

RESEARCH PROJECTS

Surveillance Sampling Programme (2023-24)

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FSA Research and Evidence

This is the fourth national surveillance sampling of retail food products carried out by the Official Feed and Food Laboratories (OLs) in England and Wales to help identify emerging food safety risks and increase the Food Standards Agency's (FSA's) intelligence on the food system.

A total of 31 commodities were identified as key areas of interest and were divided into three categories. The basket of foods included 15 commodities deemed to be frequently consumed and targeted for surveillance due to known potential safety and authenticity risks. The Surveillance category included 12 commodities for which surveillance is deemed useful to inform the FSA's knowledge of emerging risks; and the Science and Research category included four commodities that the FSA needed more data to inform science and policy.

The results from the basket of foods contribute to the FSA and Food Standards Scotland (FSS) Annual Food Standards Report.

1. Executive summary

This is the fourth national surveillance sampling of retail food products carried out by the Official Feed and Food Laboratories (OLs) in England and Wales to help identify emerging food safety risks and increase the Food Standards Agency's (FSA's) intelligence on the food system.

A total of 31 commodities were identified as key areas of interest and were divided into three categories. The basket of foods included 15 commodities deemed to be frequently consumed and targeted for surveillance due to known potential safety and authenticity risks. The Surveillance category included 12 commodities for which surveillance is deemed useful to inform the FSA's knowledge of emerging risks; and the Science and Research category included four commodities that the FSA needed more data to inform science and policy.

The results from the basket of foods contribute to the FSA and Food Standards Scotland (FSS) Annual Food Standards Report (*Inaugural Report on UK Food Standards Cautions of Challenges Ahead*, 2022).

Food samples were purchased across England, Wales and Northern Ireland from large Food Business Operators (FBOs) such as national supermarkets and smaller FBOs such as independent retailers. A small proportion of the samples were purchased via internet sites.

In total, 1025 foods were sampled and analysed by OLs. The Public Analysts reviewed the analytical results and reported the samples against the appropriate legislation where this was available. Where regulatory divergence is present for the devolved administrations, sample compliance was assessed against the legal requirements of the country in which the product was being sold. The Public Analysts indicated whether, in their professional opinion, the sample was satisfactory with regards to the tests carried out or if any non-compliances had been identified.

Foods can be non-compliant to regulatory requirements for a variety of reasons, many of which do not pose concern for human health. Samples were reported as non-compliant in the following circumstances:

- detection of undeclared allergens
- adulteration or substitution of products such as olive and coconut oils, meat, coffee, cheese, pasta and herbs
- composition of food tested not accurately presented on the food label
- presence of contaminants, both physical (such as foreign material) or chemical (such as mycotoxins, heavy metals, melamine, and methanol above permitted levels)
- food labels not complying with The Food Information Regulations 2014 (*The Food Information Regulations 2014, 2014; The Food Information Regulations (Northern Ireland) 2014, 2014; The Food Information (Wales) Regulations 2014, 2014*) or industry guidance

The FSA were informed immediately of any significant safety hazards, such as the presence of undeclared allergens, and reports for all non-compliant samples were provided to the FSA for follow up action to be taken.

The Public Analysts reported 87% of the basket of food and surveillance samples, tested for compliance, as satisfactory. The samples analysed for science and research purposes did not all have regulatory standards for compliance assessment. The Public Analysts highlighted any noteworthy results however these have not been included in the compliance figures given.

The compliance rate for the basket of foods was 89% and for the surveillance samples 86%. It should be noted that the sampling was targeted, with a focus on foods that intelligence showed were likely to be of higher risk, and as such the compliance rates should not be viewed as being reflective of actual non-compliance levels in the UK market.

Samples purchased from large FBOs in this survey had a compliance rate of 90%. Foods from small FBOs were 86% compliant meaning that one in seven were reported as unsatisfactory. Only a small number of samples were purchased online from both large and small FBOs and had a compliance rate of 94%.

Undeclared allergens were detected in less than 2% of the 180 foods tested for the presence of allergens. In all instances where an undeclared allergen was found, this was due to the presence of milk protein (casein) being detected, at levels between 0.2 and 0.4 mg/kg.

Authenticity testing was carried out on 390 samples including meat and meat products, herbs and spices, coffee, pasta, cheese, coconut oil and olive oil. Over 97% were reported as authentic and three were reported as inconclusive.

Compositional analysis was carried out on 470 samples and 9% were reported as unsatisfactory in this respect by the Public Analysts. Composition checks on a total of 250 meat and meat products including pork sausages, ready meals (chicken, beef and lamb), tinned meat, beef burgers and raw frozen chicken showed 13% did not comply with requirements. Low meat content and for raw frozen chicken, undeclared / incorrectly declared added water, were the most common reasons for non-compliance. Lower levels of alcohol than declared on the label were found in 9% of the premixed cans of spirits /cocktails and 10 of olive oils tested did not meet appropriate compositional characteristics.

There was only one unsatisfactory report out of the 90 samples tested for contaminants compliance. This was a physical contaminant of a small hard chalky pebble found in an oregano sample. However, two commodities in the science and research category were noted as having a number of noteworthy results when analysing for chemical contaminants. Soya pieces were tested for the mycotoxin ochratoxin A and raised levels were detected in 13 of the 30 samples. Acrylamide was detected in 27% of the potato snacks at levels above the benchmark of 750 µg/kg. Currently, there is no benchmark level set for vegetable-based crisps, but none were highlighted as containing noteworthy levels.

The Public Analysts reviewed 710 food labels for irregularities with regards to the analysis that was undertaken. 11% were deemed to have unsatisfactory labelling.

This year's survey showed that greater than 87% of the targeted sampling programme met the legal requirements for the parameters checked. Whilst safety concerns were low there were a number of composition non-compliances which means that consumers could be misled about the foods they are buying. Three of the commodities in the science and research category had noteworthy results which provide useful information for risk assessments and policy decisions.

Ongoing market surveillance is essential to ensure food is safe and is what it says it is. The continued collaborative working between the Public Analyst OLs and the FSA is laying excellent foundations for the Food Law Code of Practice for Food Standards (*Food and Feed Codes of Practice*, 2024) which is heavily focussed on delivery of food standards work via an intelligence led approach.

2. Introduction

2.1. Project Aim

To carry out food surveillance sampling and analysis of specific food types across England, Wales and Northern Ireland to help identify emerging food safety risks and increase the Food Standards Agency's intelligence on the food system.

2.2. Background

Targeted retail surveillance food sampling contributes to the FSA's aims through identifying and evaluating emerging risks and monitoring that food is what it says it is. The results assist in narrowing down areas of risk to food from the wide range of intelligence received and contribute to the work to monitor food standards in the United Kingdom post EU exit and during the cost of living crisis. This project builds upon the work carried out in the 2020/21 food sampling during Covid-19 programme (*Retail Surveillance Sampling Programme during Covid-19 Pandemic*, 2023) and the subsequent 2021/22, and 2022/23 retail surveillance sampling surveys (*Surveillance Sampling Programme 2021/22*, 2023; *Surveillance Sampling Programme 2022/23*, 2024).

The surveillance sampling programme was developed to purchase food samples from retailers in England, Wales and Northern Ireland and delivered in partnership by the three Local Authority OLs and the two private Official Feed and Food Laboratories in England and Wales.

2.3. Official Feed and Food Laboratories (OLs)

In the UK, official feed and food laboratories are Public and Agricultural Analysts and Food Examiners (microbiology laboratories) that undertake work for local authorities for enforcement purposes. This project was carried out by the five designated Public Analyst laboratories in England and Wales:

- Hampshire Scientific Service
- Kent Scientific Services
- Lancashire County Scientific Services
- Minton Treharne and Davies Ltd
- Public Analyst Scientific Services

All the OLs employ suitably qualified staff including Public Analysts, Agricultural Analysts and Food Examiners for enforcement purposes and are accredited to ISO17025 by The United Kingdom Accreditation Service (UKAS).

3. Project Outline

3.1. Purpose and Scope

Based on FSA and OL intelligence 31 food commodities were identified as key areas of interest. Sampling and analysis plans were created for each commodity and approved by the FSA prior to the commencement of the work. The results are intended to provide intelligence with regards to issues of interest and are a snapshot of the foods on the market at the time of sampling.

The food commodities were split into the three categories defined below.

3.1.1. Basket of foods

The basket of foods included 15 commonly consumed commodities, identified via economics data, which were tested for compliance to relevant regulations. In some instances, the commodities were targeted for surveillance due to known potential safety and authenticity risks.

