ANNUAL SURVEILLANCE REPORT

Report by Julie Pierce

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1. Summary

1.1 This report provides a summary of the activities and progress made to the modernised surveillance model outlined in the report to the Board in January 2020.

1.2 The Board is asked to:

a) **Review the work** of Strategic Surveillance during 2020

b) **Confirm** that the approach being taken fulfils the Board's requirements including supporting a proactive approach to identifying potential risks, and in relation to the new FSA risk assessment process for the post-EU environment.

2. Introduction

2.1 A report is presented annually to the Board on the topic of surveillance, an activity and function concerning the whole of the FSA. This year we pull together the range of surveillance activity through a series of independent reports and provide a more detailed description of the work of the Strategic Surveillance (data and predictive analytics driven) function in this paper.

2.2 Surveillance in general across the FSA remains critical to our role and is being exercised day to day in preparation for end of EU Transition through to responding to Covid-19. We continue to develop and integrate capability and operationalise and embed new services. We continue to deliver demonstrable business benefits from the services deployed.

3. Strategic Surveillance

3.1 The FSA has established a flexible, responsive data-enabled Strategic Surveillance service to harness the power of data science to identify emerging risks before they become risks to public health, using a variety of data sources. Since our last update (January 2020), we have continued to develop this service to form a better understanding of the food system, its risks (safety, authenticity, assurance) and vulnerabilities, so that FSA, and others, can better manage consumer food risks. We now provide services to all FSA teams, enabling them to use data and analytics to help identify and address issues as they arise, be they strategic and global, or immediate and operational, following an agile way of working that is centred around specific real world 'use cases' (projects) as sprints. A sprint consists of understanding a problem, finding data

that might address the problem, and developing a model. At that point we decide whether we should put what we have built into operation or not.

3.2 As well as delivering individual business services, the underpinning Strategic Surveillance capability has evolved and matured. For example, we have:

- improved our data architecture;
- transitioned to a Cloud-based environment that standardises the way we ingest, store and visualise data;
- created dashboards following common models that bring familiarity to users;
- designed and implemented data standards to ensure we have a consistent, rules-based approach to data management that makes it easier to maximise the reuse of data that has been previously standardised and cleansed for other solutions;
- established a systematic and repetitive process for identifying use cases, conducting hackathons (i.e. brainstorming workshops for exploring an "exam question" and solution approaches and data options), regularly engaging with stakeholders;
- implemented a business change activity to embed the solutions into the business as usual of the requesting team, by providing user support for adopting solutions, collecting feedback, and maintaining request backlogs for each project/service;
- strengthened our data governance; and
- introduced an ethics approach to all our Artificial Intelligence (AI) activities, including Machine and Deep Learning.

4. Sprint activity during 2020

4.1 In recent months, we have further strengthened our understanding of food risks by accessing and analysing additional sources of data, using increasingly sophisticated analytics techniques, building advanced data science models, improving the predictive element of our models, providing our stakeholders with useful insights and encouraging self-service by facilitating the adoption of these tools by users. We have focussed on the strategic priorities, e.g. provision of a capability to help mitigate risks associated with leaving the EU and future changes in trade patterns, helping Achieving Business Compliance (ABC) and Operations Transformation better understand the businesses they regulate. Our work is detailed here:

Index of use cases delivered since January 2020 (see Annex A for detail):

Title
1. Achieving Business Compliance – Segmentation
2. FHRS Predictions using Artificial Intelligence
3. Wales marketing approach
4. Bio-based food contact materials on the UK market
5. Risky food entering ports
6. Providing information of ongoing and future activities at food and feed safety relevant international bodies
7. Automatically updating Risk Assessment Unit's scientific evidence base for horizon scanning
8. Imported food surveillance sampling results & Imported food surveillance intelligence and data
9. Automated identification of feeds from manifests
10. Support with Covid-19
11. Identification of online food providers

A list of projects delivered before 2020 is available in the Annual Surveillance Report of January 2020.

5. Operationalisation

5.1 We continue to follow a 'sprint' based approach, wherein we work on a use case for a short, time-boxed period (usually 5 or 10 weeks), building the solution in iterations that break down big, complex projects into bite-sized pieces. Sprint outputs that are regularly used by the stakeholders need to be further enhanced and put into live usage and are progressed to the 'continuous improvement and operationalisation' phase. This phase includes deployment of common services such as automating data ingestion to enable regular data refresh, ongoing user support through demo and training sessions, facilitating change adoption, maintaining a backlog of enhancement requests, resolving bugs, documenting project code etc. The suite of services we have developed inform the FSA risk identification capability, including prioritisation and targeting of sampling activities.

5.2 For example, our collaboration with the FSA Receipt and Management team resulted in the creation of the Signal Prioritisation Dashboard. The tool was built to help identify and prioritise signals related to food, feed, and food contact material being reported by various competent authorities and media websites from across the globe. This dashboard has reduced FSA's dependency on 3rd party systems and has resulted in an annual saving of £60k (to be offset against the one-off investment of c£200k). We have observed occurrences of the Signal Prioritisation Dashboard reporting signals a week before other 3rd party systems, which unlike our dashboard might be relying on manual intervention. Having this earlier notification is invaluable to those organising the resultant intervention. The dashboard provides users with complete transparency and control over the data sources and the logic used for the prioritisation of signals. As affirmed by our primary users from the Receipt and Management team, "the Signal Prioritisation Dashboard gives customisable, transparent and detailed data, dramatically improving our overview of food safety issues which may affect the UK." In addition to the dashboard we are currently working on an automated feed into the new Incidents Management System, further facilitating the gathering of intelligence for our main users. This tool only uses open data and we intend to share it openly with external users, in the near future. Work to make this possible is ongoing, involving the Knowledge and Information Management and Legal teams.

6. Strategic Surveillance informs Sampling

6.1 Through strong collaboration with the Imports and Exports unit, we have improved our capability in the area of early detection of risk in imported food and feed and informed ad hoc sampling activities, including the sampling programme undertaken in support of Covid-19 (Sampling Board Paper refers). Our Risk Likelihood Dashboard was built with the objective of identifying risky commodities being imported into the UK from the EU and 3rd countries. We have established a regular flow of information to inform sampling, as demonstrated below:

- Last year, inputs from Strategic Surveillance dashboards contributed to the imported food sampling plan and helped increase the non-compliance hit ratio in sampled commodities by 60%.
- During Q1 2020, Local Authorities (LAs) and Port Health Authorities (PHAs) were given access to the Risk Likelihood dashboard and were awarded funds to take a total of 1067 samples. Even though the dashboard was only just being rolled out to authorities, it was still utilised by authorities for roughly a quarter of the samples analysed.
- A separate list of commodities was developed for the FSA Imports-led sampling survey conducted in February-March 2020, with the Risk Likelihood Dashboard being one of the sources. With inputs from the dashboard, the non-compliance ratio in sampled commodities increased by 132%.
- Using the latest intelligence from the dashboard, a list of commodities relevant to the current Covid-19 scenario was shared with the Science Strategy team for a sampling survey.
- The Imports Unit also plan to conduct further sampling this year with inputs from this dashboard and covering POAO (Products of Animal Origin) and non-regulated FNAO (Food of Non-Animal Origin).
- We are currently enhancing the dashboard to include data from sampling surveys conducted by FSA Imports team, LAs and PHAs. This work further strengthens the already strong working relationships with LAs and PHAs, improving our ability to collate and share intelligence on emerging risks to relevant stakeholders, and inform policy decisions regarding imported food.

7. Supporting Local Authorities

7.1 For a prototype that we created last year for identifying unregistered food businesses, we received a follow up request from a local authority asking whether it could be run again with the latest data to see which businesses get flagged as unregistered, particularly during the current Covid-19 situation. We are currently working with our Information Governance and Legal teams to ensure we put in the necessary safeguards before we operationalise the prototype as part of a service to LAs for identifying unregistered food businesses.

8. Business change/embedding

8.1 Our aim is for the Strategic Surveillance service to serve as the framework supporting the wider Surveillance activities undertaken by the FSA. As detailed in the paper, we have co-designed solutions with multiple teams, bringing a systematic approach across the FSA to effectively identify food and feed risks. We have continued to collaborate with different parts of FSA as well as with LAs, PHAs, other government departments, academia, and industry.

8.2 For instance, we have developed solutions to help the Risk Assessment team to identify direct impacts such as microbiological risk, explored using data to segment food businesses to support the ABC and Ops Transformation programmes, and looked at changes in consumer attitude during the Covid-19 pandemic working along Social Sciences.

8.3 The Risk Likelihood Dashboard has created a community of interest that goes beyond the FSA, for sampling of imported foods. Besides the FSA Imports team, it is being used by more than 80 Port Health and Local Authorities. The dashboard has also been shared with users from Food Standards Scotland (FSS) and 4 LAs in Scotland. This work has demonstrated the value of using data to direct sampling activities, through an increase in the detection of non-compliances. The dashboard is designed in a flexible manner such that it will be able to include the outputs of sampling activities conducted by other teams in the FSA in the future.

