

## COVID-19 PANDEMIC

# Has COVID-19 caused a significant increase in observed food fraud incidents?

**Massimo Frera, Selvarani Elahi, Mark Woolfe, Sterling Crew and John Spink investigate the effect of the COVID-19 pandemic on the occurrence of observed food fraud incidents.**

## Introduction

The effects of the COVID-19 pandemic are being felt across the world and it is reasonable to expect

that they have the potential to impact on the vulnerability of the global food supply chain to food fraud. Recent reports<sup>1,2</sup> suggest the potential for increased food fraud in global food supply chains due to the impact of COVID-19. Counterfeiting and fraud have already been seen in hand sanitisers<sup>3</sup> and personal protective equipment<sup>4</sup> (PPE). In view of this, researchers have examined the effect

of COVID-19 on food fraud vulnerability<sup>5</sup> and on food fraud data<sup>6</sup>.

Food fraud and contamination are worldwide issues of growing concern in relation to consumer protection and trade globalisation. Food fraud is a collective term used to encompass the deliberate and intentional substitution, addition, tampering, or misrepresentation of

food, food ingredients, or food packaging; or false or misleading statements made about a product for economic gain<sup>7</sup>. Moreover, risk assessment and monitoring are increasing required by international standards and in some countries, government regulations. In order to conduct a global risk assessment for ingredients and to monitor food safety and food fraud issues, it is

key to have access to real time data. A better understanding at an earlier stage means there is more time to investigate and reinforce mitigation plans to minimise the impact on consumers and legitimate businesses.

**The Issue**

Data from Safety HUD (a tool offered by Mérieux NutriSciences) was presented in a webinar in April 2020, which showed a “dramatic” increase in food fraud activity for the period December 2019 – March 2020 compared to the preceding fourth months; a link between the increased food fraud activity and the disruption caused by the COVID-19 pandemic was made. The slide from this webinar was shared widely on social media causing concern among stakeholders, some of whom contacted the Food Authenticity Network requesting independent verification of the data. Consequently, the Food Authenticity Network and Mérieux NutriSciences have collaborated to undertake a detailed assessment of the data presented at the webinar to establish whether

food fraud incidents are indeed increasing.

**Food Authenticity Network**



The Food Authenticity Network (FAN)<sup>8</sup> was set-up in July 2015 by the UK Government as a direct response to Recommendation 4 (Laboratory Services) of the Elliott Review. FAN is now funded by a private–public partnership and is an open access website led by LGC, which aims to create a truly global network that can respond in a rapid, evidence-based manner to the next food fraud incident so that the impact on consumers, legitimate food businesses and supply chains is minimised. It curates global information

on food authenticity testing, food fraud mitigation and food supply chain integrity in one convenient location. It enables best practice information to be shared for the benefit of all stakeholders helping to raise standards worldwide so that ultimately, consumers can have greater confidence in the food they buy. In addition, FAN ensures that stakeholders have access to a resilient network of laboratories (Food Authenticity Centres of Expertise) providing fit-for-purpose food authenticity testing.

FAN has over 2,000 members from 78 different countries/territories and in 2019, over 12,000 unique users accessed the website.

A dedicated [COVID-19 Resource Base](#) has been created on FAN that

brings together global information to help businesses combat some of the new pandemic-associated food fraud challenges.