Following a review of the basket of food results in the previous survey twelve of the fifteen commodities were included again in this year's project. Three commodities (Basmati rice, milk, and minced meat) were replaced in the basket for this year with pasta, breakfast cereals and chicken ready

meals to ensure a good range of commonly consumed foods are sampled on a regular basis. The same principle was applied to the vegan products where the focus moved from desserts to biscuits and cereal bars.

The results of basket of foods samples contribute to the FSA/FSS Annual Food Standards Report (*Inaugural Report on UK Food Standards Cautions of Challenges Ahead*, 2022)

3.1.2. Surveillance

This category included 12 commodities which were tested for compliance to relevant regulations, and which surveillance was deemed useful to inform the FSA's knowledge of risk, based on intelligence and information on the global and UK food market.

3.1.3. Science and Research

The science and research category included four commodities for which data collected from analysis would be used to inform science and policy. There were not legal limits to compare the results from for all the tests conducted. In these cases, a satisfactory or unsatisfactory outcome was not assigned, and any significant results were highlighted as noteworthy.

3.2. Commodities and Analysis

Full details of the commodities and the analysis undertaken are included in Table 2 in Appendix 1.

4. Method

4.1. Sampling

The project aimed to provide representative surveillance across England, Wales and Northern Ireland.

Informal samples were purchased by OL staff at full cost from businesses selling to the public either in person or online and the FBOs were not notified that the products were being bought for testing purposes. Each sampler was provided with a shopping list and an area of the country in which to shop generated from the sampling plan which ensured that samples were taken from a range of brands and businesses.

Samplers sought to procure a range of budget/own brand products from larger retailers alongside those marketed as premium products. A maximum of two samples from the list of commodities were purchased from the same FBO within the same local authority area. This was to ensure good geographical spread of sampling and a good spread of sampling across businesses.

Only packaged products were purchased. Any commodities that were going to be analysed for the presence of undeclared allergens were required to not have precautionary allergen labelling (PAL) for the allergen being tested for.

4.1.1. Geographic Distribution

Each OL identified areas of England, Wales and Northern Ireland where their staff could purchase samples. When samples were purchased, they were identified by postcode on a sampling map which samplers referred to throughout the sampling phase to ensure maximum regional coverage and geographical spread. Areas of the country not covered by OL staff shopping in store were targeted for online purchases where possible.

4.1.2. Retail Outlet Types

Samples were taken from a range of different size FBOs and online retailers. The project aim was to obtain approximately 40% of samples from large FBOs defined as mainstream supermarkets or large food distributors such as cash and carries and 60% from smaller FBOs, such as independent retailers, independent corner shops, farm shops and speciality shops.

Of these samples, the aim was to collect approximately 90% via physical purchases from retailers and 10% via online ordering.

The actual proportion of where samples were taken from is given in section 6.1 and more detail is shown in Figures [2](#), [3](#) and [4](#).

4.1.3. Sample Size

Sampling information was provided for each food commodity to ensure that a sufficient amount of sample was obtained and that samples were of a suitable standard for testing. The sample size required for each commodity type was determined at the outset and generally only single food items were purchased. Where sample size or the nature of the hazard being tested required multiple samples to be purchased, a combined sample using samples of the batch code was tested. In particular at least four samples of the same batch were purchased for oregano and turmeric to allow for analysis for mycotoxins which are not evenly distributed. It should be noted that samples were informal and taken for surveillance purposes as opposed to enforcement, so the number of samples taken was not always consistent with that prescribed in the relevant legislation, as this number of samples is challenging to take in a retail environment.

4.1.4. Duplication of Samples

In order to minimise duplication major supermarkets and large FBOs were allocated to each of the OLs for sampling purposes. A similar approach was taken with the main brands for each sample type.

4.1.5. Sample Integrity

The sampling instructions included the appropriate conditions for transportation and storage to maintain the sample integrity and minimise any impact on the quality of the final analytical result.

The sampling instructions provided for samplers including commodity details, sample size and transport requirements are included in Appendix 2 and Table 6.

4.2. Analysis

Each OL was allocated samples for testing according to their analytical capabilities and the most appropriate method for each commodity / hazard was used. Where possible the laboratories used methods accredited to ISO17025 and all the samples in this project were analysed using procedures suitable for official control samples. The integrity of the samples was maintained at all times with comprehensive records to demonstrate chain of custody.

The raw data for all samples including any replicate analysis, positive and negative controls and quality control materials were recorded and all records will be kept for a period of at least 12 months.

4.3. Reporting Results

The Public Analysts reviewed the analytical results and reported the samples against the appropriate legislation. Where regulatory divergence is present for the devolved administrations, sample compliance was assessed against the legal requirements of the country in which the product was being sold. The Public Analysts indicated whether the sample was, in their professional opinion, satisfactory with regards to the tests carried out, or if any non-compliances had been identified. Non-compliances were classified by the following hazard areas:

- Allergens
- Authenticity
- Composition
- Contaminants (physical or chemical)
- Labelling

Samples analysed for science and research purposes did not all have regulatory standards for compliance assessment. Where results were considered noteworthy, they were reported as such.

The FSA were provided with a sample report including photographs of packaging and interpretation of the analytical results, with regards to the relevant legislation, for all unsatisfactory samples. The complete project data for all samples was also provided.

In the event that a laboratory identified something that it considered to be a significant hazard to human health the FSA were informed immediately.

5. Results

A total of 1,025 samples were purchased across England, Wales and Northern Ireland of which 905 were analysed by OLs for compliance against legislation. A further 120, which did not all have regulatory standards for compliance assessment, were tested for science and research purposes.

Table 1. Numbers of Samples Purchased and Analysed

Summary	Number of samples
Total number of Products Sampled:	1025
Basket of Food Samples:	480
Surveillance Samples:	425
Science and Research Samples:	120



Figure 1. Sample Distribution Map with Outcomes

[Figure 1](#) Sample Distribution Map with Outcomes shows the sampling distribution of all samples across England, Wales and Northern Ireland and indicates the samples that were compliant and non-compliant. There is a relatively even spread of samples with no hot spots for non-compliant results.