8.4 In summary, the FSA is increasingly recognising the importance of surveillance to its operations and we are making significant progress by operating at the forefront of data analytical techniques. We have followed the recommendations of the FSA Science Council work in data usage and digital technology and made considerable progress in bringing together Surveillance processes by applying data and sophisticated data analysis and a common modus operandi across multiple projects involving different teams across the organisation. We have been able to influence those projects and programmes we have supported in terms of improving data quality, data standards and data sharing. However, we need to do even more, engage further with other teams, and make additional material impact with the greater insight we have.

9. Ethics

9.1 We are in the process of developing a practical methodology for a ‘right-sized’ approach to ethical Artificial Intelligence (AI) to ensure the data used and outcomes delivered by the data science/AI models are in line with best practice data ethics guidelines from both government and private sector. To shape our strategy, we are aligning with the uniform ethics principles that apply across the plethora of existing frameworks and viewpoints including (but not limited to) the Alan Turing Institute (ATI), the DCMS Data Ethics Framework, Microsoft, Google, and the OECD. These principles are upheld via the “Reflect, Act, Justify” process posited by the ATI to ensure the stewarding and safeguarding of consumers and stakeholders throughout the end-to-end AI and data lifecycle. Our methodology will ensure we are designing, developing, and

deploying ethical AI solutions, processes and policies that also address data protection, integration, data-sharing, and transparency. All our AI work has a parallel Ethics sprint to provide assurance that data are used appropriately. This work has already sparked interest within the Government Data Leaders Community.

9.2 One area worthy of note is that we have been asked to share our approach to our recent AI tender as an exemplar with the World Economic Forum (WEF). The UK's Office for AI collaborated with the WEF to support civil servants with the adoption of AI. After a consultation with experts and global leaders in the field, the WEF published a Whitepaper outlining guidelines for the public procurement of AI. The UK is the first country to pilot those guidelines. The Office for AI partnered with the FSA to test the guidelines in practice.

9.3 We have ensured that the ethics principles and framework we are aligning with have contributed closely to numerous facets of our work. Firstly, the principles and framework have acted as our "North Star" in the Segmentation proof of concept, guiding our decisions on both the processing of potentially sensitive personal data and our vision of a potential operational outcome. Secondly, with respect to our ability to collect data via means such as web-scraping and APIs, although the FSA is entitled to conduct such activities under the functions conferred on it by the Food Standards Act of 1999, we strive to ensure that the collection of this data remains fair whilst also holding ourselves accountable using a newly developed Web Scraping Policy and Process. Finally, these principles and processes have also been invaluable in retrospective reviews of existing use cases that are being operationalised, including the Meat Establishment Dashboard and the identification of Unregistered Food Businesses.

10. Data reusability and data openness

10.1 We have focussed on maximising the reuse of existing tools with minimum turnaround time to respond to the changing environment and needs. This is particularly reflected in our response to Covid-19 (detailed under 'Update on use cases delivered since January 2020'). Some of our work has lent itself to become the foundation for wider projects. For instance, our work on identifying unregistered food businesses has become the foundation for the Agency's work around digital food business platforms.

10.2 Whilst working as far as possible in the open, we are mindful of the responsibilities we have in relation to data privacy; we continue to take appropriate action to protect any data and are also actively seeking to understand the evolution of data protection and distributed models of governance such as data trusts. We are also working in collaboration with HM Revenue and Customs and industry to explore ways of minimising the footprint of data exchanged across collaborating parties in a supply chain. We are referring to this work as the Open Ecosystem Federation (OEF). The OEF is a technology agnostic toolkit which enables collaboration between people, organisations, and machines in a way that is scalable, repeatable, and extensible. By its very nature it is expected that the adoption of common tools

will ensure that participants can share intelligence and participate in a collaborative ecosystem using a variety of solutions e.g. blockchain, traditional databases etc. In other words, the choice of technology by any one organisation will not be a barrier to participation.

10.3 We are also working towards migrating from on-premise to the best of breed cloud environments, data mining and visualisation tools. This ensures that we are compliant with Government standards guidelines and spend controls. This also promotes more efficient and effective use of data across the organisation whilst reducing risk of data leakage, as there will be less need for localised data sets.

11. Benefit evaluation

11.1 We see the validation of our outputs as an important step towards confirming the relevance and benefits of our services. The methods for validating the outputs vary by use case, and examples are included in the detail in Annex C. We aim to conduct such validations for all use cases, conducting the validation in ways that minimise costs for the FSA. We are dependent on the business users providing us with timely feedback on any enhancements or improvements that may be needed as well as on the benefits that have been realised or potential benefits that will be realised in the near future. We leverage existing work, but where not possible, but justified, we would consider use of third parties to validate our results.

11.2 In many of our use cases, the operationalisation, and hence realisation of benefits, also needs to consider the satisfactory completion of relevant information governance and ethics related assessments and processes. This work, which includes the regular update of terms and conditions of use of our dashboards, privacy notices, and web-scraping policies, among other things, requires the collaboration of the Knowledge and Information Management and Legal teams to ensure data is managed appropriately by all the stakeholders involved.

12. Next steps

12.1 In addition to continuing with our sprint and operationalisation work, we will undertake the following:

- Following from the Science Council Working Group 4 recommendations, and based on a cross Government standard approach, we are putting together a training programme to improve the data knowledge and skills of FSA staff members, from basic awareness through to strategic and innovation. This will aid in developing a more collaborative approach for designing solutions and improving user adoption of the solutions we produce.

- In order to continue to develop new technical solutions and continuously improve existing solutions we need a high level of engagement with the users of the solutions. We are working on a structure to identify ‘service

owners' from the business with whom we would work in partnership. The service owner would be accountable for the quality of the service and would need to operate at scale and provide the connection between multidisciplinary business areas and stakeholders. They would also be responsible for prioritisation, funding, benefit realisation and continuous improvement and would need to have an awareness of how their services align with other services in the FSA.

ANNEX A: STRATEGIC SURVEILLANCE USE CASES DELIVERED IN 2020 – DESCRIPTION

Update on use cases delivered since January 2020:

Title	Description
1. Achieving Business Compliance – Segmentation	Currently, food businesses are subject to a 'one size fits all' regulatory approach by local authorities. The ABC-Segmentation project aims at exploring different ways to segment food businesses based on risk. The retail sector (i.e. Hypermarkets / Supermarkets, Small retailers, and Other retailers) was selected for the pilot. After retail, we explored different approaches for segmenting the 'Manufacturers and Packers' sector, leveraging learning from retail segmentation. Some of the key observations were : • Our segmentation analysis and approaches could be applied to both sectors (i.e. Retail and 'Manufacturers and Packers'), though the 2 sectors are quite different in nature. This indicates that we should be able to largely apply the segmentation approaches to other types of establishments. • For both retailers and manufacturers, we found compliance to be much better in the 'top 10-20' businesses (by market share / revenue) in each sector. • We found that the availability of inspection data at business level is much better for customer-facing establishments. Data became sparse as we moved higher up the supply chain to manufacturers. This analysis for the ABC programme has also triggered a similar request from the Operational Assurance & Transformation team who are looking to segment the meat industry. This will help us have a consistent approach to segmentation across the agency. The project will use our Meat Establishments Dashboard (developed for NFCU) as a base to build upon, for the segmentation project.
2. FHRS Predictions using	This project used Artificial Intelligence techniques to answer two questions:

Title	Description
Artificial Intelligence	• Are the risks to the public the same across the country for all food businesses? • What supplemental information can be used to support the LAs in their inspections? The project analysed 0.5million food businesses with 235 demographic descriptors from 2011 Census data. The project used the latest deep-learning techniques (on the demographic descriptors) to deliver a national prediction model for establishments' food-hygiene ratings. The project's National model predicted compliance with 84% accuracy and restaurant rating with 69% accuracy. Segmenting business types showed take-away restaurants were half as likely to get a rating of 5 as caring establishments. This project helped explore the art of the possible by looking into how AI could help improve efficiency in regulating the food sector.
3. Wales marketing approach	An online dashboard was produced to aid in the investigation of the Food and You Survey. It used data from the Food and You Survey Waves 1-5 and the 2011 Census data. The dashboard will be used by the Wales team when the data from the Food & You 2 survey is returned, to understand the data at a local level. Furthermore, the dashboard will be used as part of planning of future Food and You waves as an example of a user-friendly way of interacting with the data.
4. Bio-based food contact materials on the UK market	This project was built on the back of the Signal Prioritisation Dashboard to ascertain information/data on what types of bio-based Food Contact Materials (FCM) are under development, are traded on the international market and those that have already reached the UK market. This work makes information on emerging trends in this market readily accessible, decreasing the risk that the FSA will be unsighted of developments and confined to being reactive to changes. Ultimately, this work delivers information to those who can act on it at the earliest opportunity.
5. Risky food entering ports	This dashboard helps build a picture of the activity surrounding high risk commodities imported to the UK that highlights the effects of the current global pandemic besides EU Exit. Knowing where and when commodities are entering the UK in real time allows us to be aware of changing demands on resources at UK ports and sudden/unexpected changes in supply chains and helps expose vulnerabilities. The dashboard analyses