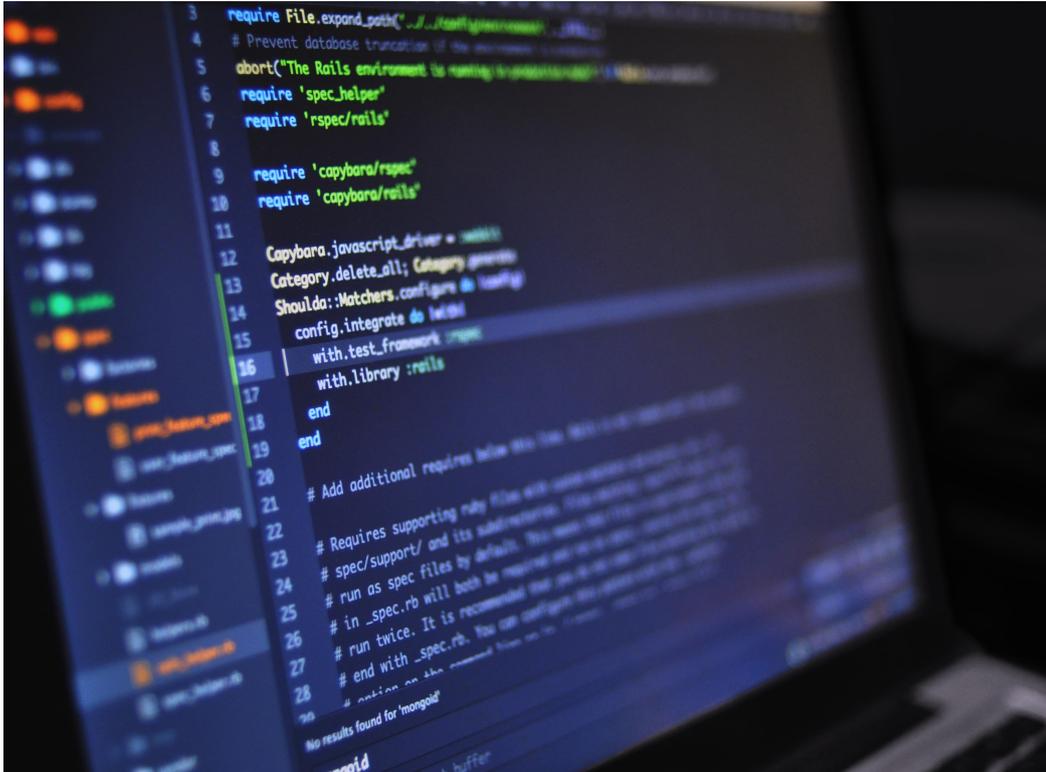
**Background on data source**

The food fraud data presented in a slide (Figure 1) at the April webinar on [COVID-19 in the Food Industry: Enterprise Risk Management and the Supply Chain](#) was derived from Safety HUD<sup>9</sup>, an online database tool offered by Mérieux NutriSciences, which monitors international food fraud and safety alerts to reinforce the risk assessment of food products and raw materials, with the aim of increasing the security of global food supply chains.

Food safety and fraud alerts from almost 100 official food agencies in



**Figure 1: Slide Presented by Mérieux NutriSciences in April 2020**



60 countries (Food and Drug Administrations, Food Safety Agencies, Health Ministries etc.) as well as online media sources (social networks, online press and press releases) are monitored daily by regulatory/food safety experts and added to the Safety HUD database. Social media sources are used as a data input channel on the strict basis that a news item is only injected into the tool if it answers questions starting with an interrogative word based on the principle of the Five Ws<sup>10</sup>, often mentioned in journalism, research and police investigations. This also applies to

scientific reports that mention food fraud incidents in particular years e.g. EUROPOL annual reports. Data from the scientific literature is outside the scope of data sources for Safety HUD.

**Availability of data**

To date, Safety HUD has collated more than 45,000 global alerts with an average of 30-50 new items being added every working day; it includes data from the European Commission’s RASFF (Rapid Alert System for Food and Feed) system.

A number of factors influence the availability of food fraud data:

- Every year new

and/or trials of testing and detection methodologies

- Digitisation is a key element: not all countries are offering data in a digital/easily accessible format.

As a result, some countries register a lot more fraud incidents than others because they have data that is being collected for a specific study purpose, more openly transparent, well organised and/or more accessible through digital media.