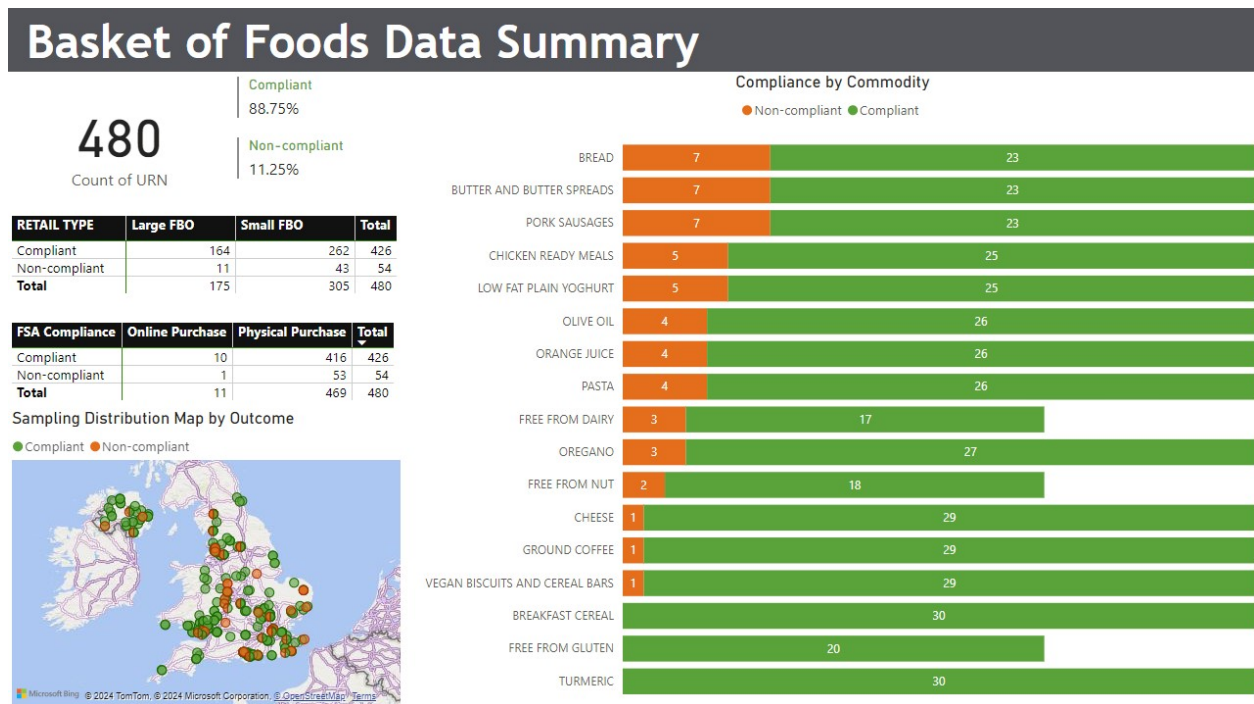


Figure 2. Basket of Foods Data Summary

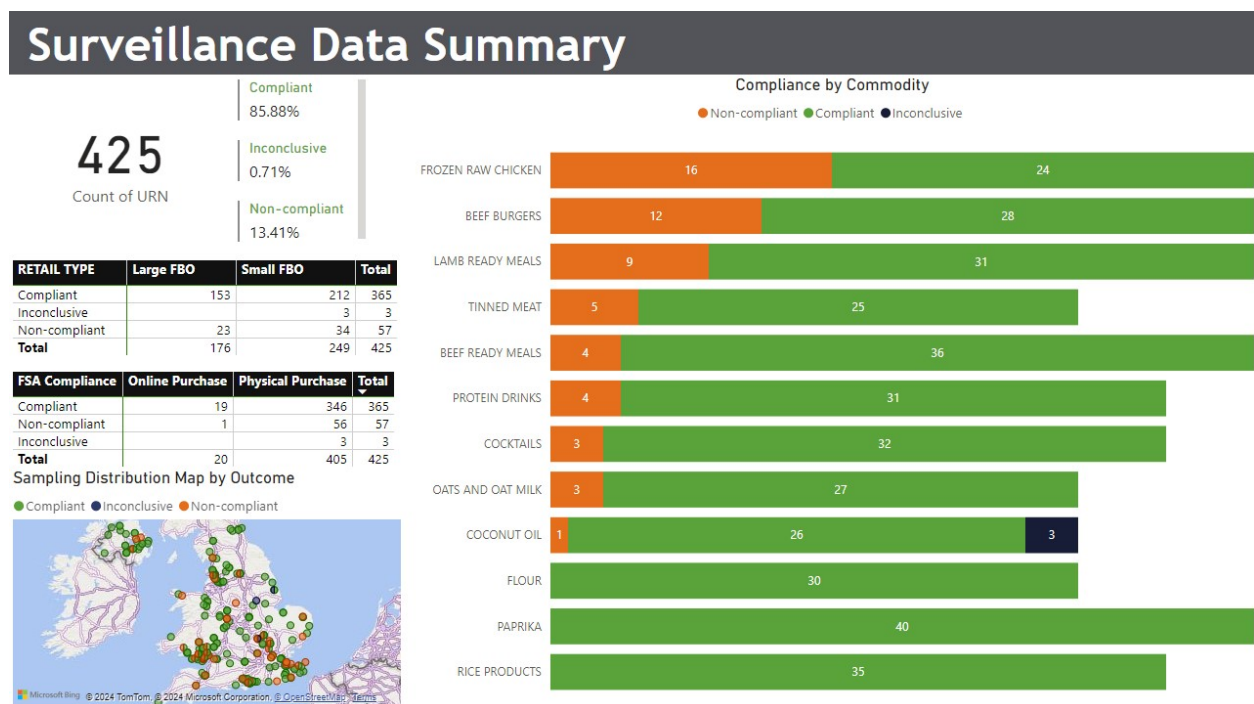


Figure 3. Surveillance Data Summary

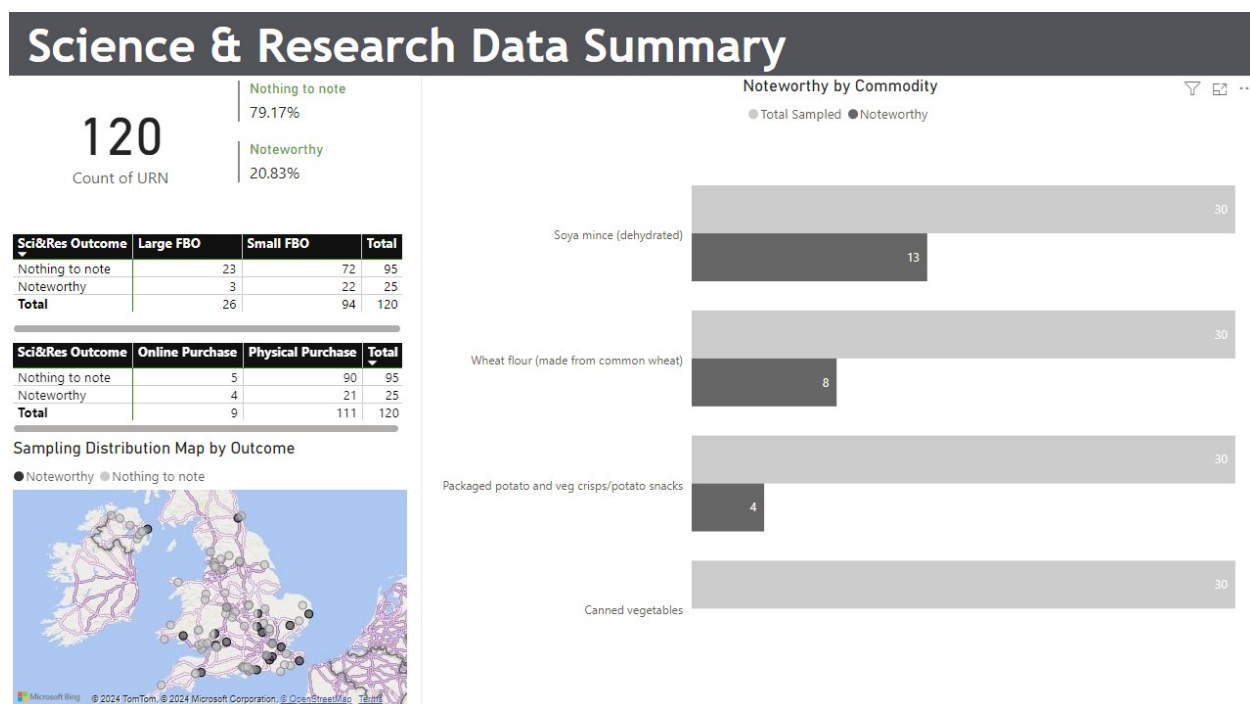


Figure 4. Science and Research Data Summary

[Figure 2](#) Summary of Basket of Foods Data shows that 480 basket of food samples were taken of which 426 samples were compliant and 54 were non-compliant.

The graphic includes:

- A distribution map showing the basket sampling coverage across England, Wales and Northern Ireland. There is a fairly even coverage across England, Wales and Northern Ireland, with some denser areas of sampling in the areas closest to the laboratories.
- A stacked bar chart of the different basket commodities showing the number of compliant and non-compliant samples for each type. For example, Bread is shown to have 23 compliant and 7 non-compliant outcomes.
- A table listing the retail outlets and the total number of basket samples taken from each, broken down as the number of compliant and non-compliant results. For example, of the 480 samples 305 were taken from small food business organisations, of which 262 were compliant, and 175 were taken from large food business organisations, of which 164 were compliant.
- A second table shows the split of online and physical purchases. Of the total 480 basket samples, 11 were purchased online of which 10 were compliant, and 416 of the 469 physical purchases were also compliant.

[Figure 3](#) Summary of Surveillance Commodities Data shows that 425 surveillance samples were taken. Of those tested for compliance 365 samples were compliant, 57 were non-compliant, and 3 samples returned inconclusive results. The graphic includes:

- A distribution map showing the surveillance sampling coverage across England, Wales and Northern Ireland. There is a fairly even coverage across England, Wales and Northern Ireland. No hot spots were identified.
- A stacked bar chart of the different surveillance commodities showing the number of compliant, non-compliant and inconclusive samples for each type. For example, Frozen Raw Chicken is shown to have 24 compliant and 16 non-compliant outcomes, and beef burgers are shown to have 28 compliant and 12 non-compliant outcomes.
- A table listing the retail outlets and the total number of surveillance samples taken from each, broken down as the number of compliant, non-compliant and inconclusive results. For example, of the total 425 samples 249 were taken from small food business organisations, of which 212 were compliant.
- A second table shows the split of online and physical purchases. For example, of the total 425 surveillance samples, 20 were purchased online, and of the 365 compliant samples 346 were physically purchased.