Title	Description
	TRACES (TRAde Control and Expert System) data about high risk commodities, including information on the weight, port of entry, date of arrival and date of clearance at port. Users can view information on recent and expected imports through UK ports, pre-notified arrivals of commodities, and the rates of physical checks being carried out on consignments at each port. The dashboard is being used by Imports and NFCU.
6. Providing information of ongoing and future activities at food and feed safety relevant international bodies	After EU Exit, we will be responsible with Food Standards Scotland (FSS) for many of the functions currently carried out by the European Commission (EC) and the European Food Safety Authority (EFSA).Once the UK has exited, the FSA needs to continue to keep track of which risk assessments, risk management decisions, legislative change and implementation guidance are being conducted and disseminated at the international and European level in relation to food and feed in real time/ in timely manner. After exit, it is likely we will have reduced access to EU committees and groups and so we need an effective and consistent solution for tracking activities and outputs, particularly the high volume of risk assessment activities and outputs. This project aims at providing consolidated, accessible, and up-to-date information of ongoing and future activities at food and feed safety relevant international bodies. The current sprint is being used to build an MVP that will update the relevant stakeholders by email to the new work that EFSA has accepted and new published opinions and guidance. We are working with Risk Assessment to work out what information to provide and how regularly.
7. Automatically updating Risk Assessment Unit's (RAU) scientific evidence base for horizon scanning	Literature reviews are manually carried out by individual risk assessors and are time consuming and unlikely to be consistent across teams. Having access to an up to date evidence base is key to the risk analysis process, supporting successful 'risk identification' and 'production of risk assessment' steps. In this project we have automated literature searches and data gathering on a regular basis to provide a time efficient and robust method of filtering for relevant articles. The MVP reads in data from the websites most used for literature reviews, formats the information, and removes duplicates. Risk assessors are then able to filter the publications using keyword searches allowing for robust reproducible literature reviews that are consistent across the team.

Title	Description
8. Imported food surveillance sampling results & Imported food surveillance intelligence and data	The Imports team aims to increase imported food sampling across the country to help the FSA/UK make better informed Imported food policy decisions after the EU Exit transition period. The ability to record sampling results will become increasingly more important to prepare for the post transition period scenario of losing access to relevant EU systems and processes. The objective of this project is to collate and store all imported food surveillance sampling results (both satisfactory/non-satisfactory results) on a dashboard for easy user access and analysis by various teams within FSA. This project is being developed as an enhancement to the existing Risk Likelihood Dashboard.
9. Automated identification of feeds from manifests	Annually the FSA provides approximately £200k in funding for initial assessment of imported feed of non-animal origin which includes the checking of manifests for consignments. There currently is variation between local authorities in how consignments are identified but most authorities will manually examine a manifest for a feed declaration. The objective of this project is to build a technology solution to identify the presence of feed of non-animal origin on a manifest. The project vision is to link this solution with the Risk Likelihood Dashboard to provide the system with data on imported feed whilst supporting authorities to determine the need for official controls based on risk. The solution will become all the more necessary after EU exit. We are currently working with the Regulatory Compliance team to understand the different processes used by the various LAs and PHAs and access feed manifests.
10. Support with Covid-19	As part of FSA's co-ordinated response to Covid-19, it has set up a Strategic Response Group (SRG) and an Immediate Response Group (IRG). Strategic Surveillance is part of FSA's IRG through Food Supply Chain Surveillance Group that looks at the more immediate issues related to the supply chain and SRG through the Horizon Scanning Group that looks at short to medium term horizon scanning. Listed below are some of the significant activities that Strategic Surveillance has been leading on: • Monitoring activity at ports through historical import patterns and by checking rates • Monitoring the Signal Prioritisation Dashboard for food alert frequencies and automated detection of food alerts

Title	Description
	• Social media text analysis to understand what people are worried about, how they act on it, how this changes over time, and how we can optimise FSA response • Mapping high risk areas to analyse how we can combine data to identify areas where people are struggling most • Supporting Operations Research with work force modelling to optimise resources As part of this support, we have focussed on reusing and repurposing existing tools, where available.
11. Identification of online food providers	Online food providers represent an increasingly important source of food, especially in the wake of Covid-19 regulations. To respond to this change, we, created a dashboard to display information on online food platforms. We collated a list of online aggregators, their policies on scraping, and FHRS scores, as well as whether FBO name and address were easily available. This information was used to create an updated interactive version of the food ecosystem with a focus on online businesses, building on previous work. For three case studies a small subset of data was scraped and compared with FHRS data where possible and displayed on the interactive dashboard. While the scope was limited for this short project, this represents a pioneering effort in tackling a new and complex challenge for the FSA that is readily extensible to meet the demands of the organisation.
12. Signal Prioritisation Dashboard	This dashboard helps identify and prioritise food, feed, and food contact material related signals reported on 40+ competent authority and media websites globally. The prioritisation of signals it's based on hazard severity. The dashboard helps us learn about potential and emerging issues. It uses machine learning algorithms to extract, translate (from foreign languages) and summarise risks by commodity, origin country, and hazard. We are also developing the underlying model to predict if a signal is likely to impact the UK. The dashboard is being currently used by various teams in the FSA (including RAM, NFCU, Imports – Early Warning System (EWS) and the Consumer Protection Team in Wales). We are also working with Incidents team to integrate the dashboard with the new Incidents Beta system in development. We are seeking advice from FSA Legal and Information Governance teams to be able to openly share a version of this dashboard with users outside the FSA.

Title	Description
13. Risk Likelihood Dashboard – Continuous Improvement	The primary driver for this project was EU exit. The objective was to identify risky commodities being imported into the UK from the EU and 3rd countries. This dashboard helps present complex information on risky food and feed, in an understandable way and flags potential and emerging food and feed safety risks in terms of commodity, country of origin and hazard. Access to this tool has been extended to PHAs and LAs; currently there are 80+ different authorities using the dashboard. The dashboard contributed to the imported food sampling plan and helped increase the non-compliance detection rate by 132%, in Q1 2020. As part of the continuous improvement, we are working on automating the data ingestion, enhancing the look & feel based on user inputs, fixing bugs, improving the product and hazard extraction and standardisation.
14. Meat Establishments Dashboard - Continuous Improvement	This tool offers a comprehensive view of different types of data related to FSA-approved meat establishments, and thus helps identify potential indicators of risk and geographical hotspots. As part of the continuous improvement, we are working on automating the data ingestion, assisting users through live support and training materials and demos, designing a change control process to work on defects and documenting all project materials (including code). NFCU is using the tool as a starting point for research into businesses they are interested in. The dashboard is used as the first source of information for a meat establishment when they receive investigation referrals. Also, plan is in place to utilise the tool for testing with Field Ops, to help inform a data-led approach to unannounced audits. The tool and the underlying approach are being evaluated by Operational Transformation team, as part of their segmentation project for the meat industry.
15. Unregistered food businesses -	This prototype was delivered last year (2019). The prototype was created as a proof of concept to establish whether it is possible to use different sources of data to identify food businesses (such as restaurants, dark kitchens, takeaways, supper clubs, mobile caterers etc.) selling food to consumers but which are not

Title	Description
Operationalisation of the prototype	registered with FHRS. We received a follow up request from one of the local authorities this year, asking whether the prototype could be run again to see which businesses get flagged as unregistered, particularly during the current Covid-19 situation. The local authority suspects there may be some well-intentioned people running such businesses, who could benefit from the local authority's advice. We are working with the FSA legal and information governance teams to implement the necessary safeguards before we can operationalise the prototype.

** Please note that project numbers 12 to 15 are older pieces of work that are being operationalised.*

ANNEX B: STRATEGIC SURVEILLANCE USE CASES DELIVERED IN 2020 – DATA STORIES

1. Achieving Business Compliance – Segmentation

Piecing together different data sources to explore possible approaches for risk based segmentation of food businesses

Problem Statement

- Currently, food business are subject to a 'one size fits all' regulatory approach by local authorities. This model is outdated, not risk based, unable to flex and thereby keep pace with emerging food trends.
- As part of the Achieving Business Compliance (ABC) programme, the Segmentation project aims to answer the question: What are the various ways in which food businesses can be segmented in order to assess risk?
- Scope agreed for pilot: Retail sector (i.e. Hypermarkets & Supermarkets, Small Retailers and Other Retailers)
- Approach was then extended to analyse the 'Manufacturers and Packers' sector

Solution Highlights

- Agreed with FSA stakeholders on a prioritised list of possible approaches and data sources for segmenting retail food businesses based on (a) expected value of each approach and (b) feasibility based on access to and complexity of data
- Analysed currently available FSA data (Unified View, LAEMS, Prosecutions, List of prohibited individuals) and open data (Companies House, Primary Authority) to derive preliminary results and insights for prioritised approaches
- Analysed commercially available data (Dun & Bradstreet, Equifax, Local Data Company) to determine whether fit for purpose

Key Findings & Next Steps

- Project demonstrated that our segmentation analysis and approaches could be applied to both sectors (i.e. Retail and 'Manufacturers and Packers'), though the two sectors are quite different in nature. This indicates that we should be able to largely apply the segmentation approaches to other types of establishments within the sector.
- For both retailers and manufacturers, compliance was found to be much better in the 'top 10-20' businesses in each sector.
- Challenges identified within certain FSA data sets will be raised with local authorities to improve quality of the data
- Potential to extend analysis to other sectors, along with exploring additional commercial data

Food Standards Agency
food.gov.uk

2. FHRS Predictions using Artificial Intelligence

Predicting the Hygiene rating of any FBO across the nation

Problem Statement

- How can we support inspections of food businesses?

