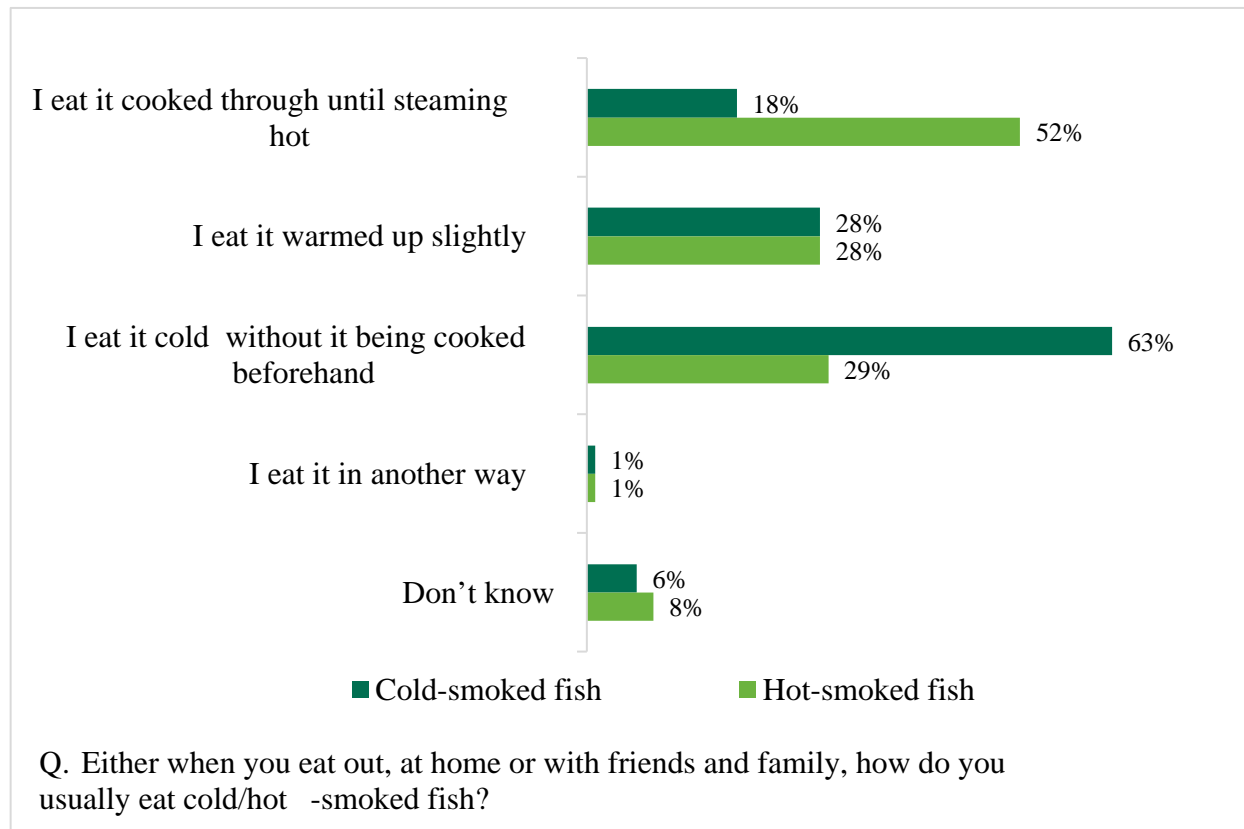
Base: All Adults aged 16 to 75 in UK (2,390 consented to the collection of their personal health related data)



While overall consumption patterns are similar, there are differences in the ways consumers report eating cold-smoked and hot-smoked fish. Cold-smoked fish is usually eaten cold by consumers, without being cooked through beforehand. Hot-smoked fish is usually eaten cooked through until steaming hot (see Figure 6).

**Figure 6: Way of eating smoked fish**

Base: All who eat cold-smoked fish (n=1,570) hot-smoked fish (n=1,504) at least once a year



When it comes to consuming cold-smoked fish, findings are generally consistent across the UK nations. However, Scottish consumers are more likely to report eating hot-smoked fish cold compared to consumers in the rest of the UK (38% vs 28%- see Table 9). There is a similar pattern among those who cook for vulnerable consumers, with most (68%) saying that they eat cold-smoked fish cold, and half (50%) eat hot-smoked fish cooked through until steaming hot.

Among vulnerable consumers, those with a weakened immune system are more likely to report consuming cold-smoked fish either cooked through until steaming hot (26% vs 18% overall) or warmed up slightly (37% vs 28% overall). Conversely, those aged 65-75 are more likely to consume cold-smoked fish cold compared to those with a weakened immune system and consumers overall (75% vs 55% of those with a weakened immune system and 63% of consumers overall). This is shown below in Table 10.

