

Annual Science Update

1 Purpose of the paper

1.1 This paper is for **discussion**, and aims to provide the board with an update on outputs from FSS’s science and evidence programme over the past year and an early indication of our proposed priorities for research in 2024/25.

1.2 The Board is asked to:

- **Note** our progress in delivering FSS’s science and evidence programme during 2023, and our key achievements for the year;
- **Note** the status of our Food and Health Research Programme (FHRP) and **discuss** the balance of activities across each of the FHRP themes in light of FSS’s current strategic priorities;
- **Consider and provide views** on initial proposals for research priorities in 2024/25.

2 Strategic aims

2.1 The science outputs described in this paper underpin all five of FSS’s strategic outcomes for 2021-26 and comprise activities under Goal 3: A research and data science capability which enables us to detect risks, monitor public health trends and consumer behaviours, and translate evidence into action.

3 Background

3.1 This paper provides the second annual review of FSS’s science and evidence programme since the publication of our strategy for 2021-26. At the board meeting held in December 2022, we presented our proposed approach to the use of science and evidence in 2023/24, taking account of the re-prioritisation exercise that was undertaken last year (Figure 1). This paper outlines how we have been aligning our science to support priority programmes of work, and the central role our scientists have continued to play in providing the technical advice and evidence base needed to underpin the delivery of FSS’s corporate objectives.

SURVEILLANCE	ANALYSIS	RESEARCH	ACTION
<ul style="list-style-type: none"> • Horizon Scanning • Food/feed sampling • Dietary monitoring • Food Law compliance • Food crime intelligence • Data Sharing • Audit 	<ul style="list-style-type: none"> • Building data science capability • Enhanced interpretation, visualisation and reporting of FSS datasets • Risk Assessment 	<ul style="list-style-type: none"> • Food and Health Research Programme (FHRP) • New focus on social science • Collaboration and co-funding 	<ul style="list-style-type: none"> • Prioritisation • Resourcing • Targeting policy, guidance, risk management • Evaluation • Identifying evidence gaps

Figure 1. Our approach to science and evidence in the delivery of FSS priorities for 2023-24.

3.2 In addition, the paper includes an overview of the status of our Food and Health Research Programme (FHRP); the framework we developed during 2022 to provide FSS with a structured mechanism for promoting, monitoring and reporting our research. It presents an update on spend across the FHRP during financial year 2023/24, and an overview of stakeholder engagement activities taken forward this year to raise awareness of our science and build partnerships which allow us to collaborate and influence external funding opportunities.

4 Discussion

Resourcing of FSS’s science functions

4.1 FSS’s science functions are currently delivered by 27 multidisciplinary scientists brigaded into four teams, with oversight and governance led by the Head of Science, Head of Public Health Nutrition (PHN), and the Chief Scientific Advisor (CSA). At the start of November 2023, the forecast out-turn for FSS’s science programme was approximately £1.36 million. Figure 2 shows the proportions of FSS scientists and total science programme budget which are allocated to our seven core scientific functions, providing an indication of how in-house resource and external spend is split across each function.

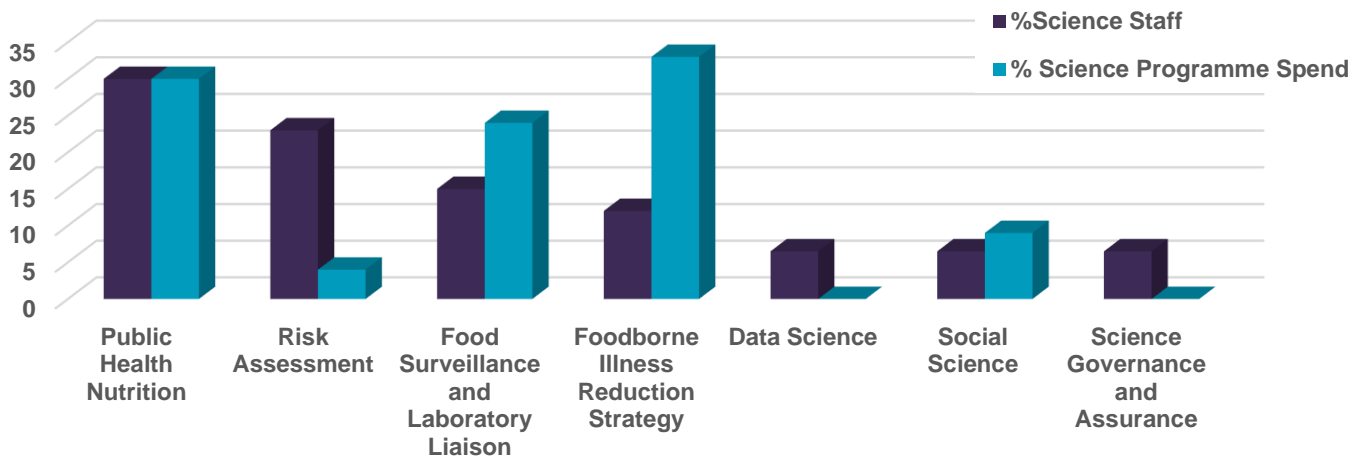


Figure 2. Current split of staff resource and programme spend across each of FSS’s key science functions.

4.2 Earlier this year we presented, to the board, our plans for developing our science and evidence programme through [our new public health nutrition strategy](#), a [refreshed foodborne illness reduction strategy](#), and a new [framework for delivering social research](#) in FSS. Alongside this work, our science has been focussed on four additional business areas which were identified in our 2022 re-prioritisation exercise as priorities, activities considered ‘must do’, or work that should be continued. These are: risk analysis, food surveillance, evidence to support the Scottish Authorities Food Enforcement Rebuild (SAFER) programme, and data and digital transformation. Key outputs being delivered across our 2023/24 science and evidence programme are described in the sections below.