Solution Highlights

- Focussed on two questions:?
  - Are the risks to the public the same across the country for all food businesses?
  - What supplemental information can be used to support the LAs in their inspections?
- Analysed ½ million food businesses with 235 demographic descriptors from 2011 Census data

Key Findings & Next Steps

- National model predicts compliance with 84% accuracy
- National model predicts restaurant rating with 69% accuracy
- Segmenting business types showed take-away restaurants were half as likely to get a rating of 5 as caring establishments

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3. Wales marketing approach

Wales marketing approach

Exam question:
It is believed that certain vulnerable groups are not adequately targeted by the FSA's marketing approach and are therefore more likely to have riskier behaviours.

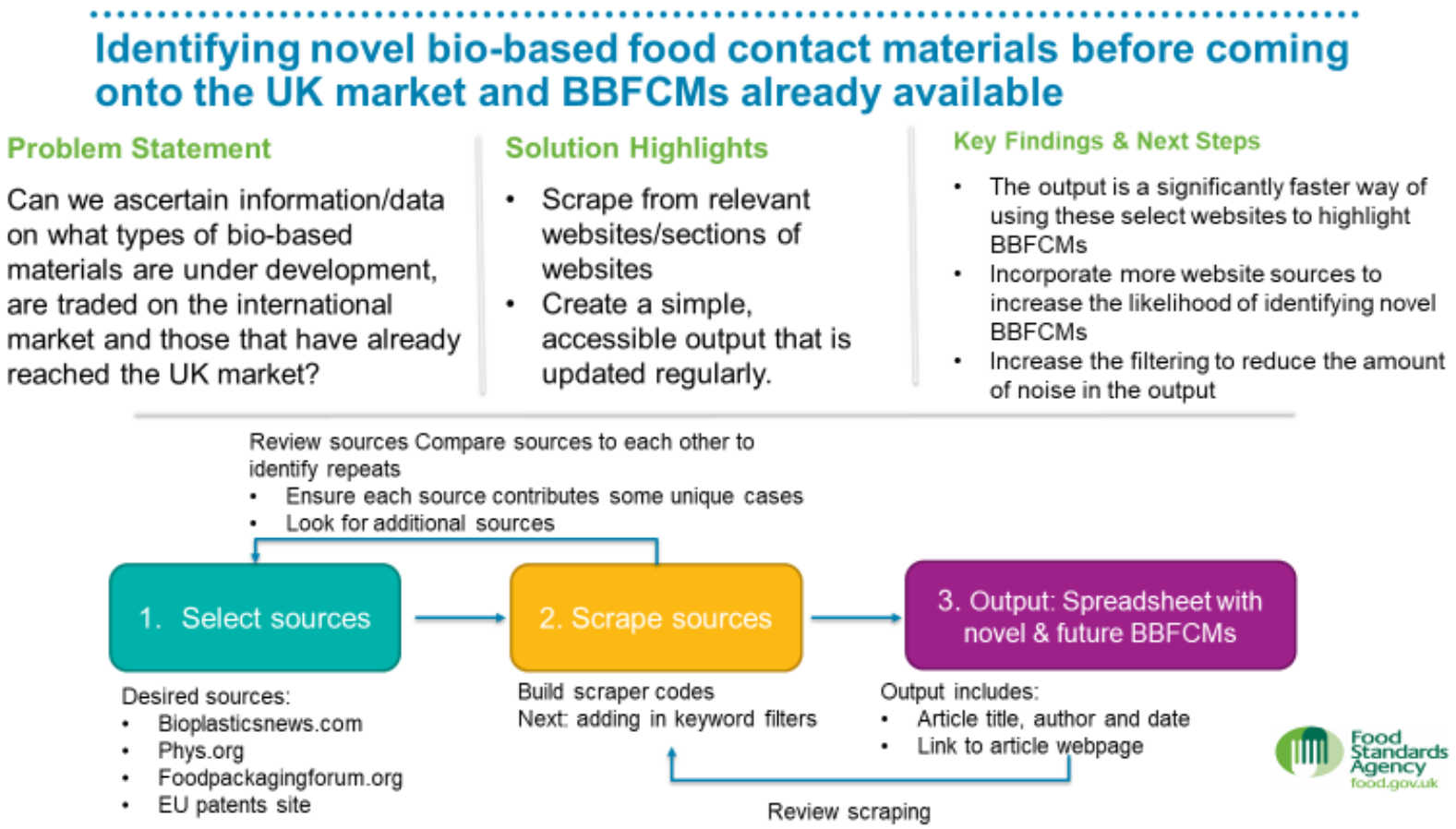
Investigation:
Team's analysis showed that:

- it was true that certain groups were under represented in the FSA surveys,
- but also that not enough specificity was gathered in the questions that were asked, i.e. respondents were labelled either Christian, No Religion or other.

Output:

- The team produced an online dashboard in order to aid in the investigation of the Food and You Survey.
- Users can investigate the survey by either as a whole UK, by region or by country.
- Users can then select the relevant question and see an answer breakdown filtered by three demographics at a time.

4. Bio-based food contact materials on the UK market



5. Risky food entering ports

Problem: Monitoring high risk commodities entering the UK in a time of disruption to the food supply chain and to the workforce

- Can we build a picture of the activity surrounding high risk commodities imported to the UK that highlights the effects of the current global pandemic?
- Knowing where and when commodities are entering the UK in real time allows us to be aware of changing demands on resources at UK ports and sudden/unexpected changes in supply chains.
- This can help expose how vulnerable are we to the disruptions.

Food Standards Agency
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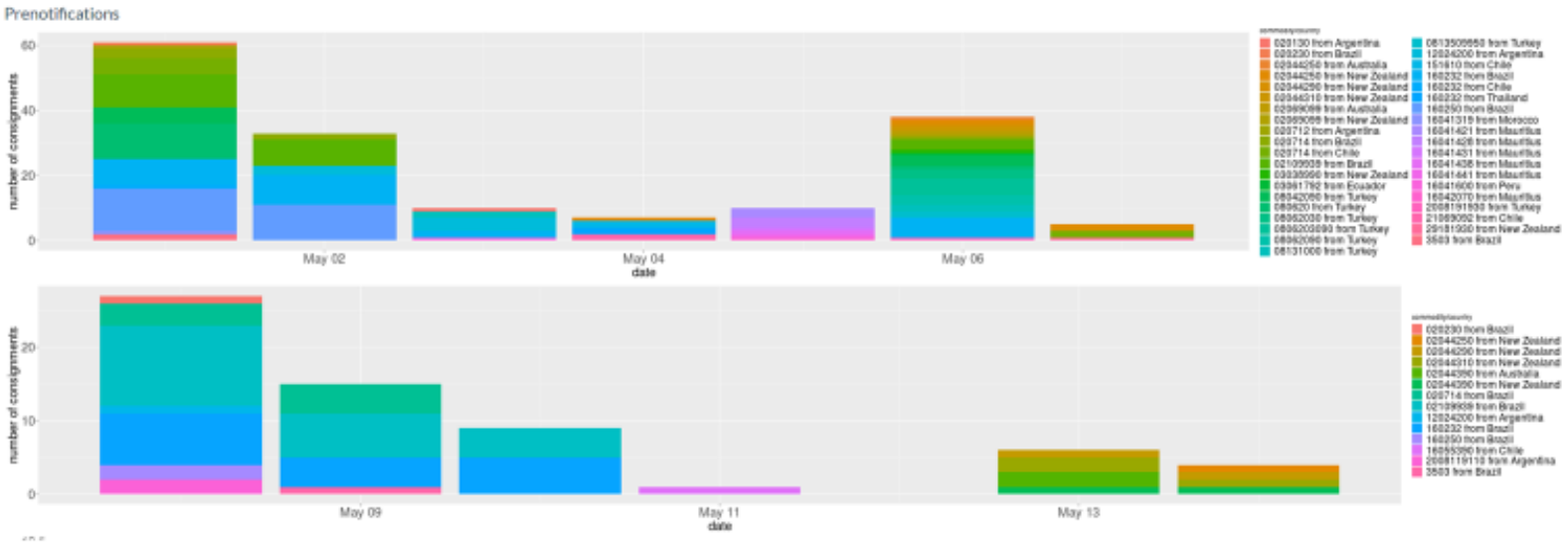
Insights (1/4): An idea of the demand on ports each day

London Gateway (seaport)