**Table 8: Ways of eating cold-smoked fish by nation**

Statement	Total (A)	EWNI (B)	Scotland (C)
I eat it cooked through until steaming hot	18%	18%	20%
I eat it warmed up slightly	28%	28%	29%
I eat it cold	63%	63%	66%
I eat it in another way	1%	1%	1%
Don't know	6%	6%	4%
Base	1570	1161	409

Base: All who eat cold-smoked fish at least once a year (1,570)

**Table 9: Ways of eating hot-smoked fish by nation**

Statement	Total (A)	EWNI (B)	Scotland (C)
I eat it cooked through until steaming hot	52%	52%	52%
I eat it warmed up slightly	28%	28%	35%
I eat it cold	29%	28%	38% B
I eat it in another way	1%	1%	-
Don't know	8%	8%	1%
Base	1504	1109	395

Base: All who eat hot-smoked fish at least once a year (1,504)

**Table 10: Ways of eating cold-smoked fish by vulnerable group**

Statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
I eat it cooked through until steaming hot	18%	11%	26% ABD	20% B
I eat it warmed up slightly	28%	17%	37% ABD	29% B
I eat it cold	63%	75% CD	55%	63% C
I eat it in another way	1%	-	-	-
Don't know	6%	7%	3%	5%
Base	1570	109	220	398

Base: All who eat cold-smoked fish at least once a year (1,570)

**Table 11: Ways of eating hot-smoked fish by vulnerable group**

Statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
I eat it cooked through until steaming hot	52%	55%	55%	54%
I eat it warmed up slightly	28%	17%	32% B	27% B
I eat it cold	29%	32%	31%	31%
I eat it in another way	1%	-	-	-
Don't know	8%	8%	6%	7%
Base	1504	179	225	391

Base: All who eat hot-smoked fish at least once a year (1,504).

## Response to risk communications and advice

### Would consumers be receptive to cooking advice for RTE cold-smoked fish and RTE hot-smoked fish?

The following wording was included in the questionnaire to outline current government advice:

**Listeria is a bacteria which can cause an illness called listeriosis from eating contaminated food.**

**While illness is rare, for people who do become ill, listeriosis mainly causes mild symptoms such as fever, vomiting and diarrhoea. However, in pregnant women and their unborn babies, people aged over 65, and people with weakened immune systems, it can cause serious illness and even death.**

**Listeria is widespread in the environment and can contaminate a wide range of food. It is most commonly found in chilled RTE foods that do not require further cooking or re-heating, such as RTE smoked fish. However, Listeria can be destroyed by thorough cooking.**

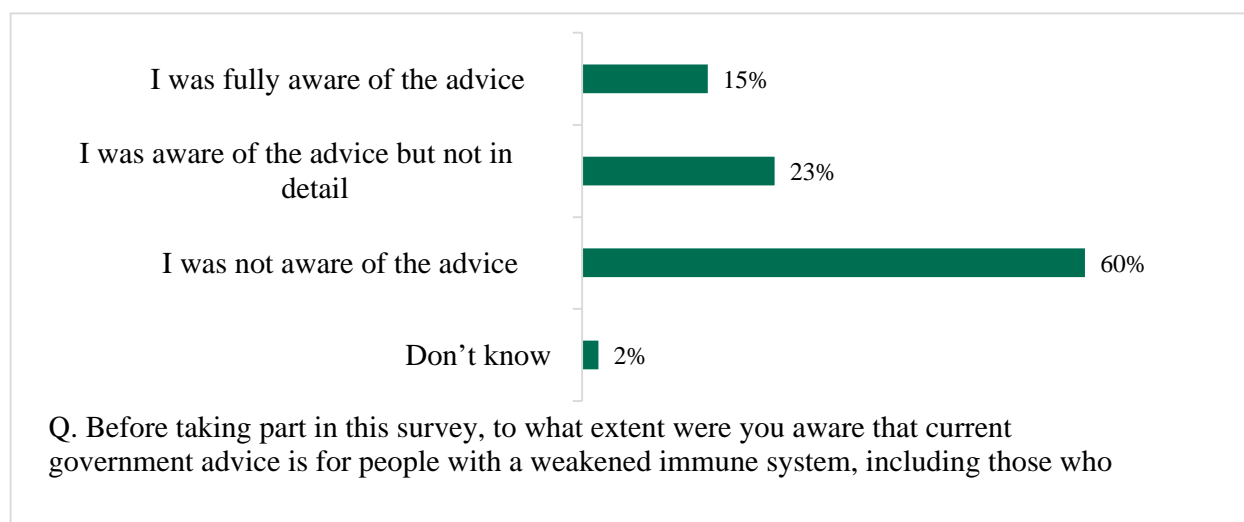
**Current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook RTE smoked fish before eating it to avoid listeriosis.**

As seen in Figure 7, awareness of the current government advice is low, with a minority of consumers being fully aware (15%) and most not aware (60%). Levels of awareness are consistent across the UK, with similar proportions reporting that they are not aware of the current government advice in Scotland (59%) and in the rest of the UK (60%).

When comparing across vulnerable consumers, older consumers aged 65-75 report the lowest level of awareness of government advice. This group is more likely than those with a weakened immune system to say that they were not aware of the advice (66% vs 57% of people with a weakened immune system). No significant differences were identified among those who reported cooking for a vulnerable consumer when compared with the overall sample.