[Figure 4](#) Science and Research Data Summary shows that 120 samples were taken. Of those tested 95 samples returned nothing to note, and 25 were noteworthy. The graphic includes:

- A distribution map showing the surveillance sampling coverage across England, Wales and Northern Ireland. There is a fairly even coverage across England, Wales and Northern Ireland. No hot spots were identified.
- A bar chart of the different science and research commodities showing the number of samples with nothing to note and those that were noteworthy. For example, 30 Soya Mince (dehydrated) samples were taken and 13 returned noteworthy results.
- A table listing the retail outlets and the total number of science and research samples taken from each, broken down as the number of noteworthy or nothing to note results. For example, of the total 120 samples, 94 were taken from small food business organisations, of which 72 had nothing to note.

- A second table shows the split of online and physical purchases. For example, of the total 120 Science and Research samples 9 were purchased online, and of the 95 samples with nothing to note, 90 were physically purchased.

6. Discussion

6.1. Project Overview

The overall compliance rate for samples analysed within the basket of food and surveillance sections of this project was 87%, with 791 of the 905 samples tested for compliance purposes reported as compliant with regards to the analysis undertaken. Three samples were reported as inconclusive.

A further 120 samples, which did not all have regulatory standards for compliance assessment, were analysed for science and research purposes. The Public Analysts highlighted any noteworthy results, but these have not been included in the compliance figures.

Samples purchased from large FBOs including supermarkets and wholesalers showed the highest level of compliance in this survey with 90% compliance. For smaller retailers 86% of samples tested for compliance were reported as satisfactory by the Public Analysts. Online purchases were mainly made from small FBOs and had a 94% compliance rate.

The samples were purchased from a variety of retail outlets with a view to represent a range of shopping habits. Just over a third of all project samples (37%) were purchased from large FBOs with the remaining 67% bought from small FBOs. The majority of samples were physical purchases made by samplers visiting retail outlets, however a small number of samples (40) were purchased via online retail sites.

The maps show there was a wide geographical spread of samples ([Figures 2](#), [Figure 3](#) and [Figure 4](#)) and no patterns of non-compliant hotspots were identified ([Figure 1](#)).

In total 111 samples were reported as non-compliant and the reasons for the non-compliance were assigned into categories below. Samples were assigned a maximum of 3 categories based on the most significant non-compliances found.

- Allergens
- Authenticity
- Composition
- Contaminants (physical or chemical)

- Labelling

In general, single food items (samples) were purchased for analysis as described in section 4.1.3. This should be taken into consideration when interpreting the results. Results for composition for example may not be representative of the whole batch of a product and non-compliances may require further assessment.

6.2. Basket of Foods

A total of 480 products from 15 frequently consumed commodity types were tested for compliance to appropriate legislation and the compliance rates ranged from 77% to 100%. The following sections provide more information on each commodity and have been ordered from lowest to highest compliance rate.

6.2.1. Bread products

Packaged bread products were analysed for the presence of undeclared sesame and milk allergens and compliance with labelling regulations. They had a compliance rate of 77% which was the lowest of the basket of foods commodities, along with butter and butter spreads, and sausages. None of the samples contained undeclared sesame protein. However, two of the 30 samples (7%), a loaf of bread and a packet of tortilla wraps, had undeclared milk protein (casein) present at levels between 0.2 and 0.4 mg/kg.

Six of the products, including the loaf of bread with undeclared levels of milk protein, were not labelled in accordance with The Food Information Regulations 2014 (*The Food Information Regulations 2014, 2014; The Food Information Regulations (Northern Ireland) 2014, 2014; The Food Information (Wales) Regulations 2014, 2014*) implementing Retained Regulation (EU) No. 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland), 2011; Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011, 2011*). The labelling issues included nutritional information not being in the correct format, compound ingredients not sufficiently descriptive to allow the consumer to know the full nature of the ingredient, food additives incorrectly identified, and missing required information such as durability date and storage conditions.

6.2.2. Butter and Butter Spreads

Milk fat content was tested in 30 dairy based butter or buttery spreads to check the declared butter content was accurate. All of the analytical results were satisfactory. However, seven samples were deemed unsatisfactory for labelling giving a 77% compliance rate for this commodity type.

Four of the products did not correctly highlight milk as an allergen in the ingredients list. Guidance published in March 2013 by the British Retail Consortium and the Food and Drink Federation (*BRC Guidance on Allergen Labelling and the Requirements in Regulation 1169/2011*, 2013) states that 'milk' should be declared despite consumers' understanding that products such as 'butter' or 'cream' contain milk. Two of the products included milk in the ingredients list but this was not highlighted. The other two products incorrectly highlighted cream or butter as an allergen. Two of these products also had other labelling issues with regards to how the nutrition information was presented including incorrect rounding, units and quantities not in the correct format and mandatory nutrients given as a % of daily intake instead of reference intake.

A salted butter spread sample did not possess a sales description of "Blended spread X %" as specified in Annex II of Retained Regulation (EU) No 1308/2013 (*Regulation (EU) no 1308/2013 of the European Parliament and of the Council of 17 December 2013*, 2013).

6.2.3. Pork Sausages

Fresh and frozen pork sausages were analysed for meat content to check compliance with Quantitative Ingredient Declaration (QUID) (*Commission Notice on the Application of the Principle of Quantitative Ingredients Declaration (QUID)*, 2017) and meat species to check for any undeclared species presence. They had a compliance rate of 77% for the 30 samples tested.

All of the samples were reported as satisfactory for the meat speciation tests. However, two of the samples were reported as unsatisfactory with regards to composition as the apparent meat content was below the declared value on the label.

Labelling irregularities were identified in five samples. These included inaccuracies in nutrient value labelling, pork content not being declared in the manner required by QUID regulations (*Commission Notice on the Application of the Principle of Quantitative Ingredients Declaration (QUID)*, 2017) and the name of the product not being suitably precise.

The name used for a food should be sufficiently precise to inform the purchaser of the true nature of the food and enable it to be distinguished from similar products. A packet of sausages with the name 'Pork sausages in sheep casing' also included beef in the list of ingredients which was deemed to be misleading to the consumer. Another sample labelled as 'Best Pork Sausage' did not include an explanation as to why the term 'Best' was used as recommend by the FSA guidance document *Criteria for the Use of the terms fresh, pure, natural etc in food labelling* (*Criteria for the*

Use of the Terms Fresh, Pure, Natural Etc. in Food Labelling, 2008) in order to help consumers understand why a claim of high level of overall quality is justified and why the particular term is used.

Other labelling issues identified included allergens not being highlighted in bold, compound ingredients not including lists of statutory nutrients, missing prescribed additive category name, missing name and address of the importer and nutritional information not in the required format.

6.2.4. Chicken Ready Meals

A total of 30 fresh, frozen and tinned chicken ready meals containing pieces of chicken were checked for meat species by DNA and for Quantitative Ingredient Declaration (QUID) by physical separation and weighing. All the samples were satisfactory with regards to meat speciation with only chicken DNA detected. However, three samples were non-compliant due to compositional issues and two samples were non-compliant due to labelling. The overall compliance rate for chicken ready meals was 83%.

Low meat content compared to the declared QUID was found for three of the chicken meals. There is no legal lower tolerance set for QUID declarations however a lower tolerance of 10% is widely accepted as reasonable and is used by the Public Analysts.

Labelling issues included allergens not highlighted in the prescribed manner, the quantity of chicken not declared, the list of ingredients not in descending order of weight and nutritional information not in the prescribed format.

6.2.5. Low Fat Plain Yogurts

Low fat plain yogurts were tested for their content of fat and milk protein and benzoic acid and sorbic acid. The compliance rate was 83%. Of the 30 samples tested one was non-compliant for composition and four for labelling.

The Nutrition and Health Claims Regulations 2007 (*The Nutrition and Health Claims (England) Regulations 2007*, 2007; *The Nutrition and Health Claims Regulations (Northern Ireland) 2007*, 2007; *The Nutrition and Health Claims (Wales) Regulations 2007*, 2007) require a claim that a food is fat-free may only be made where the product contains no more than 0.5g of fat per 100 g, or 100 ml, and a low fat claim can only be made on a product containing no more than 3 g of fat / 100g (for a solid) or no more than 1.5 g fat / 100ml (for a liquid). All the yogurts tested complied with the nutritional claims made.

Sorbic acid was detected at a level of 72 mg/kg in a live low fat natural yogurt. The list of ingredients did not include sorbic acid and under the 'dairy products' food category in Retained Regulation (EC) No 1333/2008 (*Regulation (EC) no 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives*, 2008), enforced by the Food Additives, Flavourings, Enzymes and Extraction Solvents (England) Regulations 2013 (*The food additives, flavourings, enzymes and extraction solvents (England) regulations 2013*, 2013), the addition/use of sorbic acid is not permitted in natural yogurt products whether heat treated or non-heat treated after fermentation.