Key outputs from our science and evidence programme in 2023/24

- 4.3 FSS's input into the [UK risk analysis process](#) draws on multidisciplinary expertise contributed from across our science functions. Our risk assessment team has continued to work closely with FSA's cohort of around 90 specialists to support the scientific analyses required to inform risk management decision making and the authorisation of regulated products. A total of 8 risk assessments and 41 safety assessments for regulated food and feed products had been completed up to the end of the second quarter of 2023/24, including a number where FSS scientists played a lead role. These include assessments to inform consumer advice on the risks to vulnerable consumers from *Listeria monocytogenes* in [ready-to-eat smoked fish](#), and blue cheese, and [an assessment of the public health risks associated with the detection of norovirus particles in oysters](#), which has informed UK risk management approaches for shellfish. In addition, our chemical safety risk assessors have been actively involved in work that is being taken forward by the UK's Scientific Advisory Committees to inform decision making on the renewal of authorisations for the use of smoked flavourings in food, and [the toxicity of titanium dioxide as a food additive](#). Our team also peer reviewed risk assessments on the [potential of allergic reactions from fortification of non-wholemeal flour with folic acid](#), and has provided scientific advice to support reviews of official controls for food and feed imported into the UK. A further achievement this year has been the collaborative research delivered by our social science and risk assessment teams on [new research to understand consumer views regarding the use of new breeding technologies in food](#), the findings of which have been shared with Scottish ministers to inform considerations on the implications, for Scotland, of new regulatory regimes that have been proposed for such products.
- 4.4 Back in June, the board discussed our refreshed, evidence based workplan plan for understanding current trends in [foodborne illness](#), and identifying interventions for reducing the impacts of priority pathogens on public health in Scotland. Since then, we have made good progress in the five key work areas that we committed to over the next 3-5 years. In collaboration with [SEFARI \(the Scottish Environment, Food and Agriculture Research Institutions\)](#), we are taking forward a review to assess the uptake, in Scotland, of on-farm controls which have the potential to control the transmission of foodborne pathogens. The findings generated from this review will complement work we are taking forward with the FSA to map the status of interventions for reducing *Campylobacter* contamination throughout the food chain, and any gaps or changes which might explain the relatively static rates of human infection that have been reported over the past 10 years. We have also initiated a new programme of work to elucidate foodborne illness trends in different population groups in Scotland, which will run alongside our on-going contribution to the [FSA's third study of infectious intestinal disease in the UK \(IID3\)](#). This includes the commissioning of new research with Cardiff Metropolitan University to review our definition of population groups that are more vulnerable to foodborne illness, and the recruitment of a dedicated epidemiologist within Public Health Scotland (PHS) to undertake, on our behalf, the analysis of patient data to determine the factors that contribute to foodborne illness in Scotland. In order to strengthen our evidence base on potential food safety risks to consumers, we have also launched [a new project titled FROST \(Fridge Recording Over Set Time\)](#), to generate data that will help us to determine the average temperature of fridges in households across Scotland. This is FSS's first citizen science project, for which we have called on members of the public to sign up to receive temperature loggers to be placed in their fridge for 2 weeks, and send them back to us for analysis. Participants are also asked to submit details of their

appliance and how they use it, and, where possible, photographs showing how their food is stored. All participants are provided with a summary of their data, along with advice on changes they can make to reduce the risks of bacterial growth (see Annex 1). This innovative and low cost research approach has proven to be very successful, with 327 members of the public having signed up since launching in July and data from 145 fridges already analysed¹. The data generated from this project will be invaluable in microbiological risk assessment and the future targeting of our consumer food safety advice.

- 4.5 Following the Board's approval, in March 2022, of our proposals for a new [food surveillance](#) strategy for Scotland, we have continued to work with the four Public Analyst laboratories to deliver our annual national food sampling programme. This programme is currently targeted to around 15 priority areas of potential risk identified by the horizon scanning process managed by our team. Testing results are recorded alongside data generated through other Local Authority sampling activities on our Scottish Food Sampling Database (SFSD) and made available to enforcement authorities and partners across government. The outputs are used to assess trends, and inform enforcement activities and risk assessments, with some of the findings published in our [joint annual report with the FSA on food standards across the UK](#). Alongside this year's programme, we have been scoping a new 'shopping basket' approach which aims to augment our existing surveillance datasets, through the testing of foods selected to represent a typical diet in Scotland. In July 2022, we commissioned a project, undertaken by [FERA science](#), to help us to design this new approach by reviewing learning points from surveillance programmes in other countries, and evidence from retail purchase data and horizon scanning, to identify product and testing combinations that would provide appropriate coverage of food safety and standards across a range of commonly consumed foods. We are currently using the findings to develop a sampling and analysis plan which we are aiming to take forward during the second half of 2024/25. In addition to this work, we commissioned three new projects this year to address gaps in our existing surveillance data sets, which will support our risk assessment capability and the targeting of future sampling programmes; an assessment of chemical contaminants in fish of relevance to Scottish fishing waters, a review of potential microbiological risks in ready to eat foods which can be purchased via social media, and a survey of chemical contaminants in plant based proteins on sale in Scotland.
- 4.6 Science and evidence continues to play a key role in supporting FSS's work with Local Authorities (LAs) to deliver official controls and support Scottish food businesses in complying with food law. This includes the provision of reports from our horizon scanning activities and Scottish Food Sampling Database (SFSD) to help LAs target areas of risk, and the analysis of data sets from our Scottish National Database (SND) to inform audit and assess trends in compliance at national level. Over the past year, we have also [worked with the FSA to review the impacts of allergen labelling requirements](#) (implemented in Scotland in 2021) for foods pre-packed for direct sale (PPDS), including [research to explore the extent to which Scottish consumers with food allergies and intolerances were aware of these requirements](#). This research has helped us to understand the barriers and facilitators for LAs in implementing these legislative changes, and the support that may be needed from FSS to improve future compliance in this area. We have also recently commissioned new research

¹ The findings to date show only 43% of fridges analysed with an average temperature in the correct range of 0-5°C; the majority being warmer (5-10°C)

to evaluate The Food Law Rating System (FLRS) in Scotland, the findings of which will support proposals being developed under FSS's Scottish Authority Food Enforcement Re-Build (SAFER) programme, to re-design the LA delivery framework in Scotland.