#### Figure 7: Awareness of government advice for vulnerable consumers

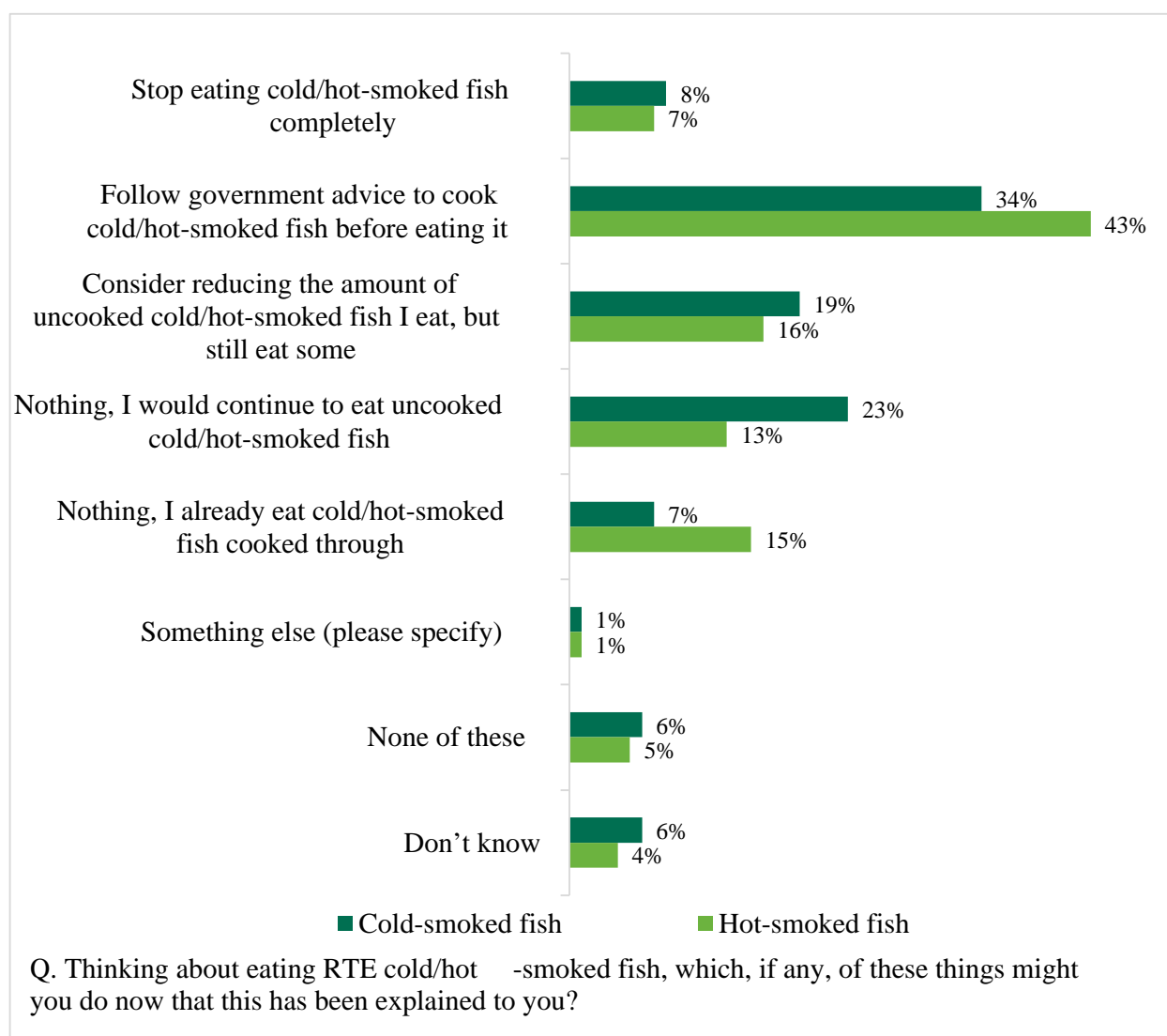
Base: All Adults aged 16-75 in UK (2,390 who consented to the collection of their personal health-related data).



Views are divided among vulnerable consumers who currently eat cold- and hot-smoked fish about whether they would follow government advice to thoroughly cook smoked fish before eating it. Overall, more say they would follow the advice for hot-smoked fish, reflecting consumer preferences for how to eat each type of product highlighted earlier (see Figure 8).

### Figure 8: Likelihood to follow government advice

Base: All in vulnerable group who eat cold-smoked fish (398) or hot-smoked fish (391)



People with a weakened immune system who eat cold-smoked fish are more likely to say that they would either follow current government advice (40% vs 34% of vulnerable consumers who eat it overall) or consider reducing the amount of uncooked cold fish they eat (27% vs. 19%, see Table 12).

Similarly, people with a weakened immune system are also more likely to consider reducing the amount of uncooked hot-smoked fish they eat (22% vs 16% of vulnerable consumers who eat it overall). Vulnerable consumers aged 65-75 who eat smoked fish are more likely to say they would not follow government advice than vulnerable consumers who eat smoked fish overall. A third of this older group say that they would continue to eat uncooked cold-smoked fish (33% vs 23% for vulnerable consumers who eat this overall- see Table 12).