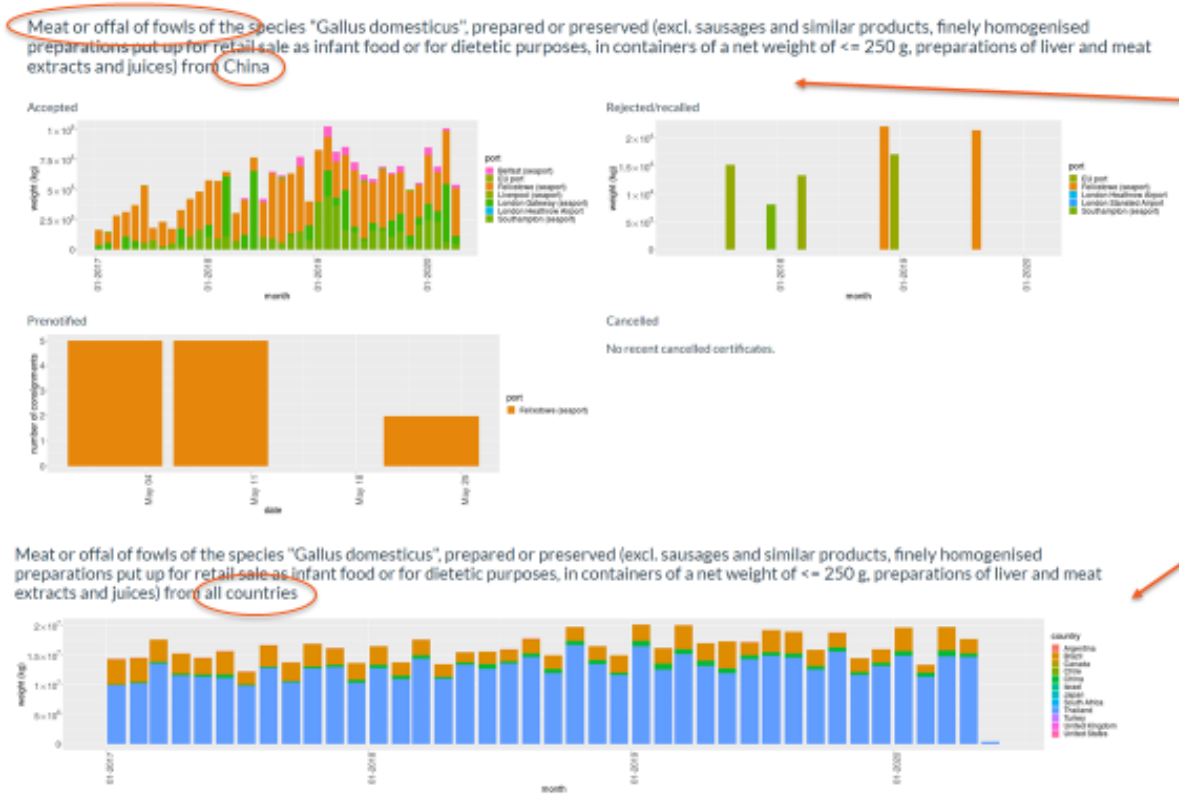
- Plots and tables summarising expected imports in the coming weeks give an idea of what the daily demand on resources is going to be at each port.

Insights (2/4): Changes in the rates of physical checks at ports

Felixstowe (seaport)

- What fraction of high risk imports are being physically checked? The rate of checks is commodity dependent, but might also vary with time and decrease during periods of increased resource demand/ less manpower.

Insights (3/4): Explore the import history of a given commodity



- Choose a commodity and origin country and find out where and when this product has been imported to or rejected by the UK.
- Useful for revealing changes in port (and origin country) and whether these changes follow multiple rejections of the commodity.
- Find out where else we import this commodity from. Useful to see how often we rely on one country for a single type of product.

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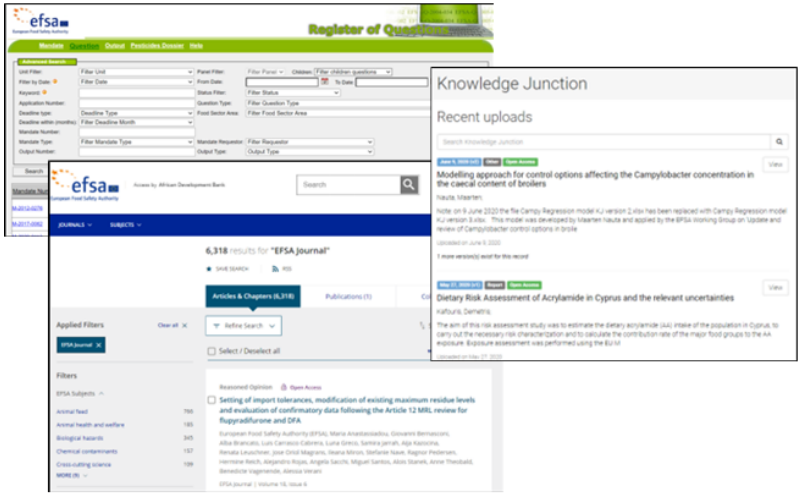
Insights (4/4): Explore the import history from a given country

- Choose a commodity and country and find out where and when this product has been imported to or rejected by the UK.
- Find out which other commodities we import form this country.

6. Providing information of ongoing and future activities at food and feed safety relevant international bodies

Question: Can we help Risk Assessment keep up to date with the high volume of EFSAs risk assessment activities and outputs.

Approach: We discussed with colleagues from across the Risk Assessment teams what information they required and how regularly and used this to create timely email notifications.



To: alice.smith@food.gov.uk
Subject: EFSA information 22-Jun to 28-Jun

Hello Alice,

You have the following BIOHAZ questions:

- Request for a scientific opinion on capacity of certain specific processing and transformation methods in the manufacturing chain of organic fertilisers and soil improvers

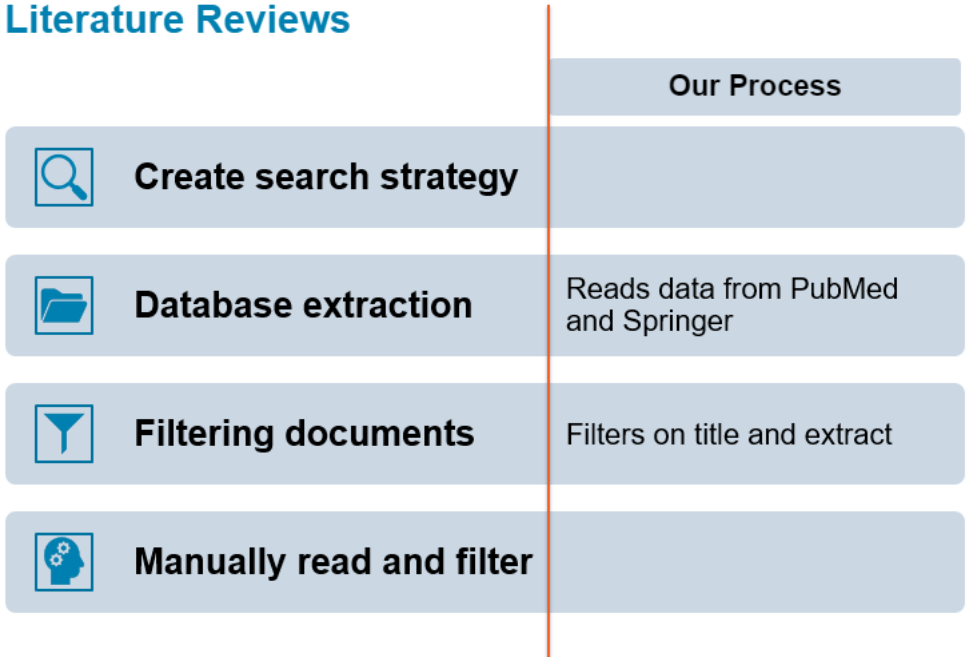
You have the following CONTAM questions:

- Request for a scientific opinion on the shucking of certain species of scallops contaminated with lipophilic toxins with a view to the production of edible parts meeting the safety requirements foreseen in the Union legislation.

7. Automatically updating RAU's scientific evidence base for horizon scanning

Question: Can we provide a tool that automates part of the Risk Assessments literature review searches to provide a time efficient and robust method of filtering for relevant articles.

Approach: We automated the download of the data, formatted the information, and removed duplicates (all of which have been flagged as time consuming). We also gave them the ability to quickly filter the publications using keyword searches in both the titles and the abstracts, allowing for robust reproducible literature reviews that are consistent across the team. We picked databases that were used across the team for Risk Assessments and had individual catch-ups with members of each team within risk assessment to make sure we were building all the required functionality.



8. Imported food surveillance sampling results & Imported food surveillance intelligence and data

This work is currently underway.

9. Automated identification of feeds in manifests

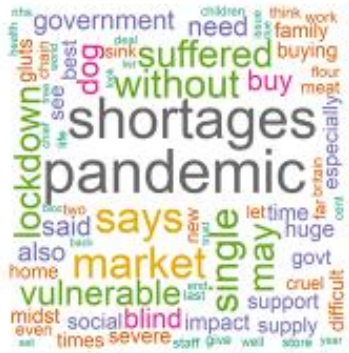
This work is currently underway.