In three of the four labelling irregularities the nutritional information for fat or protein was not sufficiently accurate with regards to the tolerances of nutrient values declared on the labels (Guidance Document for Competent Authorities with Regard to the Setting of Tolerances for Nutrient Values Declared on a Label, 2012). In the fourth sample the format of the nutritional information for fat was incorrect.

6.2.6. Olive Oil

The authenticity and composition of 30 olive oil samples was tested for compliance with the Commission Delegated Regulation (EU) 2022/2104 (*Commission delegated regulation (EU) 2022/2104*, 2022) which defines the characteristics to be fulfilled by oil described as olive oil. The overall compliance was 87%. One olive oil was reported as non-compliant for authenticity and three samples did not meet the compositional requirements. One of the samples which did not have the required composition also had labelling irregularities.

An extra virgin olive oil did not meet the requirements to be named an extra virgin olive oil as the specific extinction at 232nm was greater than 2.5, as is required by the regulations.

Compositional tests were reported as unsatisfactory for three of the olive oil samples analysed. In two instances the peroxide value of the oil was above the maximum permitted quality characteristic required by the regulations indicating that the oil quality had deteriorated. Another extra virgin olive oil had a fat profile that differed from a typical olive oil being lower in saturated fat / mono-unsaturated fat and higher in polyunsaturated fat. The nutrition information on the label of this sample was also not sufficiently accurate or in the required format.

6.2.7. Orange Juice

A total of 30 orange juice samples were tested for the presence of unauthorised colours, composition (Brix), Sulphur Dioxide and labelling. The compliance rate was 87% with one sample deemed to be

unsatisfactory with regards to composition and three had unsatisfactory labelling. No unauthorised colours or sulphur dioxide were found in any of the orange juices.

The Fruit Juices and Fruit Nectars (England) Regulations 2013 (*The fruit juices and fruit nectars (England) regulations 2013*, 2013) require that orange juice made from concentrate must have a Brix level of 11.2 or more, determined as soluble solids by refractometer at 20°C. The Brix level of one of the samples was less than required by the Regulations.

The three juices reported as unsatisfactory for labelling all had sugar concentrations lower than the declared value and outside the guidance tolerance of $\pm 20\%$ (Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011), article 7 as enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) and the Guidance Document for competent Authorities with regards to the setting of tolerances for nutrient values as declared on a label 2012 (Guidance Document for Competent Authorities with Regard to the Setting of Tolerances for Nutrient Values Declared on a Label, 2012). The nutrition information relating to sugars therefore was not sufficiently accurate.

6.2.8. Pasta

Pasta claiming to be made from Durum wheat was tested for authenticity. The compliance rate for the 30 samples was 87% with three samples reported as unsatisfactory for authenticity and one for labelling.

Durum wheat speciation was analysed using R-Biopharm DUROTEST S ELISA Membrane Kit which uses a monoclonal antibody specific for the protein friabilin which is only present in non-durum wheats. The presence of common wheat at a level greater than 3% was found in three pasta samples and these were reported as unsatisfactory for authenticity.

The pasta sample which was reported as unsatisfactory for labelling used the allergy advice / information statement 'For allergens, see ingredients in bold'. Guidance published by the British Retail Consortium and the Food and Drink Federation (*BRC Guidance on Allergen Labelling and the Requirements in Regulation 1169/2011*, 2013) encourages food operators to use an allergy statement such as 'For allergens, including cereals containing gluten, see ingredients in bold'. Wheat was not highlighted in bold in the ingredients list.

6.2.9. Oregano

Oregano samples were examined by microscopy for authenticity and analysed for the presence of aflatoxins, ochratoxin A and the heavy metals arsenic, cadmium, lead and mercury. Aflatoxins and ochratoxin A are mycotoxins, a group of naturally occurring chemicals produced by certain moulds. They can cause a variety of adverse health effects.

The compliance rate for the 30 samples was 90% with one sample unsatisfactory for contaminants, one for authenticity and one for labelling. None of the oregano samples were unsatisfactory with regards to the levels of aflatoxins, ochratoxin A or heavy metals detected.

Physical examination of one oregano sample found a physical contaminant of a hard chalky pebble, measuring approximately 4 x 2 millimetres, rendering the sample not of the substance demanded within the meaning section 14 of the Food Safety Act 1990 (*Food Safety Act 1990, 1990*).

Microscopic examination of a sample described as oregano indicated that the sample was a mixture of oregano and olive leaf. This sample was also not of the substance demanded within the meaning of section 14 of the Food Safety Act 1990 (*Food Safety Act 1990, 1990*) and was reported as non-compliant for authenticity.

The oregano sample reported as unsatisfactory for labelling was imported from Romania and none of the mandatory food information was present in the English language as required for a pre-packed product sold in the United Kingdom. (Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011), enforced by the Food Information Regulations 2014) (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014).

6.2.10. Free From Products

A total of 60 'free from' products were tested for the presence of the relevant allergen – peanut, milk or gluten. For each 'free from' claim, 20 samples were analysed and there was an overall 92% compliance rate with only one sample having undeclared milk detected. Five samples (including the one found to contain milk) had labelling issues identified. All the gluten free products were reported as satisfactory with regards to the analysis undertaken.

In a sample of 'free from' dairy red lentil and poppy seed crackers a level of 0.2 mg/kg of the milk protein casein was detected.

Three 'free from' dairy products and a further two 'free from' peanut products had labelling issues. The red lentil and poppy seed crackers included a claim of "No added sugar". Retained Regulation (EC) No 1924/2006 on nutrition and health claims made on foods (*Regulation (EC) No 1924/2006*, 2006) states that where a 'no added sugar claim' is made but sugars are naturally present the indication "Contains naturally occurring sugars" must also be present. This required statement was not present.

A 'free from' dairy milk chocolate bar was reported as unsatisfactory due to the name of the food being insufficiently precise to identify the true nature of the food. The Cocoa and Chocolate Products (England) Regulations 2003 (*The Cocoa and Chocolate Products (England) Regulations 2003*, 2003) prescribe that "chocolate" is the product obtained from cocoa products and sugars and that "milk chocolate" is the product obtained from cocoa products, sugars and milk or milk products. There was no milk in the product so the references to milk chocolate on the label could mislead a consumer.

Other labelling issues included ingredients of a compound component not listed, allergenic substances not highlighted in bold, additives not preceded by an appropriate category, incorrect high fibre claim and inappropriate use of '100% natural' declaration.

6.2.11. Cheese

A variety of 30 packaged cheeses were tested for authenticity of the milk product used, fat content and labelling. The compliance rate was 97% with only one sample reported as unsatisfactory for authenticity.

In a sample labelled as goat cheese a low level of ovine (sheep) DNA was detected with the major DNA component being consistent with *Capra Hircus* (goat). The level of sheep DNA was likely to be indicative of contamination as opposed to deliberate inclusion.

6.2.12. Coffee

Ground and instant coffees that declared the bean type Robusta or Arabica were checked for authenticity and 97% of the 30 samples analysed were satisfactory.

The unsatisfactory sample was described as 100% Arabica, whereas the NMR profiling test indicated the product was a mixture of Arabica and Robusta beans.

6.2.13. Vegan Products

A total of 30 vegan biscuits and cereal bars, labelled as vegan and without any PAL (e.g. 'may contain') for milk or egg were tested for the presence of these allergens. There was a 97% compliance rate, with one sample reported unsatisfactory due to labelling.

On a packet of cookies, the word 'ingredients' did not precede the list of ingredients as required by The Food Information Regulations 2014 (*The Food Information Regulations 2014, 2014; The Food Information Regulations (Northern Ireland) 2014, 2014; The Food Information (Wales) Regulations 2014, 2014*).

Milk and egg protein were not detected in any of the samples analysed.

6.2.14. Breakfast Cereal

A variety of packaged breakfast cereals with no dairy ingredients or PAL for milk, were tested for the presence of milk, as well as, melamine and unauthorised colours. All of the 30 samples were reported as satisfactory.

6.2.15. Turmeric

Samples of turmeric were tested for aflatoxins, ochratoxin A and unauthorised colours. All the 30 samples tested were reported as satisfactory giving a compliance rate of 100%.

The unauthorised colour screen included metanil yellow which is a synthetic dye known to be added to spices. Its presence in the turmeric samples could not be assessed as the metanil yellow could not be separated chromatographically from an interfering peak at the same retention time. The OL and the National Reference Laboratory are undertaking further research and development work to identify an appropriate method for this commodity.