Notably, when it comes to hot-smoked fish, consumers aged 65-75 are more likely to say that they already eat it cooked through, therefore they won't change their behaviour as a result of being exposed to the advice (24% vs 15% for vulnerable consumers who eat it overall). This can be seen in Table 13 below.

There are no significant differences between UK nations or among people who cook for a vulnerable consumer to Listeria infection when it comes to the likelihood to follow government advice.

**Table 12: Likelihood to follow government advice for cold-smoked fish by vulnerable group**

Government advice statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
Stop eating cold-smoked fish completely	8%	7%	9%	8%
Follow government advice to cook cold-smoked fish before eating it	34%	26%	40% B	34% B
Consider reducing the amount of uncooked cold-smoked fish I eat, but still eat some	19%	11%	27% BD	19% B
Nothing, I would continue to eat uncooked cold-smoked fish	23%	33% CD	15%	23% C
Nothing, I already eat cold-smoked fish cooked through	7%	8%	6%	7%
Something else (please specify)	1%	-	1%	1%
None of these	6%	7%	3%	6%
Don't know	6%	8%	5%	6%
Base	398	192	220	398

Base: All in vulnerable group who eat cold-smoked fish (398).

**Table 13: Likelihood to follow government advice for hot-smoked fish by vulnerable group**

Government advice statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
Stop eating hot-smoked fish completely	7%	5%	9%	7%
Follow government advice to cook hot-smoked fish before eating it	43%	39%	47%	43%
Consider reducing the amount of uncooked hot-smoked fish I eat, but still eat some	16%	8%	22% BD	16% B
Nothing, I would continue to eat uncooked hot-smoked fish	13%	16%	9%	13%

Government advice statement	Total (A)	65 and overs (B)	Weakened immunity (C)	Any vulnerable group (D)
Nothing, I already eat hot-smoked fish cooked through	15%	24% CD	9%	15% C
Something else (please specify)	1%	-	1%	1%
None of these	5%	6%	4%	5%
Don't know	4%	5%	4%	4%
Base	391	179	225	391

Base: All in vulnerable group who eat hot-smoked fish (391).

## Reasons for not following government advice

For cold-smoked fish, the most common reasons given by vulnerable consumers who say they would not follow the advice are:

- they have always eaten cold-smoked fish without cooking it and haven't had any problems (48%)
- they prefer cold-smoked fish uncooked (28%)
- they think it's already cooked through the smoking process (25%); and
- they don't think they are at risk by eating cold-smoked fish without cooking (23%).

For hot-smoked fish, the most common reasons among vulnerable consumers who say that they would not follow the advice are:

- they have always eaten hot-smoked fish without cooking it and haven't had any problems (36%)
- they think it's already cooked through the smoking process (28%) and
- they don't think they're at risk by eating hot-smoked fish without cooking (27%).

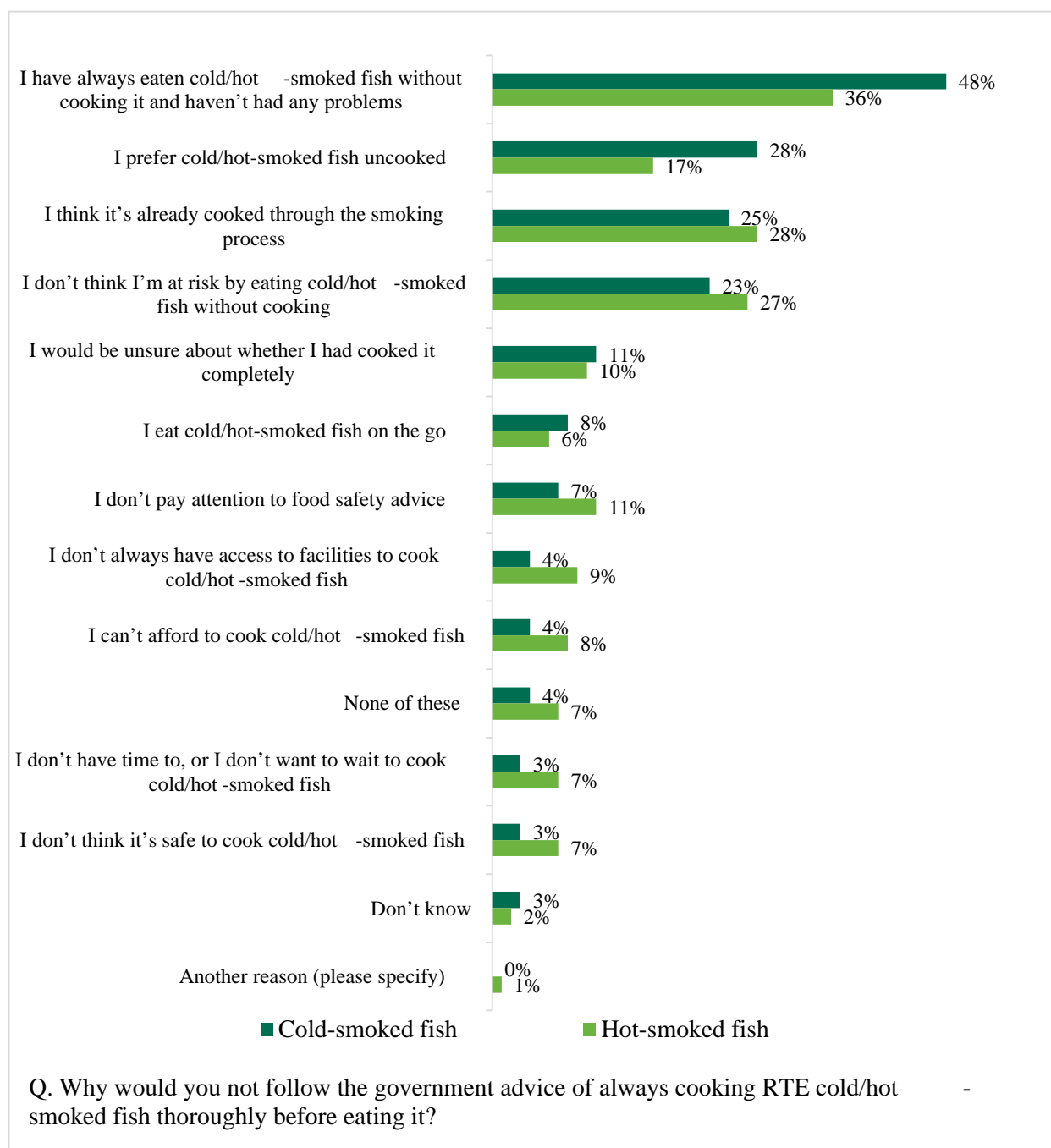
A smaller proportion of those who would not follow the advice prefer hot-smoked fish uncooked (17%) compared with those prefer cold-smoked fish uncooked (28%).