**Food safety vs food fraud**

Safety HUD tracks both food safety and food fraud issues. Food safety reports represent the vast majority of the items in the tool (95% so far) with food fraud incidents making up only 5% of the data. This reflects the fact that a lot more food safety issues are reported by official agencies compared to food fraud incidents, meaning there is less data on fraud available for trend analysis (this could be due to there being more food safety incidents compared to food fraud incidents and/or that more food safety incidents are reported compared to food fraud incidents). In

- official sources share their data online introducing new entries to the database
- Some agencies share their national data for only a few weeks, after which period they are updated with new information or deleted
- Data sharing is constantly evolving as official databases introduce new and enhanced functions
- Increasing attention broadly to food fraud issues is reflected in more data being available to the user
- Specific discrete campaigns by countries or organisations to investigate food fraud related to particular geographical sources or types of foods

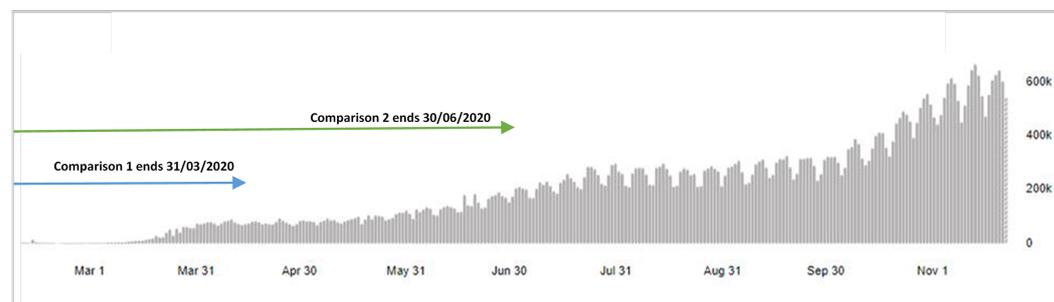
In addition, when official agencies identify a food fraud incident, often there are no clear protocols governing its publication. As things stand, news media are the main source of food fraud incident information in Safety HUD.

**Data entry**

Artificial Intelligence is not used to track and/or process data. Instead, each alert is manually processed by an international team of food experts and injected into the tool using a fact-checking approach and avoiding any interpretation of information captured from the sources. The original source is referenced with a link in the native language and the critical information is translated into English.

**Incident processing**

Processing an incident involves splitting its content into different fields according to a specified list of food fraud definitions<sup>11</sup>. The user is able to sort items with the use of specific filters so that the results from similar types of incident can be compared.



**Figure 2: WHO Coronavirus Disease Daily Global Infections: 23/11/2020**

Alerts are broken down into reports for each individual issue i.e. an alert that contains results for e.g. mycotoxins and a labelling issue would be counted as two entries, one for mycotoxins and one for the labelling issue. If more than one detected alert/news item reports the same incident, Safety HUD makes a correlation between them, recording only one single item to avoid double counting.

The tool provides a panel, which is constantly updated with the latest alerts and a facility to process statistics. A specific dashboard to access useful statistics, data on commodity type, geographical mappings and trends in support of product risk assessment is included.

**Methods: Comparison of food fraud incidents before and during the pandemic**

The COVID-19 pandemic began to disrupt manufacturing and supply chains in central China around January 2020, Western Europe and North America went into mandatory lockdowns in mid-March 2020, and while there have been variations in market demand, the supply chain disruption has been fairly constant from then to the time of this report in November 2020.