6.3. Surveillance Commodities

A total of 425 products from 12 commodity types were sampled for surveillance purposes and were tested for compliance to appropriate legislation. The compliance rates ranged from 60% to 100%. The following sections provide more information on each commodity type and have been ordered from lowest to highest compliance rate.

6.3.1. Frozen Raw Chicken

Frozen raw chicken pieces were analysed for water content to determine if undeclared added water or excess water, to what was declared, was present. This commodity had a compliance rate of 60%. Six samples were

reported as non-compliant for composition and one of these also had unsatisfactory labelling. There were a further ten samples reported with labelling issues.

All samples were kept frozen until the laboratory analysis was undertaken for water content. One sample was found to have a water to protein ratio of 3.49 which was greater than the maximum of 3.4 permitted for skinless chicken fillets laid out in Assimilated Regulation (EC) 543/2008 (*Assimilated Commission Regulation (EC) No 543/2008*, 2008). Added water not declared in the list of ingredients or on the packaging was found in four samples. Another sample that included the statement 'with added water for succulence' was found to have no added water present.

Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011) requires meat products to include an indication of the presence of added water in the name of the food if the added water makes up more than 5% of the weight of the finished product. This is to ensure that consumers are not misled into believing that a meat product is 100% meat when water has been deliberately added. Five of the product names did not include an indication of the presence of added water.

A packet of chicken thighs had a 'high in protein' nutritional claim. Although this met the requirements to make the claim as set out in Regulation (EC) 1924/2006 (*Regulation (EC) No 1924/2006*), Article 7 of Retained Regulation (EU) 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011) states that a product should not suggest that the food possesses special characteristics when all similar foods possess such characteristics, especially if the claim emphasises the presence or absence of certain ingredients and/or nutrients. The claim should have therefore not been made.

Labelling issues that were highlighted included no mention of the product being frozen and no date of freezing as required by Annex VI and Annex III of Retained Regulation 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011). Other missing information included class of poultry meat and the registered number of the slaughterhouse or cutting plant which is required by Article 5 of Regulation 543/2008 (*Assimilated Commission Regulation (EC) No 543/2008*, 2008).

A packet of free range chicken mini fillets and a packet of chicken breast fillets appeared to be fresh, unfrozen products that had then been sold frozen. As a result, the labelling did not state that the products were sold frozen and did not include the correct recommended storage temperature. The dates of freezing were also not displayed. A new date of minimum durability had been added to the mini fillets with an adhesive label, however this did not cover the previous use by date that was provided on the original labelling and was not preceded by the words 'Best Before' as is required by Annex X of Retained Regulation (EU) 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland), 2011; Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011, 2011*). The class of the poultry meat was also missing on both of the samples of the mini fillets and chicken breast fillets.

The labelling on one sample had largely washed away and therefore did not meet the requirements of being indelible as set out in Article 13 of Retained Regulation (EU) 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland), 2011; Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011, 2011*).

Other labelling irregularities included incorrect QUID declaration, incorrect rounding, durability or freezing date in the wrong format, no address of the food business operator, an additive in the ingredients list not preceded by category name and a non-permitted additive (tartaric acid) for this product type in the list of ingredients.

6.3.2. Beef Burgers

A total of 40 beef burgers, 16 fresh and 24 frozen, were tested for undeclared meat species, QUID and associated labelling. 70% of samples were found to be compliant. The fresh burgers had an 88% compliance rate with 14 of the 16 samples reported as satisfactory. The frozen burgers had a 42% compliance rate with ten of the 24 samples reported as unsatisfactory.

One beef burger was reported as non-compliant for authenticity as although the burger was predominantly beef it contained a small amount of sheep. A trace level of goat consistent with cross contamination was also present. This sample was also unsatisfactory for composition and labelling.

In total, nine burgers, of which eight were frozen products, were reported as having unsatisfactory composition. In all instances, this was due to the apparent meat content being less than declared. The ingredients list of two of the burgers included 'beef heart' which is considered offal and a non-meat component that will potentially inflate the reported apparent meat

content. Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011), enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) defines 'meat' as meaning 'Skeletal muscles of mammalian and bird species recognised as fit for human consumption with naturally included or adherent tissue, where the total fat and connective tissue content does not exceed prescribed values and where the meat constitutes an ingredient of another food'. 'Offal' is excluded from this definition. 'Offal' is defined in Retained Regulation (EC) No 853/2004 (*Retained Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004*, 2004) as meaning 'fresh meat other than that of the carcass, including viscera and blood'.

Twelve samples had non-compliant labelling. This included the nine burgers also reported as unsatisfactory for composition. The remaining three products were non-compliant in relation to labelling only.

Four of the burgers were found to have excess fat which was not indicated in the list of ingredients and two products contained excess connective tissue which was also not declared.

The maximum fat limit as laid down in Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011), enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) was exceeded in two samples with the actual level of fat found exceeding the declared amount. In another product there was less fat than declared on the label.

The term 'premium' was present on two of the products. A guidance document 'Criteria for the Use of the terms fresh, pure, natural etc in food labelling' published by the Food Standards Agency (revised July 2008) (*Criteria for the Use of the Terms Fresh, Pure, Natural Etc. in Food Labelling*, 2008) specifies recommended criteria for the use of the terms "Premium"; "Finest"; "Quality"; and "Best". It states that "consumer research indicates that these terms were each seen as ways in which manufacturers differentiate their ranges of products to indicate the one that is 'top of the range'. It would be advantageous if manufacturers and retailers could help consumers to understand why a claim of high level of overall quality is justified and why the particular term is used". There was no explanation

present for the use of the term “Premium” and the high fat and connective tissue levels found in these products indicate that this is likely to be an unsubstantiated claim.

Other labelling irregularities included E numbers in ingredients list not preceded by the appropriate category name, compound ingredients not correctly referenced, nutritional information not in prescribed format, missing protein declaration, missing QUID declaration, allergens not labelled or emphasised as required, incorrect rounding and spelling errors and font not meeting the minimum required size stated in regulations (*BRC Guidance on Allergen Labelling and the Requirements in Regulation 1169/2011*, 2013; *Commission Notice on the Application of the Principle of Quantitative Ingredients Declaration (QUID)*, 2017; *Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011).

6.3.3. Lamb Ready Meals

Lamb ready meals were analysed for meat speciation, QUID and associated labelling. Of the 40 meals tested, 31 were reported as satisfactory giving a 78% compliance rate.

All the DNA speciation tests detected only sheep DNA, and therefore no meat substitution was identified in the meals. However, seven of the samples were found to have low meat content and these were all reported as unsatisfactory for composition. Two of these seven samples had a net weight significantly higher than that declared and so were also reported as unsatisfactory for labelling.

In total, five samples had labelling irregularities including a mutton product using lamb in the list of ingredients, no QUID present and incorrect net weights.

6.3.4. Tinned Meat

A total of 30 tinned meat or long-life meat products were analysed for meat species authenticity, meat content and associated labelling. The compliance rate was 83%.

A sample of chicken luncheon meat was reported as non-compliant for authenticity due to a small amount of beef DNA (<1%) being detected which was not included in the ingredients list. This sample was also reported as unsatisfactory for composition and labelling.

Low meat content was identified in four of the tinned meat samples. A tin of stewed steak had 11% less beef and 22% less protein than declared. The weight of the product stated on the label was 400g however the

actual weight was found to be 319g, and the can appeared to only be three quarters filled. Three luncheon meat samples, one pork and two chicken, contained mechanically recovered meat and did not comply with the Product Containing Meat etc (England) Regulations 2014 (*The Products Containing Meat etc. (England) Regulations 2014*, 2014) which defines meat as “the skeletal muscles of mammalian and bird species recognised as fit for human consumption with naturally included or adherent tissue but does not include mechanically separated meat.”

Non-compliant labelling was reported for three samples. In two instances the name of the food was insufficiently precise to identify the true nature of the food. The reserved description for luncheon meat containing chicken, as specified in the Products Containing Meat etc. in (England) Regulations 2014 (*The Products Containing Meat etc. (England) Regulations 2014*, 2014), requires a minimum of 55 percent chicken meat. The chicken luncheon meat product which was unsatisfactory for authenticity and composition declared “90 percent mechanically separated chicken meat” however as the definition of ‘meat’ as stated in the Regulations does not include mechanically separated meat, this sample was not considered to meet the requirements to use the reserved description ‘Luncheon Meat’. The same regulations also have four required criteria for use of the reserved description corned beef and these were not met by one of the samples. Finally, a pork luncheon meat did not declare the quantity of pork used in the preparation of the sample as required by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014).