Given the small sample bases of vulnerable consumers across nations, determining statistically significant differences across these groups was not possible;. Therefore, significant differences are not reported in this section.

### Figure 9: Reasons for not following government advice

Base: All in vulnerable groups who eat cold-smoked fish (186) or hot-smoked fish (122) and will continue to eat it uncooked.





## Knowledge of risk for vulnerable consumers and likelihood to follow government advice

Previous knowledge of government advice appears to make some difference to the likelihood to follow the advice when it comes to consuming cold-smoked fish. Among those vulnerable consumers who eat cold-smoked fish and were previously fully aware of the government advice, more than four in ten say they would follow it (44%), while among those who were aware but not in detail, 35% say they would follow the advice. On the other hand, among those vulnerable consumers who eat cold-smoked fish that were not previously aware of the government advice, fewer say they would follow it (30%).

The pattern is not the same for hot-smoked fish. Among vulnerable consumers who eat hot-smoked fish and were previously fully aware of the government advice, 42% say they would follow it, while among those who were partially aware 39% say they would follow the advice.

Conversely, among vulnerable consumers who eat hot-smoked fish but who were not previously aware of the government advice, 47% say they would follow it.

It is important to note that consumption preferences, and other determinants of behaviour, could also influence people's receptiveness to adopting the advice. As previously highlighted in the report, there is a general preference for consuming cold-smoked fish uncooked or cold and hot-smoked fish cooked through until steaming hot. Previous knowledge of government advice will not be the only factor influencing people's openness to the advice.



## Survey on knowledge and behaviours towards smoked fish: Appendix 1 Online survey

### Base Ask All

#### QHEALTHCONSENT

The next questions will be about your health. A "Prefer not to answer" option will be available for you to select if this is the case.

Just to re-iterate, this survey is for research purposes only. Participation is completely voluntary, you may withdraw your consent at any time and if you do not want to answer a question, you do not need to. Your survey answers will be combined with the answers from all other participants and used for market research reporting, and your personal data will be held for no longer than 12 months after the end of the study.

Do you accept the collection of personal health-related data?

SINGLE

1. Yes
2. No [SKIP TO NEXT SECTION]

### BASE: ASK ALL

#### HEALTH CONDITIONS

Q1. Some people have a weakened immune system, which means they may have a reduced ability to fight infections and other diseases. This can be due to a particular health condition or because someone is on medication or having a treatment that weakens their immune system. For example, diabetes, cancer, chronic liver or kidney disease, HIV infection and other conditions can weaken someone's immune system – although this is not always the case. Similarly, medications like oral steroids or chemotherapy can weaken someone's immune system, as can organ transplants or an alcohol dependency.

As far as you know, do you, or someone you care for, have a weakened immune system?

**MULTICODE**

1. Yes, I have a weakened immune system
2. Yes, someone I care for has a weakened immune system
3. No, neither I nor someone under my care has a weakened immune system [EXCLUSIVE]
4. Prefer not to say [EXCLUSIVE]
5. Don't know / Can't say [EXCLUSIVE]

**BASE: ASK ALL**

QS. What sex were you assigned at birth?

**SINGLE CODE**

1. Male
2. Female
3. Prefer not to say
4. Don't know

**BASE: ASK ALL THOSE WHO WERE ASSIGNED AS FEMALE AT BIRTH**

FILTER: ASK IF QS =2

Q2. Are you currently pregnant?

**SINGLE CODE**

1. Yes
2. No
3. Prefer not to say
4. Don't know

**BASE: ASK ALL**

Q3. Do you regularly cook or prepare food for someone...