10. Support with Covid-19

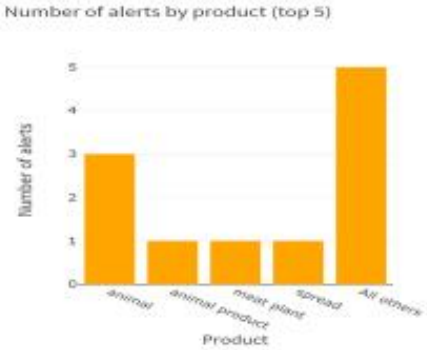
Ongoing support for FSA's response to COVID-19

- Strategic Surveillance is part of IRG through Food Supply Chain Surveillance Group and SRG through Horizon Scanning Group
- **Monitoring activity at ports:**
  - Historical import patterns
  - Checking rates

- **Signal Prioritisation Dashboard:**
  - Food alert frequencies monitored
  - Automated detection of food alerts
- **Social media text analysis:**
  - What are people worried about?
  - How to they act on it?
  - How does this change over time?
  - How can we optimise FSA response?
- **Mapping high risk areas:** How can we combine data to identify areas where people are struggling most?
- Supporting OR with work force **modelling** to **optimise resources**



Data sources include IDM, food deserts (pre-existing) and employment type (emerging)



Using Operations data to build a prototype resourcing model

- The situation: Field operations wanted a forecast of whether **demand for frontline staff would exceed supply** as a result of increased absence due to COVID

- The problem: The real-time data required to build such a model is **not currently collected**

- A solution: Timesheet and SOR data from the operations database was used as a starting point while new data collection processes were being established. This allowed work to begin on constructing a model which projected staff surplus or deficit given a scenario of COVID absence and demand fluctuation.

- Conclusions: This was a challenging project that highlighted **a clear need for better real-time information** on plant demand and supply of staff. However it is an example of how **we can leverage the data we have** – and the combination of subject matter expertise and analytical skills across the agency – to quickly address matters of pressing concern.

11. Identification of online food providers

Online Food Platforms

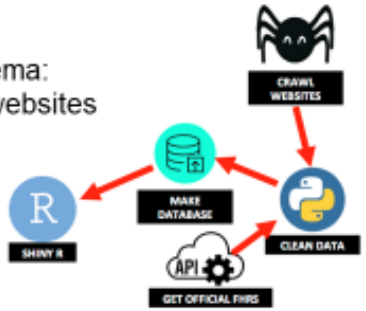
Problem Statement

- Can we investigate online businesses by gathering information from online platforms aggregating FBOs

Solution Highlights

Data collection and processing schema:

1. Data is gathered from different websites
2. Data is cleaned
3. FHRS data is added
4. Data is stored in a database
5. All is displayed in a Dashboard



In addition, a list of online aggregators was collated and used to update the food ecosystem with a focus on online platforms

Key Findings & Next Steps

- Information from online platforms was sourced in an automated manner, analysed, and returned in a user-friendly dashboard.
- Business model typology was challenging as one platform might have different functions
- Project work links into other projects on unregistered businesses, online platform economy and the new food ecosystem
- Potential to extend scraping to include a wider geographical area and more sources

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12. Signal Prioritisation Dashboard

Identification and prioritisation of food, feed and food contact material related signals

Problem Statement

- Can we identify food risk signals and categorise them based on severity of risk? Can we identify the probability of signals likely to impact the UK?

Solution Highlights

- Identified and summarised food safety and fraud issues from 40+ data sources, at a "commodity - origin country – hazard" level, using machine learning algorithms
- Interactive user-friendly dashboard
- Automated extraction and refresh of the data from the source systems every 24 hours
- Automated prioritisation of risk signals into high, medium and low
- Translation features for foreign language sources

Key Findings & Next Steps

- Tool is currently used by various teams in the FSA
- Additional data sources can be added to improve comprehensiveness of the tool
- Advanced features being explored: Personalisation of risk prioritisation logic, sending data feeds to other systems
- Prediction model for estimating when a particular risk is likely to impact UK is being further refined

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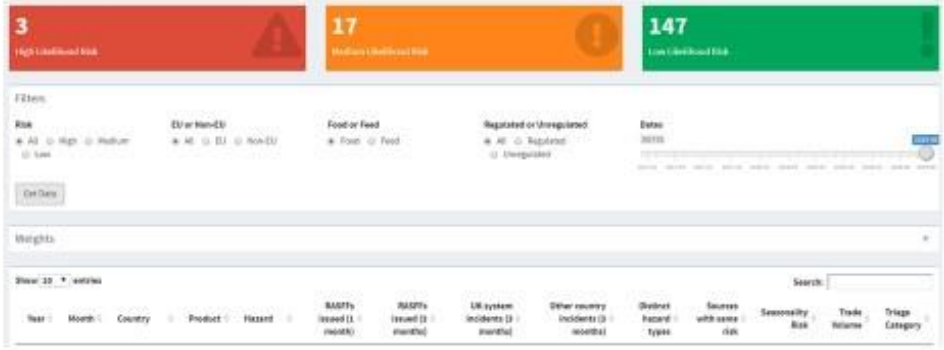
13. Risk Likelihood Dashboard – Continuous Improvement

Enhancements to Risk Likelihood dashboard

Objective: Enhancement of the Risk Likelihood (Risky food) dashboard based on the improvements suggested by the users



Key highlights:

Completed

- Code to automate data refresh (except TRACES)
- Enhancing look & feel based on user inputs
- Other bug fixes

In-Progress

- Make relevant modifications to transition from TRACES classic to TRACES NT
- Improve the product and hazard extraction & standardisation
- Add data sources
- Incorporate PHA / LA feedback

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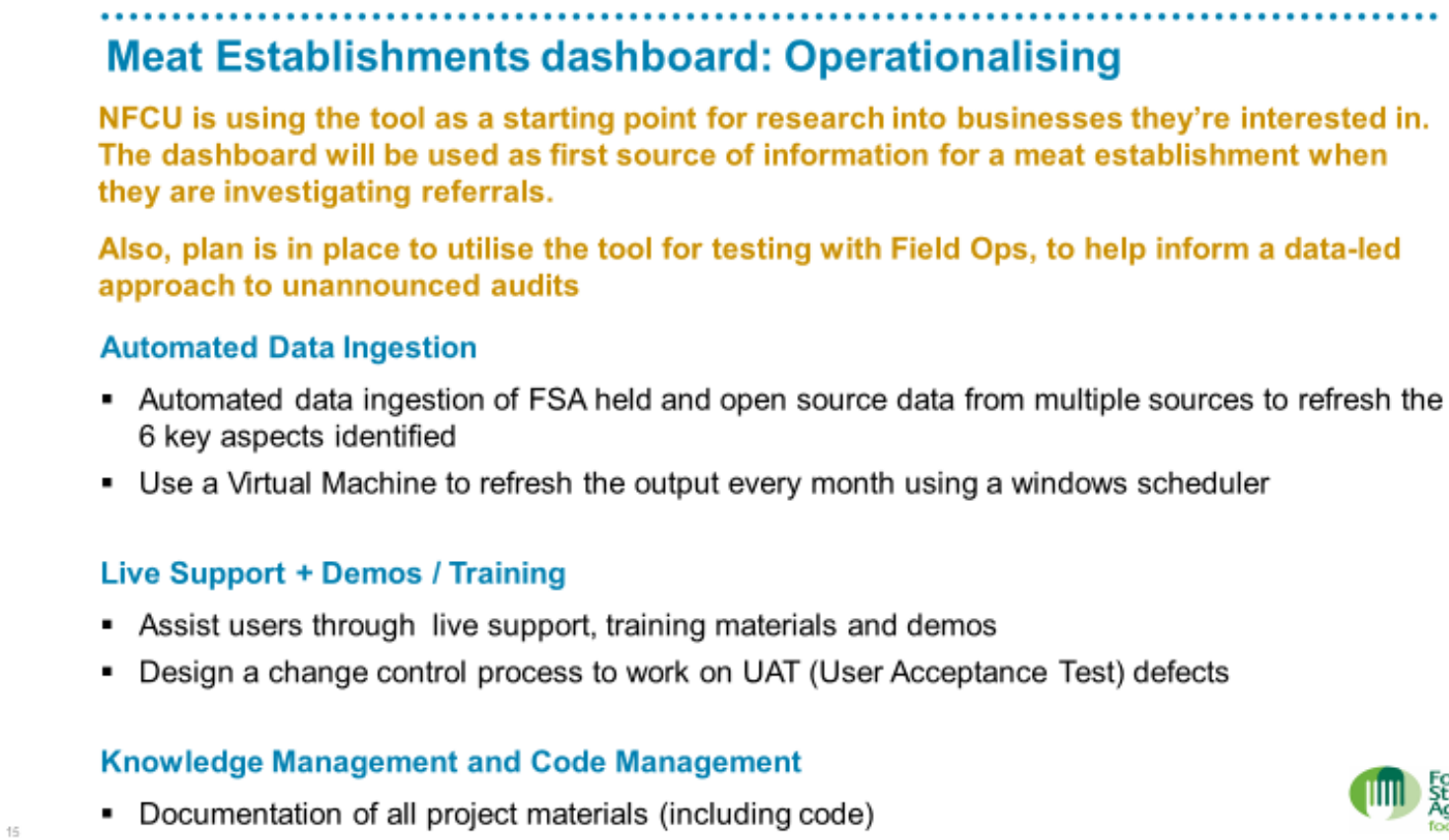
14. Meat Establishments Dashboard - Continuous Improvement



15. Unregistered food businesses - Operationalisation of the prototype

This work is currently underway.