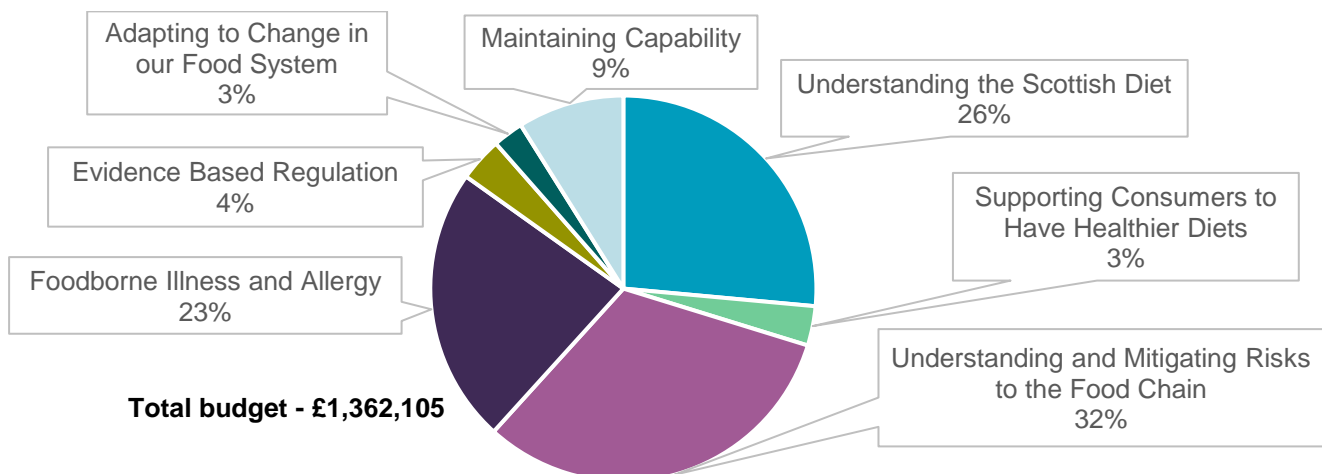
- 4.7 Throughout this year we have made good progress in implementing the [proposals presented to the board in October 2022 for improving the use of data science across FSS](#). Since then our lead data scientist has worked closely with FSS's digital team to implement a governance structure around our work in this area. This includes a new Digital and Data Steering Board, which has been put in place to provide oversight of database developments and data science projects across the business. A focus for this group is to recommend improvements to FSS systems for collecting, analysing and visualising data on the delivery of official controls by our own operational staff and LAs. Data science expertise has significantly improved our ability to use these data sets for audit and performance reporting purposes and has enabled us to generate underpinning evidence on enforcement activities and business compliance to inform the SAFER programme. This year's project work has also included enhancements to our SFSD dashboard which have significantly reduced the staff resource needed to report the outputs of our national food surveillance programmes; enabling the team to dedicate more time to the analysis of trends and ensuring results are appropriately followed up. A further achievement has been the establishment of a new interactive dashboard for retail purchasing data collected in Scotland (an example of the outputs from this dashboard can be found in Annex 2). By enabling us to more quickly analyse, interpret and visualise these datasets, the dashboard offers a substantial resource saving, reducing staff effort required to deliver reports and allowing us to more efficiently respond to emerging areas of policy interest and generate evidence needed to influence improvements to the food environment. The dashboard also provides a resource that will enable us to optimise the use of retail purchasing data to support other FSS business needs including risk assessment, horizon scanning and the design of food surveillance activities.
- 4.8 The provision of expert scientific advice and generation of evidence from dietary surveillance and monitoring are key pillars of our [Public Health Nutrition \(PHN\) strategy](#). Our PHN team provides the authoritative source of evidence on public health nutrition to support the development of policies aimed at improving diet. A key arm of our dietary monitoring programme is exploration of consumer purchasing patterns within the retail environment and last year we published a [suite of reports](#) exploring purchasing patterns in 2021, which were used to support the development of [proposals to restrict the promotion of less healthy foods](#). These reports have been extensively promoted and disseminated among key stakeholders, including industry, public health professionals, academics and policy makers in government including an [online webinar](#) in which over 130 stakeholders attended.
- 4.9 The PHN team also monitors progress towards the [Scottish dietary goals](#) and our monitoring programme has been enhanced with the integration of the Intake24 tool to collect dietary intake data within the Scottish Health Survey (SHeS); the tool will be included within the survey in 2024 in adults aged 16+. The team has used data from the 2021 survey to explore purchasing trends to support the development of [proposals to restrict the promotion of less healthy foods](#). In response to a request from SG the PHN team has also commissioned the University of Edinburgh to use the SHeS dataset to explore the nutritional effects of reducing intakes of meat and dairy products; generating data that will put Scotland at the forefront of assessing the potential dietary impacts of climate change recommendations on the UK population. Following approval of our approach by the [Scientific Advisory Committee on](#)

[Nutrition](#) (SACN), there are plans to extend this work using data generated by our forthcoming dietary survey of children aged 2-16 years to examine the specific impacts on children’s diets.

4.10 Applying our data and evidence to support policy aimed at improving the food environment is a key focus for our PHN strategy; reflecting our role in the monitoring and evaluation of [SG’s Out of Home Action Plan](#). Calorie reduction is the key indicator of success, however there is limited data available to understand the calorie content of food and drinks purchased Out of Home (OOH). We have addressed this in part by publishing an analysis of the [energy content of sweet discretionary foods](#) out of home, with a further report of food ‘on the go’ data ready to be published in the new year. The PHN team has also gained access to a large data set containing calorie information on menus and is working with our data scientist to explore how this can be used to monitor calorie reduction OOH. These analyses will complement those undertaken on our OOH purchasing data sets; providing evidence to demonstrate the need to drive the food industry towards creating a healthier and more sustainable food environment.

FSS’s Food and Health Research Programme (FHRP) – current status

4.11 Our update, in December 2022, provided the Board with an overview of our Food and Health Research Programme (FHRP), which has provided us with a structured mechanism for monitoring and reporting on our research activities, and a platform for engaging more widely across the scientific community to seek opportunities for collaboration and joint funding. An outline of the six research themes in our FHRP and how they align with our strategic outcomes is provided at Annex 3. Our FHRP is currently funding a total of 21 research, monitoring and surveillance projects in addition to activities which support FSS’s competent authority role and wider science profile, which are grouped under the heading Maintaining Capability². Figure 3 breaks down the current proportion of spend against each of the FHRP themes³.