**PROGRESSIVE GRID, SINGLE CODE PER ROW****ROWS: RANDOMISE**

1. ...with a weakened immune system?
2. ...who is pregnant?
3. ...aged over 65?

**COLUMNS:**

1. Yes
2. No
3. Don't know

**BASE: ASK ALL**

Q4. Have you heard of the following?

**PROGRESSIVE GRID, SINGLE CODE PER ROW,****ROWS: RANDOMISE**

1. Cold-smoked fish (on packaging, this is normally labelled as 'smoked' fish).
2. Hot-smoked fish (on packaging, this is normally labelled as 'hot-smoked' fish).

**COLUMNS: FORWARD/REVERSE**

1. Yes, I've heard of this, and I know what it is
2. Yes, I've heard of this, but I don't know what it is
3. No, I've never heard of this
4. Don't know [ANCHOR]

**ROTATE ORDER OF HOT AND COLD Q5/Q6****Q5 SHOW SCREEN****SHOW ALL**

'Show image of Cold smoked salmon'

'Cold-smoked' fish is normally labelled as 'smoked' fish on packaging. It has been cured (for example, in salt) and then smoked at a low temperature, but it is not cooked through. RTE cold-smoked fish typically come in thin slices, and it can be eaten hot or cold. Examples include smoked trout slices and smoked salmon slices.

**BASE: ASK ALL WHO HAVE HEARD OF COLD-SMOKED FISH**

**FILTER: ASK IF 0 CODE 1 = 1-2**

Q5. Is this what you thought cold-smoked fish was?

**SINGLE CODE**

1. Yes
2. No

**Q6 SHOW SCREEN**

**SHOW ALL**

'Show image of hot-smoked fish.'

'Hot-smoked' fish has been smoked at a high heat until cooked through. It is usually sold as whole fish or fillets and comes apart in flakes, like regular cooked fish, and it can be eaten hot or cold. Examples include RTE hot-smoked salmon and hot-smoked mackerel.

**BASE: ASK ALL WHO HAVE HEARD OF HOT-SMOKED FISH**

**FILTER: ASK IF 0 CODE 2 = 1-2**

Q6. Is this what you thought hot-smoked fish was?

**SINGLE CODE**

1. Yes
2. No

**BASE: ASK ALL**

Q7. Before taking part in this survey, did you know that 'cold-smoked' fish and 'hot-smoked' fish were two different types of products?

**SINGLE CODE**

1. Yes
2. No
3. Don't know

**ROTATE ORDER OF Q8 & Q9 TO MATCH ORDERING OF Q5/Q6**

**BASE: ASK ALL**

Q8. Generally, do you prepare cold-smoked fish at home for yourself or others?

INCLUDE INFORMATION BUTTON ['Cold-smoked' fish is normally labelled as 'smoked' fish on packaging. It has been cured (for example, in salt) and then smoked at a low temperature, but it is not cooked through. RTE cold-smoked fish typically come in thin slices, and it can be eaten hot or cold. Examples include smoked trout slices and smoked salmon slices.],

**MULTICODE**

1. Yes, I prepare cold-smoked fish at home for myself
2. Yes, I prepare cold-smoked fish at home for other people
3. No, I don't prepare cold-smoked fish at home for myself or for other people [EXCLUSIVE]
4. Don't know [EXCLUSIVE]

**BASE: ASK ALL**

Q9. And do you prepare hot-smoked fish at home for yourself or others?

INCLUDE INFORMATION BUTTON ['Hot-smoked' fish has been smoked at a high heat until cooked through. It is usually sold as whole fish or fillets and comes apart in flakes, like regular cooked fish, and it can be eaten hot or cold. Examples include RTE hot-smoked salmon and hot-smoked mackerel.], **MULTICODE**

1. Yes, I prepare hot-smoked fish at home for myself
2. Yes, I prepare hot-smoked fish at home for other people
3. No, I don't prepare hot-smoked fish at home for myself or for other people [EXCLUSIVE]
4. Don't know [EXCLUSIVE]

ROTATE ORDER OF Q10 & Q11 TO MATCH ORDERING OF Q5/Q6

**BASE: ASK ALL**

Q10. Now I want you to think about eating at home, eating with friends and family, eating out or buying food to take away. Overall, how often, if ever, do you eat cold-smoked fish?

INCLUDE INFORMATION BUTTON ['Cold-smoked' fish is normally labelled as 'smoked' fish on packaging. It has been cured (for example, in salt) and then smoked at a low temperature, but it is not cooked through. RTE cold-smoked fish typically come in thin slices, and it can be eaten hot or cold. Examples include smoked trout slices and smoked salmon slices.], **SINGLE CODE,**

**FORWARD/REVERSE**

1. About once a week or more often
2. About once a fortnight
3. About once a month
4. About once every 3 months
5. About once every 6 months
6. About once a year
7. Less than once a year
8. Never
9. Don't know [ANCHOR]

**BASE: ASK ALL**

Q11. Again, I want you to think about eating at home, eating with friends and family, eating out or buying food to take away. Overall, how often, if ever, do you eat hot-smoked fish?