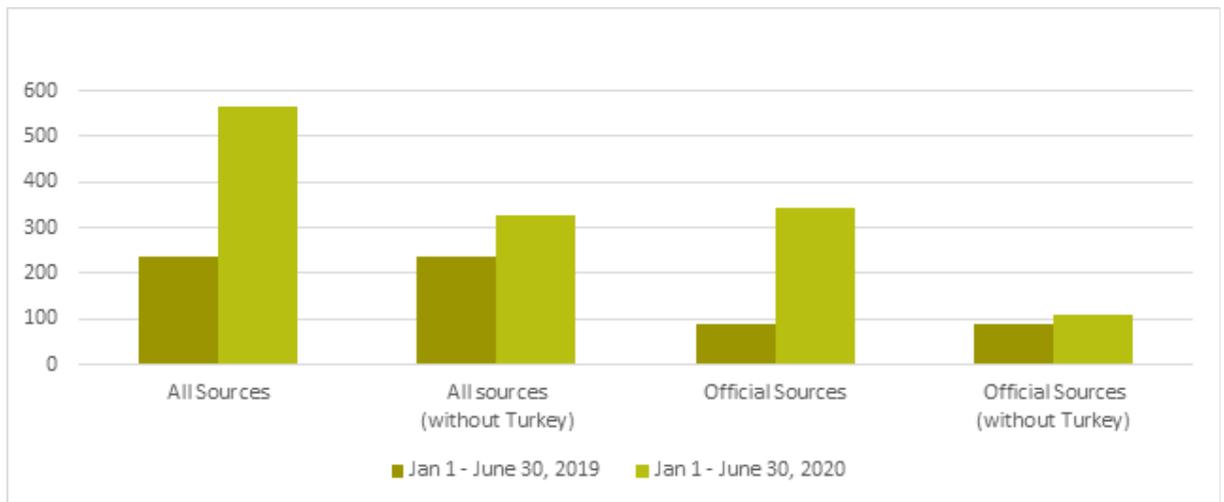
The data for Figure 1 showed a comparison (Comparison 1) of food fraud alerts for the two periods: 1 Aug - 30 Nov 2019 (Period 1) and 1 Dec 2019 - 31 March 2020 (Period 2). Given that the pandemic is still present, a new comparison (Comparison 2) was

undertaken using data from the first 6 months of 2019 (Period 1) and the same period in 2020 (Period 2). The end time period for the two comparisons was mapped onto the WHO coronavirus disease daily global infections map to illustrate the timeframes involved and is presented in Figure 2. Data was extracted from Safety HUD and processed on the following basis:

1. All sources, all countries and all food fraud incidents
2. Official sources and media sources were separated
3. Official data from Turkey was removed as no comparative data exists for 2019.

The results for Comparison 2 are presented in Figure 3.

**Figure 3:**  
**Food fraud incidents by data source for Comparison 2**



**Results and Discussion**

The results (Figure 3) of Comparison 2, show that even after removing official data from Turkey, 90 more food fraud incidents were recorded for the first 6 months of 2020 compared to the same period in 2019 with media reports making up the majority of incidents. When media reports and official reports from Turkey were excluded, there were 19 more food fraud incidents reported by official sources in 2020 compared to the same period in 2019.

Two recent reports<sup>12, 13</sup> support the widely accepted view that regulatory oversight has been impacted by COVID-19 restrictions making physical inspections / sampling difficult, although the extent of this impact

in different countries is hard to ascertain. In the UK, the government announced its ‘furlough’ scheme on 20 March 2020, so it is reasonable to assume that physical inspections / sampling in the UK were negatively impacted for Period 2 (2020) but not for the majority of Period 1 (2019).

In an attempt to assess the amount of regulatory activity, the total number of alerts (food safety and food fraud excluding official data from Turkey) recorded in Safety HUD were compared for the two periods:

- Period 1: 31 Jan - 30 June 2019 = 3,921 alerts
- Period 2: 31 Jan - 30 June 2020 = 3,223 alerts.

The total number of alerts recorded in 2020

are lower than for the same period in 2019 but the number of official food fraud incidents in the same period increased and this is against the backdrop of reduced regulatory oversight during the COVID-19 pandemic.

Taking a closer look at the countries involved, using data from official sources only, for Period 2 (2020), 22 countries

recorded an increased number of food fraud incidents, and 14 of these countries had not recorded any food fraud incidents in 2019. 40 alerts are marked as ‘unknown origin country’, where ‘origin country’ is defined as the country named in the food fraud incident report as being the country from where the food originated, raising concerns that



there are increasing issues with traceability/labelling of products. Of note, is that for some countries, the rises appear significant e.g. Ghana was recorded as an origin country of food fraud incidents 14 times in 2020 compared to only 4 times in 2019 and for ‘concerned countries’ (countries where, according to the source, the food was marketed), both Ghana (2 in 2019 to 14 in 2020) and Hungary (0 in 2019 to 8 in 2020) show significant increases from 2019 (data available upon request).

The data from official sources was analysed by commodity groups for the same periods in 2019 and 2020 after removing official data from Turkey. Results for the most impacted commodities are presented in Table 1.