² This currently covers costs of our contributions to the funding of UK National Reference Laboratories (NRLs; a requirement of Retained EU Regulation on Official Controls 2017/625) and national activities relating to scientific methods for food authenticity and standards.

³ Figures from 31 October 2023

Figure 3. A breakdown of the current FHRP budget³

4.12 Our current overall budget position for research has increased compared to the same point in FY 22/23 (+4.3%), and FY 21/22 (+12.7%). Figure 4 shows spend across each of the FHRP themes over the past 3 years, and indicates that this increase is associated with those that include our dietary monitoring and food surveillance activities (understanding the Scottish diet and understanding and mitigating risks to the food chain), and the initiation of research to support our role in delivering food law (evidence based regulation), which aligns with FSS’s changing business priorities during this period.

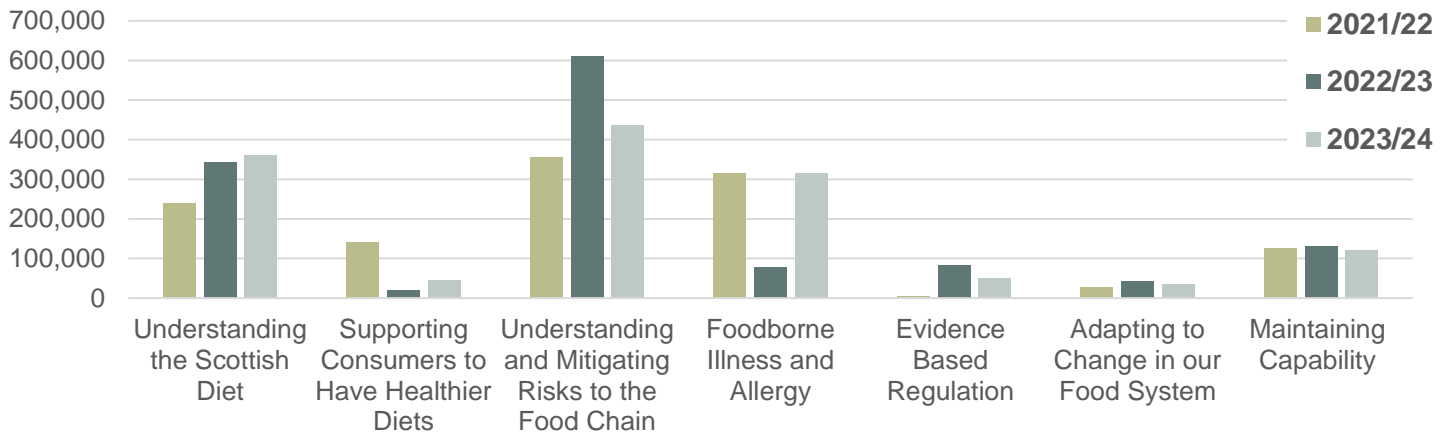


Figure 4. Profile of spend across each of the FHRP themes between 2021/22 and 2023/24

Research funding partnerships

4.13 Our science programme has continued to dedicate significant resource towards building stronger partnerships with other research bodies to promote our interests and leverage a larger pot of government funding. With regard to our work on food safety, our relationship with the FSA remains our most important in ensuring we avoid duplication, facilitate data sharing, and achieve best value for money. We have funded 6 research and surveillance projects with FSA this year, and continue to work with them to designate and commission [UK National Reference laboratories](#), and contribute expertise and funding (along with DEFRA) to the [Food Authenticity Network](#) and the [cross government knowledge transfer framework](#); initiatives which are aimed at improving UK laboratory capabilities on food safety and standards.

4.14 The FSA led [PATHSAFE \(Pathogen Surveillance in Agriculture, Food and the Environment\)](#) programme has now entered its final year, and completion of our Scottish pilot project has been a key focus for our microbiologists this year. PATHSAFE received a total of £19.2 million from the UK Treasury’s Shared Outcomes fund to develop a national whole genome sequencing (WGS) surveillance network with the aim of improving the detection and tracking of foodborne and antimicrobial resistant pathogens through the agri-food system. FSS received around £550,000 of this funding over 3 years to deliver a pilot WGS surveillance programme for *E. coli* in Scotland; utilising existing sampling frameworks for food, livestock, shellfish, wastewater and NHS patients to provide insights into potential transmission routes for human infection. This has been a highly successful project involving collaboration with

SEPA, the Public Analysts, Public Health Scotland, NHS reference laboratories, CEFAS, Scotland's Rural College (SRUC), the Moredun institute and University of Edinburgh. With sampling now completed and analysis underway, we are considering how to consolidate the networks established through this project to support the implementation of One Health genomic surveillance in Scotland. We have also submitted a proposal to build on the datasets generated in our pilot as part of a wider bid to extend the PATHSAFE programme into FY 2024/25.