INCLUDE INFORMATION BUTTON ['Hot-smoked' fish has been smoked at a high heat until cooked through. It is usually sold as whole fish or fillets and comes apart in flakes, like regular cooked fish, and it can be eaten hot or cold. Examples include RTE hot-smoked salmon and hot-smoked mackerel.], **SINGLE CODE, FORWARD/REVERSE**

1. About once a week or more often
2. About once a fortnight
3. About once a month
4. About once every 3 months
5. About once every 6 months
6. About once a year
7. Less than once a year
8. Never
9. Don't know [ANCHOR]

ROTATE ORDER OF Q12 & Q13 TO MATCH ORDERING OF Q5/Q6

**BASE: ASK ALL WHO EAT COLD-SMOKED FISH AT LEAST ONCE A YEAR**

**FILTER: ASK IF 0 = 1-6**

Q12. Either when you eat out, at home or with friends and family, how do you usually eat cold-smoked fish?

INCLUDE INFO BUTTON ['Cold-smoked' fish is normally labelled as 'smoked' fish on packaging. It has been cured (for example, in salt) and then smoked at a low temperature, but it is not cooked through. RTE cold-smoked fish typically come in thin slices, and it can be eaten hot or cold. Examples include smoked trout slices and smoked salmon slices.], **MULTICODE,**

**FORWARD/REVERSE**

1. I eat it cooked through until steaming hot (for example, in a hot meal, etc.)
2. I eat it warmed up slightly (for example, added to a cooked dish like scrambled eggs, etc.)
3. I eat it cold (for example, in a cold salad or sandwich, etc.)
4. I eat it in another way (please specify) [ANCHOR]
5. Don't know [EXCLUSIVE, ANCHOR]

**BASE: ASK ALL WHO EAT HOT-SMOKED FISH AT LEAST ONCE A YEAR**

FILTER: ASK IF Q11 = 1-6

Q13. And either when you eat out, at home, or with friends and family, how do you usually eat hot-smoked fish?

INCLUDE INFO BUTTON ['Hot-smoked' fish has been smoked at a high heat until cooked through. It is usually sold as whole fish or fillets and comes apart in flakes, like regular cooked fish, and it can be eaten hot or cold. Examples include RTE hot-smoked salmon and hot-smoked mackerel.], **MULTICODE, FORWARD/REVERSE**

1. I eat it cooked through until steaming hot (for example, in a hot meal, etc.)
2. I eat it warmed up slightly (for example, added to a cooked dish like scrambled eggs, etc.)
3. I eat it cold (for example, in a cold salad or sandwich, etc.)
4. I eat it in another way (please specify) [ANCHOR]
5. Don't know [EXCLUSIVE, ANCHOR]

**SHOW SCREEN**

**SHOW ALL**

Listeria is a bacteria which can cause an illness called listeriosis from eating contaminated food.

While illness is rare, for people who do become ill, listeriosis mainly causes mild symptoms such as fever, vomiting and diarrhoea. However, in pregnant women and their unborn babies, people aged over 65, and people with weakened immune systems, it can cause serious illness and even death.

Listeria is widespread in the environment and can contaminate a wide range of food. It is most commonly found in chilled RTE foods that do not require further cooking or re-heating, such as RTE smoked fish. However, Listeria can be destroyed by thorough cooking.

Current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook RTE smoked fish before eating it to avoid listeriosis.

**BASE: ASK ALL**

Q14. Before taking part in this survey, to what extent were you aware that current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook smoked fish before eating it?

**SINGLE CODE, FORWARD/REVERSE**

1. I was fully aware of the advice
2. I was aware of the advice but not in detail
3. I was not aware of the advice
4. Don't know [ANCHOR]

**ROTATE ORDER OF Q15 & Q16 TO MATCH ORDERING OF Q5/Q6**

**BASE: ALL IN A LISTED GROUP WHO EAT COLD SMOKED FISH**

ASK IF:

Q10 = 1-7 AND Q1=1

OR

Q10 = 1-7 AND Q2=1

OR

Q10 = 1-7 AND RESPAGE=65-75

Q15. When it comes to eating RTE cold-smoked fish, which, if any, of these things might you do now that you have been shown this advice?

**INCLUDE INFO BUTTON** [Listeria is a bacteria which can cause an illness called listeriosis from eating contaminated food.

While illness is rare, for people who do become ill, listeriosis mainly causes mild symptoms such as fever, vomiting and diarrhoea. However, in pregnant women and their unborn babies, people aged over 65, and people with weakened immune systems, it can cause serious illness and even death.

Listeria is widespread in the environment and can contaminate a wide range of food. It is most commonly found in chilled RTE foods that do not require further cooking or re-heating, such as RTE smoked fish. However, Listeria can be destroyed by thorough cooking.