ANNEX C: BENEFITS REALISATION

1. Achieving Business Compliance – Segmentation:

Description	This project is the first phase of a discovery exercise to explore various approaches in which food businesses can be segmented to assess risk. We started with analysing the Retail sector and later applied the analysis to the 'Manufacturing and packers' sector. Various approaches for segmenting the sectors were identified and prioritised after discussions with key business stakeholders. FSA held and open source datasets were used to explore prioritised approaches and undertake an initial evaluation of their potential value in developing a sophisticated approach to risk assessment.
Realised capability/benefits to date	Insights from the analysis of Retail and 'Manufacturers and packers' sectors have been shared with key stakeholders from RCD and with the ABC programme board. These insights would form the basis of FSA's strategic planning for segmenting food businesses. Key observations from the project: • The project demonstrated that our segmentation analysis and approaches could be applied to both sectors (i.e. Retail and 'Manufacturers and Packers'), though the 2 sectors are quite different in nature. This indicates that we should be able to largely apply the segmentation approaches to other types of establishments. • For both retailers and manufacturers, we found compliance to be much better in the 'top 10-20' businesses (by market share / revenue) in each sector. We identified various inconsistencies with the data, such as: • We found that the availability of inspection data at business level is much better for customer-facing establishments (i.e. retail in this case). Data became sparse as we moved higher up the supply chain to manufacturers and packers. • We found various instances of local authorities using different codes on different systems when reporting the same establishment.

	• We found establishments being reported on one system but inactive on other systems.
Potential further benefits	A segmentation approach based on risk will enable FSA to regulate different parts of the food industry in different ways. This will help local authorities with resource management, so that they can direct resources to where the greatest risks exist.

2. FHRS Predictions using Artificial Intelligence:

Description	This project used Artificial Intelligence techniques to answer two questions: • Are the risks to the public the same across the country for all food businesses? • What supplemental information can be used to support the LAs in their inspections?
Realised capability/benefits to date	This project has helped improve FSA's reputation as a leading regulatory body in the forefront of technology. The project helped explore the art of the possible and holds potential to be further developed into a solution that aids local authorities in optimising resource management.
Potential further benefits	Once the prototype is operationalised, it could be leveraged in various manners, including: • Optimising resource management for local authorities • Proactively reducing food outbreaks by cross-linking geographical hotspots of uncompliant FBOs with PHE data • Reviewing registration questions and understanding whether risky businesses can be identified earlier.

3. Wales marketing approach:

Description	This prototype has been developed for Communication team in Wales to develop insight on a variety of socio-demographic groups in Wales and use this information to better segment, compare and analyse Food & You survey data. It will also improve future stakeholder engagement and communication activities.
Realised capability/benefits to date	The project helped to identify the gaps in the Food & You Survey questionnaire where it did not collect enough insight into respondents' demographic groups. As an immediate benefit, the team was able to add one new question to the survey to help capturing the 'age of the children' in each household where the occupants reported poor hygiene behaviours. This aids in targeting right children groups during the school engagement programmes.
Potential further benefits	Towards the year end, Food & You Survey results will be fed into the dashboard, enabling the Communications team to compare insights on food related risks associated with different socio-demographic groups in Wales. This will save one day of work every quarter. The data from this dashboard helps in targeted food safety messaging, effective stakeholder engagement and informed marketing campaigns.

4. Bio-based food contact materials on the UK market:

Description	This prototype helps in early identification of novel bio-based food contact materials developed and brought into the UK market as alternatives to conventional materials including fossil based plastic food contact materials.
Realised capability/benefits to date	Only deployed into live operation in July 2020, so no benefits yet.
Potential further benefits	According to the FCM team, the new prototype will be saving time as it automatically scrapes data from multiple sources and hosts in single platform.

	A comprehensive knowledge base will facilitate in pre-empting safety and quality issues, guide enforcement and ensure that unsafe or undesirable materials are prevented from entering the market.

5. Risky food entering ports:

Description	This dashboard helps build a picture of the activity surrounding high risk commodities imported into the UK. The dashboard also highlights the effects of the current global pandemic besides EU Exit. Knowing where and when commodities are entering the UK in real time allows us to be aware of changing demands on resources at UK ports and sudden/unexpected changes in supply chains and helps expose vulnerabilities.
Realised capability/benefits to date	The Imports team is using this dashboard to monitor the activities at ports. The intelligence from the dashboard helps them have an oversight of the high risk food/feed consignments due to enter the UK ports. The dashboard has also been used for monitoring trade during the Covid-19 pandemic.
Potential further benefits	Various teams such as Imports and NFCU have been using the dashboard to keep an eye on the currently evolving Covid-19 situation. The dashboard will be significantly useful during similar situations in the future.

6. Providing information of ongoing and future activities at food and feed safety relevant international bodies:

Description	After EU exit, it is likely we will have reduced access to EU committees and groups and so we need an effective and consistent solution for tracking the high volume of risk assessment activities and outputs. This project aims at providing consolidated, accessible and up-to-date information of ongoing and future activities at food and feed safety relevant international bodies. The current sprint is being used to build an MVP that will update the relevant stakeholders by email to the new work that EFSA has accepted and new published opinions and guidance. We are working with Risk Assessment to work out what information to provide and how regularly.

Realised capability/benefits to date	The email alerts provide a paper trail of new information that can be quickly referenced. It has helped save time as Risk Assessment do not need to check the website which they were doing on a regular basis; ~10 minutes per team members (in relevant teams) per week. It has helped in stocktaking of publications and questions on the website and what would be useful.
Potential further benefits	As the alerts are fully automated the email alert mailing list can be easily expanded. We have already expanded it to include several policy colleagues. This work will be presented at the SERD awayday, providing an opportunity for additional Science colleagues to receive the alerts as well.

7. Automatically updating RAU's scientific evidence base for horizon scanning:

Description	Having access to an up to date evidence base is key to the risk analysis process, supporting successful 'risk identification' and 'production of risk assessment' steps. The objective of this project is to automate literature searches and data gathering on a regular basis to provide a time efficient and robust method of filtering for relevant articles. Literature Reviews are carried out across Risk Assessment and are currently very time consuming. The current sprint is being used to build an MVP that will read in data from the websites most used for literature reviews, format the information and remove duplicates (all of which have been flagged as time consuming). They will then be able to filter the publications using keyword searches allowing for robust reproducible literature reviews that are consistent across the team. We are working with Risk Assessment to ensure the tools are helpful and have any required functionality.
Realised capability/benefits to date	This has helped to provide a reproducible, robust and consistent way for Risk Assessment to carry out literature reviews. Time saving is that of ~a day per literature review.
Potential further benefits	Continued use for identifying documents for literature reviews. Risk Assessment may also wish to use the tool to test different search terms at the start of a literature review.

	We already have one science colleague who has requested access to the tool and will be demo-ing it at the SERD away day with potential for more science colleagues to request access. There is also potential for this tool to be used by policy to identify key documents.

8. Imported food surveillance sampling results & Imported food surveillance intelligence and data:

Description	The objective of this project is to: • Collate and store all imported food surveillance sampling results on the Risk Likelihood Dashboard for easy user access, analysis and to help inform future sampling activity. • Implement various enhancements of existing features of the Risk Likelihood Dashboard, based on feedback from FSA users as well as port health authorities and the local authorities. • Incorporate new sources of risky food data (such as third country imports, data from port health authorities etc.) to further enrich the Risk Likelihood Dashboard • Incorporate imported food surveillance data around traders, modes of transport etc. • Using patterns found in high risk commodities (such as betel leaves) to find potential unknown risks in other high-risk food/feed products
Realised capability/benefits to date	This work is currently underway.
Potential further benefits	This solution will provide various benefits, including: • Assisting the Imports team to increase the value of targeted imports surveillance operations and related sampling activity to ensure resource is used where the risk is highest, to mitigate risks associated with imported food as effectively as possible. • Allowing the Imports team to keep track of past sampling activity and help inform future sampling activity and allowing users to conduct analysis / spot patterns in non-compliance. • Providing additional data to help inform Imports policy making regarding UK imported food controls (particularly needed after the transition period).

	• Providing an easy way of sharing the results of sampling to PHAs / LAs on the ground to help inform their future own sampling activity also. • Allowing PHAs/LAs to share pertinent information with the FSA and other PHAs/LAs to maximise the value of any data/intel. • Achieving the wider FSA goals of ensuring a joined-up approach to sampling activity. • Linking link sampling results with importers/exporters/import agents (if the data is there) to help identify potential 'risky' businesses in the supply chain.