- 4.15 Our other key research partnership is with Scottish Government's (SG's) Rural and Environment Science and Analytical Services Division (RESAS), to support their Strategic Research Programme (SRP) on environment, natural resources and agriculture, which is delivered by the SEFARI institutions. Our science teams work closely with RESAS advisors and SEFARI scientists to design and influence around 30 SRP projects which map across to the themes in our FHRP, representing approximately £5 million of additional funding for FSS research priorities. This year we have also made use of the 'call-down' fund which is available through the [RESAS Underpinning Capacity programme](#) and the [SEFARI Fellowship scheme](#). This has enabled us to procure additional funding for a range of new projects; a review of interventions applied on Scottish farms to control foodborne pathogens, the lifestyle behaviours which can increase the risk of foodborne illness in older population groups, an analysis of the calorie content of 'food on the go' products in the OOH sector in Scotland, and a rapid literature review on methods for assessing the cost of diets. The PHN team has also worked extensively with SEFARI research groups on a number of SRP projects which are exploring strategies for transitioning consumers towards healthier and more sustainable diets, including work which will inform the broader context of our advice on the impact of reducing meat in the diet. We have recently been engaging with the Rowett research institute on potential opportunities for raising the profile of research being commissioned through the SRP and our own FHRP, to a wider range of food, agricultural and public health stakeholders across Scotland. Proposals are being developed for a joint conference in 2024 to showcase the research being delivered through FSS/RESAS/SEFARI partnerships and seek input on future evidence needs.
- 4.16 Strengthening relationships with UK Research and Innovation (UKRI) has continued to be a key focus for our science strategy this year. In addition to our on-going links with projects being taken forward through their [Transforming UK Food Systems Strategic Priorities Fund \(SPF\) Programme](#)⁴, we have supported the development of projects being taken forward through the Food Safety Research Network (FSRN), a collaborative initiative funded by [Biotechnology and Biological Sciences Research Council \(BBSRC\)](#) and the FSA, and hosted by Quadram Institute, to connect the food industry, government and academia in pursuing shared research priorities aimed at mitigating the risks of foodborne hazards. Alongside FSA, we are continuing to work closely with UKRI to identify strategic evidence gaps relating to food safety and identify shared priorities for investment in forthcoming UK government spending reviews. These include research applying whole genome sequencing, and advances in artificial intelligence and social science to understand food safety risks and work to elucidate the role of the microbiome in foodborne illness. In addition we have made recommendations for funding to address gaps in skills, capabilities and innovation in risk

⁴ A partnership between the Global Food Security Programme, BBSRC, ESRC, MRC, NERC, Defra, DHSC, PHE, Innovate UK and FSA

assessment and regulatory science, as well as initiatives to promote the continuation of food safety partnerships established through the PATH-SAFE programme and FSRN.

- 4.17 Our PHN team has also provided support for a number of externally funded projects including the UKRI funded FIO Food (Food Insecurity in people living with Obesity) project, and Wellcome funded projects: *Maximising potential of plant-based convenience foods in real-life sustainable diets* and *Building for health centred, net zero aligned Food Systems Transformation - A Living Good Food Nation Lab*. Through participation in the advisory boards and steering groups for these projects, the team has been able to provide access to relevant FSS datasets and direction on policy relevance.

External Engagement

- 4.18 FSS science teams have continued to engage extensively with Scottish and UK government and across the wider scientific communities to foster partnership working and information sharing in areas of common interest. In addition to our on-going collaborations with FSA, PHS, and government health and environment departments, this year we have worked with the Office of Health Improvement and Disparities (OHID) to support our evidence base on the impacts of health inequalities on diet. We have also commissioned statements from UK scientific advisory committees which have informed our advice on a number of SG policy interests. This includes working with SACN, to consider the latest evidence on [processed foods and health](#) and the Committee on Toxicity (CoT) to assess the potential chemical safety risks associated with the provision of plant based drinks in schools.
- 4.19 On food safety we have contributed to a number of cross government initiatives aimed at strengthening laboratory infrastructure, including capacity and capability to support One Health surveillance and WGS. This includes Scotland's National Laboratory Network Advisory Group (NLNAG; chaired by SG's Chief Scientific Advisor), which has supported our work in identifying potential future models for our Public Analyst service; and the PHS led Public Health Microbiology Group, through which we have been able to identify opportunities for integrating our food surveillance activities into the wider pathogen genomic strategy in Scotland. Our role in the PATHSAFE programme has also allowed us to align our contribution to One Health strategy in Scotland with wider biosurveillance and AMR initiatives across the UK.
- 4.20 During 2023 the teams have invested significant resource in international engagement, with key activities including:
- Meetings with food safety scientists, social researchers and risk assessors from a organisations including Health Canada, the New Zealand (NZ) Ministry of Primary Industries (MPI) and NZ Food Safety Science & Research Centre, to exchange knowledge which supports horizon scanning, risk analysis and research.
 - Regular discussions with Food Standards Australia New Zealand (FSANZ) and FSA Ireland to share findings and compare different approaches to address public health nutrition challenges.

- Hosting visits from the Food and Drink Administration (FDA) and Centres for Disease Control and Prevention (CDC) to discuss joint interests in relation to food safety and share experience in the management of foodborne outbreaks.
 - Visits to Health Canada and the Canadian Food Inspection Agency to present our work on foodborne illness reduction and risk assessment.
 - Attendance and presentations at the [International Association of Food Protection \(IAFP\) European Symposium](#), in Aberdeen, [the IAFP annual meeting](#) in Toronto, the [European Scientific Conference on Applied Infectious Disease Epidemiology \(ESCAIDE\) conference](#) in Barcelona; and the [International Conference on Harmful Algae](#) in Hiroshima.
- 4.21 In addition to supporting our teams in strengthening their links with the wider science community, the CSA has continued to play a key role in promoting our work through on-going participation in strategic scientific fora across government, including SG's Chief Advisors for Marine, Environment and Rural Affairs Science and Science Leadership Networks and engagement with FSA and UK government CSAs. This year he represented our interests in discussions to inform Scotland's contribution to UK strategy on tackling AMR and was part of the working group which advised the Scottish Science Advisory Council on their report, [Scotland's food systems - the contribution of local production](#). The CSA has also helped to raise the profile of FSS's science at international level through his keynote presentation at the [IAFP European Symposium](#) and engagement with the US Food Safety and Inspection service (FSIS) on shared research interests on Salmonella.

Evidence priorities for 2024/25

- 4.22 The current pace of change relating to developments in regulatory policy, food law delivery, and the wider diet and public health policy landscape, requires our science teams to be flexible; ensuring their skills and knowledge remain aligned with priorities and that FSS's evidence needs are kept under on-going review.
- 4.23 In March this year, our CSA made a recommendation to the Board that FSS should form a cross office governance group that enables evidence needs to be assessed across the whole organisation. The first meeting of this group was held on 4 December, and provided an opportunity to review our existing pipeline of projects and further evidence needed to support our corporate plan commitments in FY 2024/25.
- 4.24 Initial discussions have identified the following as priority areas for next year's FHRP:
- enhanced food surveillance programmes to provide assurance over food safety and standards in Scotland, and inform our understanding of pathogen transmission and antimicrobial resistance in the food chain;
 - updates to our analyses of the diet and food environment in Scotland;
 - reviews to support future research on interventions for reducing *Campylobacter* and *Listeria* risks;

- the generation of data and evidence to support risk assessment needed to inform standards for naturally occurring and synthetic chemicals in food;
- improved tracking of public attitudes and behaviours through our own surveys and participation in [FSA's Food and You 2](#) programme, and social research to understand consumer views on novel food technologies.