Current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook RTE smoked fish before eating it to avoid listeriosis.], **MULTICODE, RANDOMISE 1-3**

1. Stop eating cold-smoked fish completely [EXCLUSIVE]
2. Follow government advice to cook cold-smoked fish before eating it
3. Consider reducing the amount of uncooked cold-smoked fish I eat, but still eat some
4. Nothing, I would continue to eat uncooked cold-smoked fish [EXCLUSIVE]
5. Nothing, I already eat cold-smoked fish cooked through [EXCLUSIVE]
6. Something else (please specify) [EXCLUSIVE]
7. Not applicable - I have not eaten cold-smoked fish since my pregnancy started **SHOW IF CODE 1 IS NOT SELECTED AT Q1 AND Q2=1** (for example, IF Q2=1 AND Q1?1)
8. None of these [EXCLUSIVE]

**BASE: ALL IN A LISTED GROUP WHO EAT HOT SMOKED FISH**

ASK IF:

Q11 = 1-7 AND Q1=1

OR

Q11 = 1-7 AND Q2=1

OR

Q11 = 1-7 AND RESPAGE=65-75

Q16. And thinking about eating RTE hot-smoked fish, which, if any, of these things might you do now that you have been shown this advice?

**INCLUDE INFORMATION BUTTON** [Listeria is a bacteria which can cause an illness called listeriosis from eating contaminated food.

While illness is rare, for people who do become ill, listeriosis mainly causes mild symptoms such as fever, vomiting and diarrhoea. However, in pregnant women and their unborn babies, people aged over 65, and people with weakened immune systems, it can cause serious illness and even death.

Listeria is widespread in the environment and can contaminate a wide range of food. It is most commonly found in chilled RTE foods that do not require further cooking or re-heating, such as RTE smoked fish. However, Listeria can be destroyed by thorough cooking.

Current government advice is for people with a weakened immune system, including those who are pregnant or aged over 65, to thoroughly cook RTE smoked fish before eating it to avoid listeriosis.], **MULTICODE, RANDOMISE 1-3**

1. Stop eating hot-smoked fish completely [EXCLUSIVE]
2. Follow government advice to cook hot-smoked fish before eating it
3. Consider reducing the amount of uncooked hot-smoked fish I eat, but still eat some

4. Nothing, I would continue to eat uncooked hot-smoked fish [EXCLUSIVE]
5. Nothing, I already eat hot-smoked fish cooked through [EXCLUSIVE]
6. Something else (please specify) [EXCLUSIVE]
7. Not applicable - I have not eaten cold-smoked fish since my pregnancy started SHOW IF CODE 1 IS NOT SELECTED AT Q1 AND Q2=1 (for example, IF Q2=1 AND Q1?1)
8. None of these [EXCLUSIVE]

**ROTATE ORDER OF Q17 & Q18 TO MATCH ORDERING OF Q5/Q6**

**BASE: ASK ALL WHO ARE NOT CONSIDERING FOLLOWING GOVERNMENT ADVICE FOR COLD-SMOKED FISH**

FILTER: ASK IF Q15=3/4

Q17. Why would you not follow the government advice of always cooking RTE cold-smoked fish thoroughly before eating it? Please select all that apply.

**MULTICODE, RANDOMISE**

1. I don't pay attention to food safety advice
2. I would be unsure about whether I had cooked it completely
3. I think it's already cooked through the smoking process
4. I prefer cold-smoked fish uncooked
5. I don't think I'm at risk by eating cold-smoked fish without cooking
6. I have always eaten cold-smoked fish without cooking it and haven't had any problems
7. I don't have time to, or I don't want to wait to cook cold-smoked fish
8. I eat cold-smoked fish on the go
9. I don't always have access to facilities to cook cold-smoked fish
10. I can't afford to cook cold-smoked fish
11. I don't think it's safe to cook cold-smoked fish
12. For religious and/or cultural reasons (please specify) [OPEN TEXT BOX]
13. Another reason (please specify) [ANCHOR, OPEN TEXT BOX]
14. None of these [ANCHOR, EXCLUSIVE]

**BASE: ASK ALL WHO ARE NOT CONSIDERING FOLLOWING GOVERNMENT ADVICE FOR HOT-SMOKED FISH**

FILTER: ASK IF Q16=3/4

Q18. Why would you not follow the government advice of always cooking RTE hot-smoked fish thoroughly before eating it? Please select all that apply.

**MULTICODE, RANDOMISE**

1. I don't pay attention to food safety advice
2. I would be unsure about whether I had cooked it completely
3. I think it's already cooked through the smoking process
4. I prefer hot-smoked fish uncooked
5. I don't think I'm at risk by eating hot-smoked fish without cooking
6. I have always eaten hot-smoked fish without cooking it and haven't had any problems
7. I don't have time to, or I don't want to wait to cook hot-smoked fish
8. I eat hot-smoked fish on the go
9. I don't always have access to facilities to cook hot-smoked fish
10. I can't afford to cook hot-smoked fish
11. I don't think it's safe to cook hot-smoked fish
12. For religious and/or cultural reasons (please specify) [OPEN TEXT BOX]
13. Another reason (please specify) [ANCHOR, OPEN TEXT BOX]
14. None of these [ANCHOR, EXCLUSIVE]

**BASE: ASK ALL**

Q19. Before taking part in this survey, did you know that certain groups of people are at higher risk of food poisoning caused by the bacteria Listeria when eating RTE smoked fish?

This includes people with a weakened immune system, people who are pregnant, and those who



are aged over 65.

**SINGLE CODE**

1. Yes
2. No
3. Don't know