6.3.5. Coconut Oil

Edible coconut oils with no other listed ingredients were analysed to establish the fatty acid and sterol profiles to check the authenticity of the products. The compliance rate was 87% with one of the 30 samples tested reported as non-compliant for authenticity. Three were reported as inconclusive.

The fatty acid profile and the sterol profile of each sample was compared to the values given in Codex Alimentarius Standard for Named Vegetable Oils CXS 210-1999 as amended (Codex Alimentarius Standard for Named Vegetable Oils CXS 210-1999, 1999) and the FEDIOL (EU Vegetable Oil and Protein meal Industry Association) document 19SPEC449 of 2019 (*FEDIOL Specifications for Coconut Oil (Crude and Refined)*, 2019) giving specifications for coconut oil (crude and refined) as non-binding recommendations for use in contracts.

One sample showed anomalies when compared to the standard and specification for both fatty acid composition and sterol profile that showed admixture with another oil which was possibly palm oil but would require further analysis to confirm. The food was therefore falsely described, contrary to the requirements of Section 15 of the Food Safety Act 1990 (*Food Safety Act 1990*, 1990) and the name “coconut oil” did not therefore comply with the requirements of the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) and Retained Regulation 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011).

A further three samples showed anomalies, when compared to the standard and specification sterol profile, that indicated possible admixture with another oil. These were reported as inconclusive with a recommendation that confirmatory analysis using an alternative analytical technique would need to be undertaken to determine if the products were authentic.

6.3.6. Protein Drinks

Samples of ready to drink protein drinks and shakes that indicated they were high protein, had a protein claim or protein was given high profile on the label, were tested to check the actual protein content met the declared content or claims. Out of the 35 samples tested one was reported unsatisfactory for both composition and labelling and a further three had non-compliant labelling. The compliance rate for this commodity was 89%.

The Nutrition and Health Claims Regulations 2007 (*The Nutrition and Health Claims (England) Regulations 2007*, 2007; *The Nutrition and Health Claims Regulations (Northern Ireland) 2007*, 2007; *The Nutrition and Health Claims (Wales) Regulations 2007*, 2007) make provision for the execution and enforcement of regulation (EC) No 1924/2006 (*Regulation (EC) No 1924/2006*, 2006). These regulations only permit a “High Protein” claim on a food, and any claim likely to have the same meaning for the consumer, where at least 20 % of the energy value of the food is provided by protein.

A chocolate flavoured milk drink with a “high protein” claim only had 16% of the energy of the food provided by protein and therefore the nutrition claim was not justified. In addition, the milk drink was found to have less protein than declared and was reported as unsatisfactory for composition. This sample and three others were reported as unsatisfactory for labelling due to the nutritional information for protein not being sufficiently

accurate with regards to the tolerances of nutrient values declared on the labels. (Guidance Document for Competent Authorities with Regard to the Setting of Tolerances for Nutrient Values Declared on a Label, 2012).

6.3.7. Beef Ready Meals

A variety of beef ready meals such as stews, casseroles and curries were tested for meat speciation, QUID and associated labelling. The compliance rate for the 40 meals was 90%.

A beef goulash and a Chinese style beef curry were both reported as unsatisfactory for composition due to low meat content.

There were labelling irregularities reported on two roast beef dinners including no QUID declaration and excess fat not declared in the ingredients list.

6.3.8. Free From Gluten Oats and Oat Drink Products

A range of 30 'free from' gluten oats and oat drink products with no PAL for gluten were tested for the presence of gluten. The compliance rate was 90% due to labelling issues identified in three samples.

Gluten is a mixture of prolamin and glutelin proteins present in wheat, rye and barley. Since the 20th of July 2016, Retained Commission Implementing Regulation (EU) No 828/2014 (*Retained Commission Implementing Regulation (EU) No 828/2014*, 2014), executed and enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) permits a 'gluten free' statement where the food as sold to the final consumer contains no more than 20 mg/kg of gluten. All the products were reported as satisfactory with regards to this limit.

The three samples reported as non-compliant for labelling were packs of gluten free oats which did not emphasise oats in the list of ingredients. The products were a single ingredient food and as such did not require an ingredients list. However, a list was present on each and therefore it should comply with the regulations. The Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland)*, 2011; *Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011*, 2011), enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014*, 2014; *The Food Information Regulations (Northern Ireland) 2014*, 2014; *The Food Information (Wales) Regulations 2014*, 2014) states that an ingredient or processing aid listed in Annex II (or derived from a substance or product listed in Annex II) which causes

allergies or intolerances used in the manufacture or preparation of a food and still present in the finished product, even if in an altered form is required to be emphasised. Oats is a regulated Annex II allergenic foods so must still be emphasised even for specially produced gluten free oats.

6.3.9. Cocktails

A variety of pre-mixed cans and bottles of spirits and cocktails were tested for alcohol content, benzoic acid, methanol and colours (including erythrosine for pink coloured drinks). The compliance rate for this commodity was 91% with three of the 35 products reported as unsatisfactory for composition.

All the samples were satisfactory with regards to their benzoic acid, methanol and colour content. Additionally, no labelling issues were highlighted with regards to the analysis undertaken.

There were three unsatisfactory drinks which all had lower amounts of alcohol than declared. The Retained Regulation (EU) No 1169/2011 (*Regulation - 1169/2011 - Food Information to Consumers Regulation. (Applicable for Northern Ireland), 2011; Retained Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011, 2011*), enforced by the Food Information Regulations 2014 (*The Food Information Regulations 2014, 2014; The Food Information Regulations (Northern Ireland) 2014, 2014; The Food Information (Wales) Regulations 2014, 2014*) prescribes permitted tolerances for alcoholic strength. The permitted tolerance for alcohol in a beverage with a declared alcohol content of greater than 1.2 percent, other than those specified, is ± 0.3 percent alcohol by volume. A vodka and fruit juice bottled drink had a 1.5% deficiency in alcohol which was five times the permitted tolerance; a fruit margarita was four times lower than the permitted tolerance and a strawberry daiquiri was lower more than twice the permitted tolerance.

6.3.10. Flour

A total of 30 wheat flours were tested for the presence of mycotoxins including DON, ZON, fumonisins and T2/HT2. A minimum of three retail packets of the same batch code were purchased and combined prior to analysis. The compliance rate was 100% as all the products were reported as satisfactory for the tests undertaken.

6.3.11. Paprika

A red / yellow colour screen which included sudan dyes and metanil yellow was carried out on 40 paprika samples. No unauthorised colours were detected in any of the samples giving this commodity type a compliance rate of 100%.

6.3.12. Rice Products

A variety of 35 rice products including rice cakes, crackers, cereals and puffed rice were tested for total and inorganic arsenic. All the products were reported as satisfactory giving a compliance rate of 100%.

6.4. Samples for science and research purposes

Four commodities were sampled for science and research purposes in order to provide the FSA with information for risk assessments and policy decisions. There were not legal limits to compare the results for all the tests conducted, meaning a satisfactory or unsatisfactory outcome could not be assigned. In these cases, any significant results were highlighted as being noteworthy. Of the 120 samples taken, 21% had noteworthy results which have been identified in the following discussion.

6.4.1. Soya mince

A total of 30 soya mince and chunks samples were tested for the presence of ochratoxin A. The Contaminants in Food Regulations 2013 (*The Contaminants in Food (England) Regulations 2013*, 2013; *The Contaminants in Food Regulations (Northern Ireland) 2013*, 2013; *The Contaminants in Food (Wales) Regulations 2013*, 2013), which provide for the enforcement and execution of assimilated Commission Regulation (EC) No 1881/2006 (*Assimilated Commission Regulation (EC) No 1881/2006*, 2006; *Regulation - 1881/2006 (Applicable for Northern Ireland)*, 2006), set a maximum level for ochratoxin A in food. There is no specific limit provided for soya or soya products, however when compared to other food that follow a similar consumption pattern the level of ochratoxin A detected in 13 samples was deemed excessive which may present a risk to the consumer.

6.4.2. Wheat flour

Wheat flour from the UK was tested for mandatory fortification micronutrient levels (calcium carbonate, iron, thiamine and niacin) as prescribed in The Bread and Flour Regulations 1998 (*The Bread and Flour Regulations 1998*, 1998). In the case of wholemeal flour calcium carbonate is not required to be added and the regulation states the minimum levels of naturally occurring iron, thiamine and niacin required. Plain flours can be fortified to meet the prescribed levels. Seven of the 30 samples tested were highlighted by the Public Analyst as not meeting these requirements. Two of these seven samples also had labelling irregularities along with one other sample.