4.25 As a proportion of our FHRP budget is already allocated to existing contracts, and in light of timescales for procurement, it will be necessary for us to prioritise new areas of work based on business needs. However, in light of our commitment to apply a more data driven approach to food law delivery, and the on-going need for up to date evidence to support risk assessment and influence government policy on diet, development of our food surveillance and dietary monitoring projects will be a key focus for our FHRP next year. We have recognised that there is not only potential to make better use of these programmes across a range of FSS business areas, but that the outputs also have a valuable role to play in the delivery of a number of wider cross government public health priorities.

5 Identification of risks and issues

- 5.1 Resourcing continues to present the most significant risk to our ability to deliver an effective science and evidence programme in line with commitments made in FSS's strategy for 2021-26 and our subsequent re-prioritisation exercise. The SAFER programme and externally driven developments in regulatory policy and risk analysis are placing particular burdens on our data science, social research and risk assessment functions, and it will be important to continue to monitor capacity and capability in these areas and invest in partnerships which enable access to additional expertise when required.
- 5.2 Resource requirements and timescales associated with SG's procurement process pose risks to timely delivery of our FHRP. Whilst this is dependent on the nature of the research, and estimated costs, in some cases the award of contracts can take up to 6 months from project inception. We are currently drawing on experience across the teams to identify efficiencies and produce guidelines for commissioning research which will help our scientists to engage with procurement business partners in aligning the process with our needs.
- 5.3 In light of these issues, it is more important than ever for us to prioritise our evidence needs and seek opportunities for achieving best value from our research programme. The Board will note the progress made by our science teams in promoting collaboration with external scientists and other government funders to influence wider research and innovation strategy, and this will continue to be a key focus into next year. Finally, one of the aims of FSS's new digital and data governance structure is to develop systems and ways of working which will improve the way we use and share data; enabling us to optimise value in this area.

6 Equality Impact Assessment and Fairer Scotland Duty

- 6.1 Equality Impact Assessment (EQIA) and Fairer Scotland Duty requirements do not apply to the information presented in this paper, although the Board will wish to be aware that both are undertaken routinely during the development of research requirements and the commissioning of individual projects.

Conclusion

6.2 The Board is asked to:

- **Note** our progress in delivering FSS's science and evidence programme during 2023, and our key achievements for the year;
- **Note** the status of our Food and Health Research Programme (FHRP) and **discuss** the balance of activities across each of the FHRP themes in light of FSS's current strategic priorities;
- **Consider and provide views** on initial proposals for research priorities in 2024/25.

Please direct queries to:

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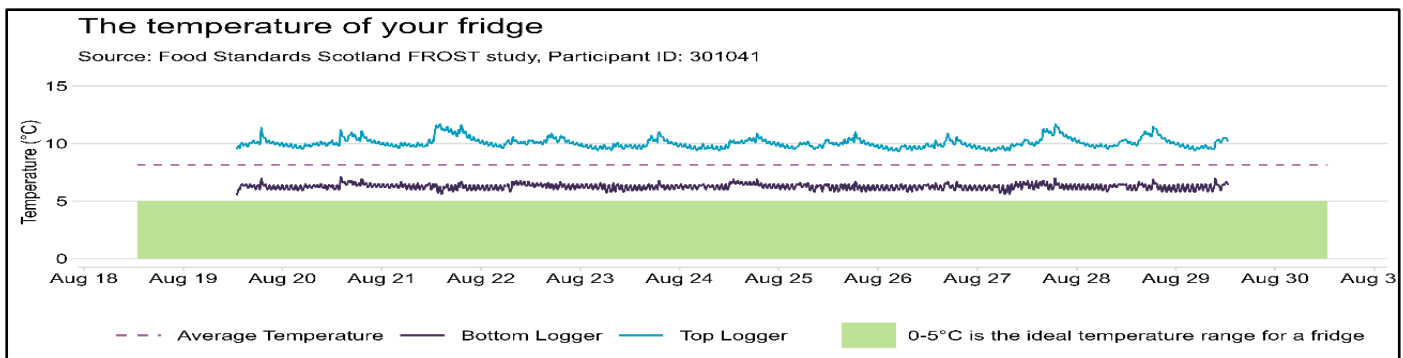
Annex 1 – Fridge temperature report provided to members of the public participating in FSS’s FROST project

Dear *Citizen Name*

Thank you for taking part in Food Standard Scotland’s FROST (Fridge Recording Over Set Time) project!

Your fridge is a weapon in the battle against germs to help stop or slow down any bacterial growth. Fridges should be kept between 0 and 5°C to keep food fresh and safe – however, due to a variety of factors, sometimes they can run colder or hotter than this.

We have downloaded the data from the temperature loggers that you stored in your fridge.



Overall, the average temperature of your fridge over the two-week period was 8.2°C.

We provided you with two temperature loggers for the trial: one to be stored at the top of the fridge and one at the bottom. This is because there can be temperature differences between the top and bottom of your fridge, but initial results from FROST suggest this is very dependent on the type of fridge that you have.

The average temperature for the top of your fridge was 10°C and the average temperature for the bottom of your fridge was 6.3°C.

It’s important to regularly check the temperature of your fridge using a built in or freestanding thermometer. If it’s not reading between 0-5°C you can use the built in dial/gauge inside the fridge to change the power setting (typically the higher the value the more power the fridge uses to take the temperature down; if in doubt, check the manufacturer’s instructions for your fridge). Note: this built in dial/gauge does not represent the temperature in °C.