9. Automated identification of feeds from manifests:

Description	This project aims to build a technology solution to identify the presence of feed of non-animal origin on a manifest. The project vision is to link this solution with the Risk Likelihood Dashboard to provide the system with data on imported feed whilst supporting authorities to determine the need for official controls based on risk. The solution will become all the more necessary after EU exit.
Realised capability/benefits to date	This work is currently underway.
Potential further benefits	The solution will benefit the FSA and enforcement authorities with: • Improved efficiency in identifying imported feed • Improved effectiveness in identifying imported feed to increase confidence that all consignments are detected • Release resource to undertake risk based official controls

10. Support with Covid-19:

Description	Gathering and interpreting data has been pivotal in the FSA's response to Covid-19. We used our Trade Data Visualisation Dashboard, Signal Prioritisation Dashboard and Risky Food Entering Ports Dashboard to help us understand and monitor changes in imports and port activities, along with food, feed and food contact material related signals from across the world. Insights from our social media listening have helped map out the relationship between social deprivation and food access as the impact of Covid-19 and lockdown evolve. The resourcing model built for the Field Operations team generated a projected staff surplus or deficit given a scenario of Covid absence and demand fluctuation.
Realised capability/benefits to date	We first developed the 3 dashboards and the social media listening capability long before the pandemic. The fact they have proved to be deployable and useful in a challenging time, highlights our agility and a highly collaborative effort from teams across the FSA. Our work supported faster access to, and interpretation of data, as well as the potential to utilise previously unexploited sources of information in a rapid and user-friendly manner. The result is better informed decisions, made faster. The resourcing model prototype is an example of how we can leverage the data we have, along with the combination of subject matter expertise and analytical skills across the agency, to quickly address matters of pressing concern.
Potential further benefits	Going forward our strategy will continue to focus on first leveraging our existing suite of tools and techniques to answer new scenarios and questions that come our way, thus ensuring a minimum turnaround time along with maximum value for money. The resourcing model prototype could be used on a regular operational basis by improving the availability of real-time information on plant demand and supply of staff.

11. Identification of online food providers:

Description	We created a dashboard to display information on online food platforms. We collated a list of online aggregators, their policies on scraping, and FHRS scores, as well as whether FBO name and address were easily available. This information was used to create an updated interactive version of the food ecosystem with a focus on online businesses, building on previous work. For three case studies a small subset of data was scraped and compared with FHRS data where possible and displayed on the interactive dashboard. While the scope was limited for this short project, this represents a pioneering effort in tackling a new and complex challenge for the FSA that is readily extensible to meet the demands of the organisation.
Realised capability/benefits to date	There is interest from Communications to get a better understanding of the types and quantities of food offered on certain digital platforms. This project demonstrated the type of extractable information and offered two interactive displays for data visualisation. The work also received good feedback from AU's Economic team who are working on the project "Food in the platform economy". Their project developed a typology for online businesses that was adapted by the team, allowing them to provide valuable feedback to the practical application of the typology. This work also links into the project on "New food ecosystem" by providing a first update of an ecosystem map focused on online platforms and by providing practical feedback on typology used to identify key parts of the ecosystem map.
Potential further benefits	The development of scraper tools and address matching is likely to be of value for future projects on unregistered businesses. This prototype is of potential value for multiple teams across the FSA and is linked to several initiatives across the FSA including projects like "New food ecosystem" and "Food in the platform economy". There is general interest to use data from digital platforms. This project was able to demonstrate the collection and use of this data which could be developed further.

12. Signal Prioritisation Dashboard:

Description	This dashboard helps to learn about potential and emerging food safety and fraud issues by using machine learning algorithms to extract and summarise risks with commodity, origin country, and hazard, by accessing various data sources (including various official data sources and news websites).
Realised capability/benefits to date	The dashboard has reduced FSA's dependency on 3rd party systems and has resulted in an annual saving of £60k (to be offset against the investment of c£200k). The dashboard has proven beneficial for various teams across the Agency. Some users, who did not previously have access to any such fully automated tool, save circa 1.5 day/month of manual effort as the dashboard helps quicker identification and analysis of issues. The Toxicological Risk Assessment team has used the dashboard to identify incidents involving highly hazardous components and has brought them to the attention of the Policy team. Previously the team has required up to two days to acquire product, component, and chemical substance related details by manually searching various sources. However, with the Dashboard, this process now takes the team only around 15 minutes to procure all necessary details, thus resulting in a time saving of 98%.
Potential further benefits	The Imports and Incident Wales teams will utilise the intelligence from the dashboard for targeted sampling, which is expected to save them a significant amount of time as compared to manual processes. For the Food Contact Material team, the dashboard's ability to identify FCM related incidents coupled with the intelligence from the 'Bio-based FCM' protype, is expected to save circa 0.5 day per month of effort. Once the dashboard feeds into the Incidents Phase 3 replacement system, it is expected to further reduce manual data processing and facilitate quick data analysis (such as automatic prioritisation of alerts, trends etc.), thus saving around 1.5 days per month of effort.

13. Risk Likelihood Dashboard – Continuous Improvement:

Description	The objective of this dashboard is to identify risky commodities being imported into the UK from the EU and 3rd countries. The dashboard helps present complex information on risky food and feed, in an understandable way and flags potential and emerging food and feed safety risks in terms of commodity, country of origin and hazard. Access to this tool has been extended to PHAs and LAs; currently there are 80+ different authorities using the dashboard. As part of the continuous improvement, we are working on automating the data ingestion, enhancing the look & feel based on user inputs, fixing bugs, improving the product and hazard extraction and standardisation.
Realised capability/benefits to date	During Q1 2020, LAs and PHAs were given access to the Risk Likelihood dashboard and were awarded funds to take a total of 1067 samples. Even though the dashboard was only just being rolled out to authorities, which significantly reduced the number of users who registered for access to the dashboard, it was still utilised by authorities for roughly a quarter of the sampling awarded (26%). Separately, another list of commodities was developed for the FSA Imports led sampling survey conducted in Feb/March 2020, with the Risk Likelihood Dashboard being one of the sources. With inputs from Risk Likelihood Dashboard, the % non-compliance ratio in sampled commodities increased by 132% - from 6.06% to 14.04%. 6 out of 24 commodities where Risk likelihood dashboard was utilised detected non-compliance compared to 2 out of 33 commodities selected using other sources.
Potential further benefits	Sampling related to Covid-19: The imports team advised a list of commodities they were interested in sampling, in relation to the current Covid-19 scenario. The Imports team chose items that: • Could not be covered in the Feb/March 2020 survey • Items that were received as non-compliant (from a combination of the Imports led sampling survey and PHA/LA sampling grant funding), and • Updated items based on latest intelligence (including Risk Likelihood Dashboard).

	Planned future samplings by imports for 2020: Imports team plan to conduct further sampling this year with inputs from Risk Likelihood Dashboard, in a similar approach to last financial year i.e. Imports led sampling surveys (conducted at different times of the year) and PHA/LA grant funding, to ensure further imported food sampling can be conducted, in addition to the imported food covered in Covid-19 led project. This approach could be used to inform the design of the sampling strategy led by SERD Strategic Projects team.

14. Meat Establishments Dashboard - Continuous Improvement:

Description	This dashboard offers a comprehensive view of different types of data related to FSA-approved meat establishments, and thus helps identify potential indicators of risk and geographical hotspots. The dashboard has been enhanced to provide intelligence on various combination of indicators to assess the risk posed by an FBO. It also allows identification of FBOs that are not considered risky based on previous audits but are vulnerable to regulatory offenses due to financial pressures.
Realised capability/benefits to date	NFCU team uses the dashboard for investigation of referrals. They use it as the first step to find useful background information on an establishment's financial, audit, sales, and company structure related information. Currently NFCU is collaborating with the Regulatory Delivery and Operational Transformation Team to apply intelligence from the dashboard to inform their segmentation approach and assess risk posed by various meat establishments.
Potential further benefits	Insights from the dashboard can be used to enhance operational decision making for investigations and enforcing proactive measures against meat establishments showing indications of risk. This will help ensure better resource allocation during investigations.

15. Unregistered food businesses - Operationalisation of the prototype

Description	This prototype was delivered last year (2019). The prototype was created as a proof of concept to establish whether it is possible to use different sources of data to identify food businesses (such as restaurants, dark kitchens, takeaways, supper clubs, mobile caterers etc.) selling food to consumers but which are not registered with FHRS. We received a follow up request from one of the local authorities this year, asking whether the prototype could be run again to see which businesses get flagged as unregistered, particularly during the current Covid-19 situation. The local authority suspects there may be some well-intentioned people running such businesses, who could benefit from the local authority's advice. We are working with the FSA legal and information governance teams to implement the necessary safeguards before we can operationalise the prototype.
Realised capability/benefits to date	This work is currently underway.
Potential further benefits	• The solution will provide benefit in that it will identify businesses that should be registered but aren't, and therefore allows FSA or LAs to contact/visit that business to ensure they do register and are meeting all relevant hygiene standards. • The measure would enable the Regulatory Compliance Division (RCD) to evaluate how many businesses are unregistered now and in future. • This project might require FSA developing a web scraping policy, which would have wider benefits for other projects.