A low level of niacin was noted in three wholemeal flours and a high level of niacin detected in a strong white flour. Two plain flours had low levels of all the micronutrients tested for and a further plain flour had a high level of calcium carbonate. One plain flour only had a minor labelling issue as the fortification agent calcium should be displayed as calcium carbonate. The same labelling issue was also identified on two of the flours noted for micronutrient levels.

6.4.3. Potato and vegetable crisps

A selection of potato and vegetable crisps and snacks were tested for acrylamide levels. Acrylamide is a chemical substance formed by a reaction between amino acids and sugars, typically in foods with high starch content, when cooked at high temperatures such as in frying, roasting, toasting and baking. Acrylamide is a contaminant as defined in Council Regulation (EEC) No 315/93 (*Assimilated Council Regulation (EEC) No 315/93, 1993; Regulation - 315/93 (Applicable for Northern Ireland), 1993*) and as such risk management measures should be in place to ensure that acrylamide levels in food are consistently as low as reasonably achievable. Assimilated Commission Regulation (EU) No 2017/2158 (*Assimilated Commission Regulation (EU) 2017/2158, 2017; Regulation - 2017/2158 (Applicable for Northern Ireland), 2017*) contains benchmark levels of acrylamide presence in foodstuffs and for potato crisps this is 750 µg/kg. There is currently not a benchmark level for crisps such as those made from vegetables.

Fifteen of the 30 samples were potato-based snacks and four of these were highlighted as noteworthy due to levels of acrylamide found above the benchmark level of 750 µg/kg (*Assimilated Commission Regulation (EU) 2017/2158, 2017; Regulation - 2017/2158 (Applicable for Northern Ireland), 2017*). None of the remaining vegetable-based crisps returned results which were considered noteworthy.

6.4.4. Canned vegetables

Canned vegetables were tested for the heavy metals lead, cadmium, mercury and arsenic plus iron, zinc and inorganic tin. None of the 30 samples tested were highlighted as being noteworthy.

7. Conclusion

The Food Standards Agency works across England, Wales and Northern Ireland to protect public health and consumers wider interest in food and has the mission 'Food you can trust'. The food system is evolving, particularly now that the UK is outside of the EU, and it is essential that consumers have confidence that their food is safe and is what it says it is.

This fourth national surveillance sampling programme determined the extent of compliance of a number of food commodities throughout England, Wales and Northern Ireland. Everyday foods that households buy regularly and largely had potential known safety and authenticity risks were targeted in the basket of food. Of these 89% were found to be compliant with regards to the tests carried out. The surveillance group of samples included commodities for which surveillance is useful to inform the FSA's knowledge of risk based on intelligence and information on the global food market. 86% of these foods were satisfactory for the tests undertaken. The overall compliance rate for samples analysed within the basket of food and surveillance sections of this project is 87%.

Non-compliances were classified into five hazard areas which have been summarised in the following sections.

7.1. Allergens

Up to 2.4 million adults have a food allergy in the UK, and 600,000 people live with Coeliac Disease (*Food Hypersensitivity*, 2024). It is essential for them to be able to rely on food products being correctly labelled so they can effectively manage risk by making safe and informed choices.

In total 180 foods were tested for undeclared allergens including gluten, milk, egg, peanut and sesame. Of the 80 samples tested for milk, three were found to have milk protein present at levels between 0.2 and 0.4 mg/kg that was not declared on the label.

7.2. Authenticity

Food authenticity is about ensuring that food offered for sale is of the nature, substance, and quality expected by the purchaser (Elliott Review into the Integrity and Assurance of Food Supply Networks – Final Report, 2014). Consumers need to have trust in the food they buy and be confident that they can make informed choices based on diet, personal taste or cost. A total of 390 samples were tested for authenticity and only 2.6% were reported as not authentic.

Durum wheat sells at a higher price than other wheats and is widely used for pasta products. The results of three of the 30 pasta samples suggested adulteration with greater than 3% common wheat.

Premium priced oils were tested for authenticity with one out of the 30 olive oils and one of the 30 coconut oils considered not to be authentic.

When examined microscopically, one of the 30 oregano samples was found to contain olive leaves in addition to oregano.

The other non-authentic products included a tinned meat and a beef burger sample each with low levels of a different species of meat detected, a goat's cheese that contained sheep DNA and an Arabica coffee sample that also contained Robusta coffee.

7.3. Composition

As well as being authentic it is important that food matches its description so that the consumer can make informed choices. Composition was reported as unsatisfactory in 9% of the 470 samples tested with regards to meeting compositional requirements.

There were seven categories of meat samples (250 food products) tested for composition including meat content, fat content and undeclared or added water. Of the 250 samples, 13% were reported as unsatisfactory with low meat content being the most common reason. Undeclared / incorrectly declared added water was reported in 15% of the raw frozen chicken samples tested.

Olive oils tested did not meet the appropriate compositional characteristics in 10% of samples.

Lower levels of alcohol than declared on the label were found in 9% of the premixed cans of spirits /cocktails.

Other food types had compositional failures that would mean that the sample was not of a quality that would be expected by the consumer.

7.4. Contaminants

Chemical contaminants are substances such as mycotoxins, heavy metals and acrylamide. They can occur naturally, as a result of one of the stages of food production or through adulteration of a product. Levels of contaminants that may cause a risk to health need to be managed and the dietary exposure of consumers reduced.

Mycotoxins are naturally occurring toxic compounds that are produced by different types of fungi and can enter the food chain because of infection of crops, such as spices. Out of the 90 flour, turmeric and oregano samples tested for mycotoxins none were found to have levels above the regulatory limits. Soya pieces were tested for science and research purposes investigating levels of the mycotoxin, ochratoxin A. This was detected in 13 of the 30 samples at noteworthy levels.

Acrylamide is a chemical contaminant produced during the cooking of certain foods and there is a requirement to keep levels to a minimum. Acrylamide was detected in 27% of the potato snacks at levels above the benchmark of 750 µg/kg (*Assimilated Commission Regulation (EU) 2017/*

2158, 2017; *Regulation - 2017/2158 (Applicable for Northern Ireland)*, 2017). Currently, there is no benchmark level set for vegetable-based crisps, but none were highlighted as containing noteworthy levels.

No heavy metals or melamine were detected in any of the samples tested.

A physical contaminant consisting of a hard chalky pebble was found in one of the oregano samples and this was reported as unsatisfactory.

7.5. Labelling

All prepacked food requires a food label that displays certain mandatory information. All food is subject to general food labelling requirements and any labelling provided must be accurate and not misleading (*Packaging and Labelling*, 2023).

Public Analysts examined the food labels in relation to the analysis that was being undertaken and did not carry out a comprehensive label check on all samples. Labelling irregularities were identified on 11% of the food products tested. A significant number of these related to allergen information not being in line with the BRC Guidance on Allergen Labelling (*BRC Guidance on Allergen Labelling and the Requirements in Regulation 1169/2011*, 2013). Standardisation of allergen labels is important to enable easy and consistent relaying of allergen information to sensitive individuals.

Other unsatisfactory labelling issues mainly related to technical aspects of labelling such as legibility and format.

7.6. Retail Outlet Types

Samples purchased from large FBOs, including supermarkets and wholesalers, showed the highest level of compliance in this survey with 90% compliance.

More than 60% of the samples were purchased from small retail outlets and the compliance rate for these was 86% meaning one in seven were reported as unsatisfactory by Public Analysts.

A small number of online purchases were made, mainly from small FBOs, and the compliance rate was 94%.

7.7. Project Conclusion

This year's survey showed that greater than 87% of the targeted sampling programme met the legal requirements for the parameters checked. Whilst safety concerns were low there were a number of composition non-conformities which mean that consumers could be misled about the foods

they are buying. Three of the commodities in the science and research category had noteworthy results which provide useful information for risk assessments and policy decisions.

This project continues to highlight the importance of undertaking surveillance sampling in order to provide intelligence and evidence of the safety and authenticity of food. Ongoing surveillance of staple food commodities as well as surveillance of products based on intelligence is essential to ensure food is safe and is what it says it is.

The continued collaborative working between the Public Analyst OLs and the FSA is laying excellent foundations for the Food Law Code of Practice for Food Standards (*Food and Feed Codes of Practice*, 2024) which is heavily focussed on delivery of food standards work via an intelligence led approach.

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Supplementary Materials

FS900410 Appendix 1-3

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FS900410 Results Data

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