A fridge doesn’t work best when it’s overstuffed, so another top tip is to increase the power to turn the temperature of your fridge down after doing a main food shop. Try to keep the door closed as much as possible too when filling up your fridge.

For more information on chilling your food safely head over to our [website](#).

Thanks again for taking part, your participation has helped us collect important data to improve food safety standards in Scotland.

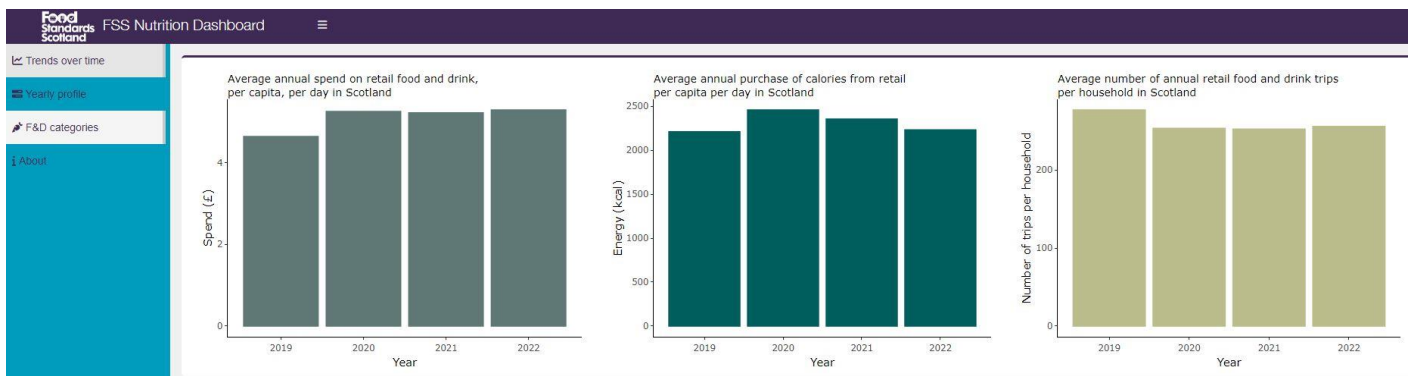
Any questions? Feel free to get in touch with us at fridgetemperatures@fss.scot

Annex 2 – FSS Dashboard for the analysis and visualisation of retail purchase data in Scotland.

This dashboard has been developed to optimise our analyses of retail purchase data and enable rapid visualisation of trends. The dashboard is split into three main sections; trends over time, yearly profile and food and drink categories along with an 'About' section which describes the data used within the dashboard, alongside key caveats.

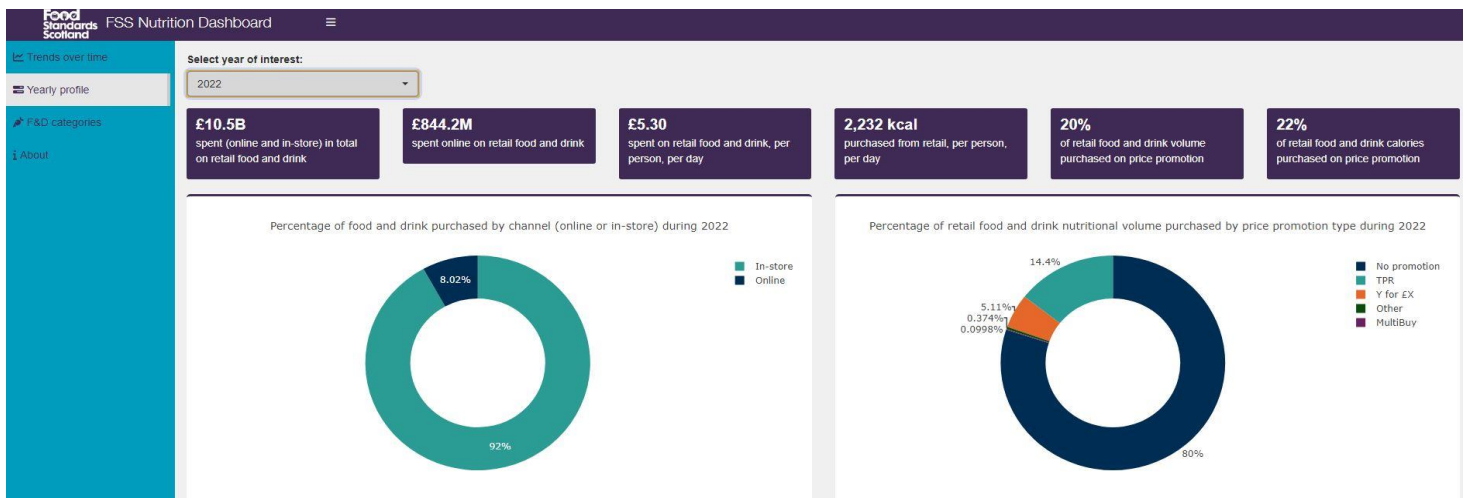
Trends over time

In this section we can explore annual data between 2019 and 2022. This includes 'per capita' purchase of calories per capita, per day in Scotland, a strategic performance indicator.



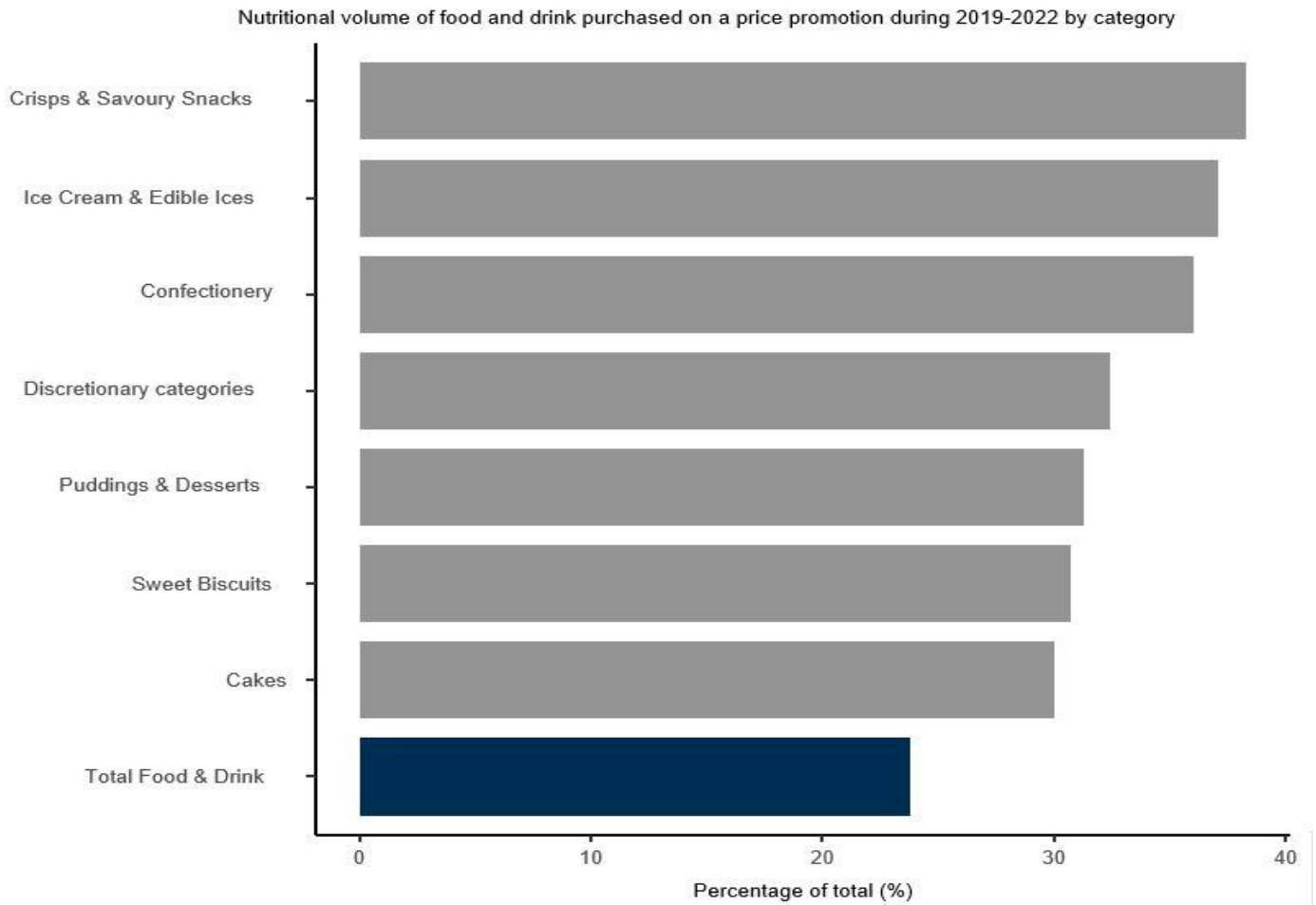
Yearly profile

The yearly profile section of the dashboard provides a snapshot of annual figures for a specific year, between 2019 and 2022, with the drop down button allowing a user to select a particular year of interest. We can also look at purchases made on a price promotion, including by Scottish Index of Multiple Deprivation, on a yearly basis within this section.



Food and drink categories

Within this section of the dashboard we are able to look at individual food and drink categories. The dashboard also includes the ability to group some of these categories of interest, for example combined discretionary foods and drinks and compare categories against the overall purchase of total food and drink (see below chart showing food and drink purchased on price promotion).



Annex 3 – The six themes of FSS’s Food and Health Research Programme (FHRP)

THEME	EVIDENCE NEEDS	STRATEGIC OUTCOMES
Understanding the Scottish Diet	<p>Monitoring and analysis of food and drink purchasing. Measuring and evaluating dietary intakes. Nutritional analysis of food. Understanding consumer attitudes and behaviours relating to diet. Understanding the impacts of inequalities on diet and health.</p>	<p>Consumers have Healthier Diets Consumers are empowered to make positive choices about food FSS is trusted and influential</p>
Supporting consumers to have healthier diets	<p>Development and piloting of approaches for promoting behaviour change towards healthier diets. Lessons learned from other countries which have been successful in improving the national diet. Identifying the best ways of evaluating the impacts of new policies and initiatives aimed at improving the diet.</p>	<p>Consumers have Healthier Diets Consumers are empowered to make positive choices about food FSS is trusted and influential</p>
Understanding and Mitigating Risks to the Food Chain	<p>Measuring the prevalence of pathogens and contaminants in food. Development of new approaches for risk assessment. Methods which enable the rapid identification of food safety risks. Understanding how environmental contaminants impact on the food chain.</p>	<p>Food is Safe and Authentic FSS is trusted and influential</p>
Foodborne Illness and Allergy	<p>Identifying the key sources and transmission routes for pathogens in food and the environment. Improving our evidence base on AMR in the food chain. Understanding the socioeconomic trends and burden of foodborne disease. Understanding the impacts of food hypersensitivity and allergy. Understanding consumer perceptions of risk to target our advice and messaging.</p>	<p>Food is Safe and Authentic Consumers are empowered to make positive choices about food FSS is trusted and influential</p>
Evidence Based Regulation	<p>Development of data driven approaches to food regulation. Identifying the key motivators and barriers to food business compliance. Understanding the risks and impacts of food crime. Understanding the role of the consumer in driving compliance in the food industry. Scientific and digital solutions for ensuring provenance and traceability. Designing regulatory approaches which keep pace with emerging technologies and e-commerce.</p>	<p>Responsible Food Businesses are enabled to thrive Consumers are empowered to make positive choices about food FSS is trusted and influential</p>
Adapting to Change in our Food System	<p>Assessing how geopolitical factors and climate change impact on food attitudes and behaviours. Identifying the impacts of climate change on diet and food safety risks. Monitoring the views and concerns of consumers regarding novel foods and emerging technologies. Understanding how sustainable food systems can affect food safety and dietary health. Understanding how changes to the food system can influence food crime.</p>	<p>Food is Safe and Authentic Consumers Have Healthier Diets Responsible Food Businesses are enabled to thrive Consumers are empowered to make positive choices about food FSS is trusted and influential</p>