The data shows that all of the increases are small when considered in a global context but if the same data is presented as percentage increases, it can give a very distorted impression i.e. that the number of food fraud incidents has increased significantly, when in reality it could be an increase of only a

Food categories	Period 1 'Jan-'Jun 2019	Period 2 'Jan-'Jun 2020	Absolute Increase	% Increase
Alcoholic Beverages	1	6	5	500
Wine	9	14	5	56
Honey and Sweeteners	3	8	5	167
Meat And Meat Products	6	9	3	50
Poultry Meat and Poultry Products	2	5	3	150
Fish And Fish Products	7	9	2	29
Fruits, Vegetables and Legumes	5	12	7	140
Oils and Fats	1	6	5	500
Non Alcoholic Beverages	0	2	2	200
Cocoa, Coffee and Tea	0	4	4	400
Mineral Water	0	1	1	100

**Note:** Data from official sources except Turkey

**Table 1: 2019 vs 2020 (6 months 'Jan-'Jun) – Most Impacted Food Commodities**

few incidents.

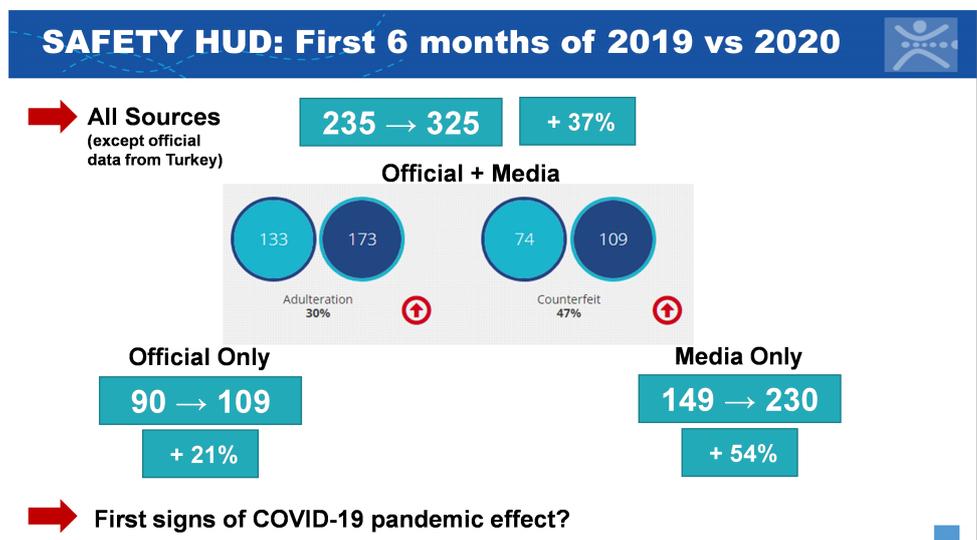
For this reason, it is recommended that data should be presented giving the actual number of incidents and not percentage figures alone. Open and transparent presentation of data gives a holistic view of

the situation from which the user can decide what action to take.

The data from Table 1 (in numerical and percentage terms including all sources after removing official data from Turkey) are summarised in Figure 4.

**Conclusions**

The year 2020 has been characterised by the COVID-19 pandemic, which has significantly disrupted global food supply chains potentially increasing the risk of food fraud. Considering the decreased worldwide regulatory monitoring



**Figure 4: Food fraud incidents from 'Jan - 'Jun 2019 compared to the same period in 2020**

that seems to have occurred during the pandemic, it is reasonable to assume that the pandemic played some role in the observed increase in food fraud incidents from January – June 2020 compared to the same period in 2019.

The increasing number of official alerts where the food is cited as being from ‘unknown origin country’, is also concerning as it creates additional confusion and possible vulnerability related to not knowing the source of the food.

The analysis conducted has identified a small increase in official food fraud alerts since the onset of the pandemic (19 more official reports) and a more significant increase in the number of food fraud media reports (81 more media reports) in January to June 2020 compared to the same period in 2019. In its weekly monitoring of global media alerts for food fraud, FAN has observed that media sources in some countries tend to report more ‘local’ or regional food fraud incidents than others. Could the observed increase in the number of media reports

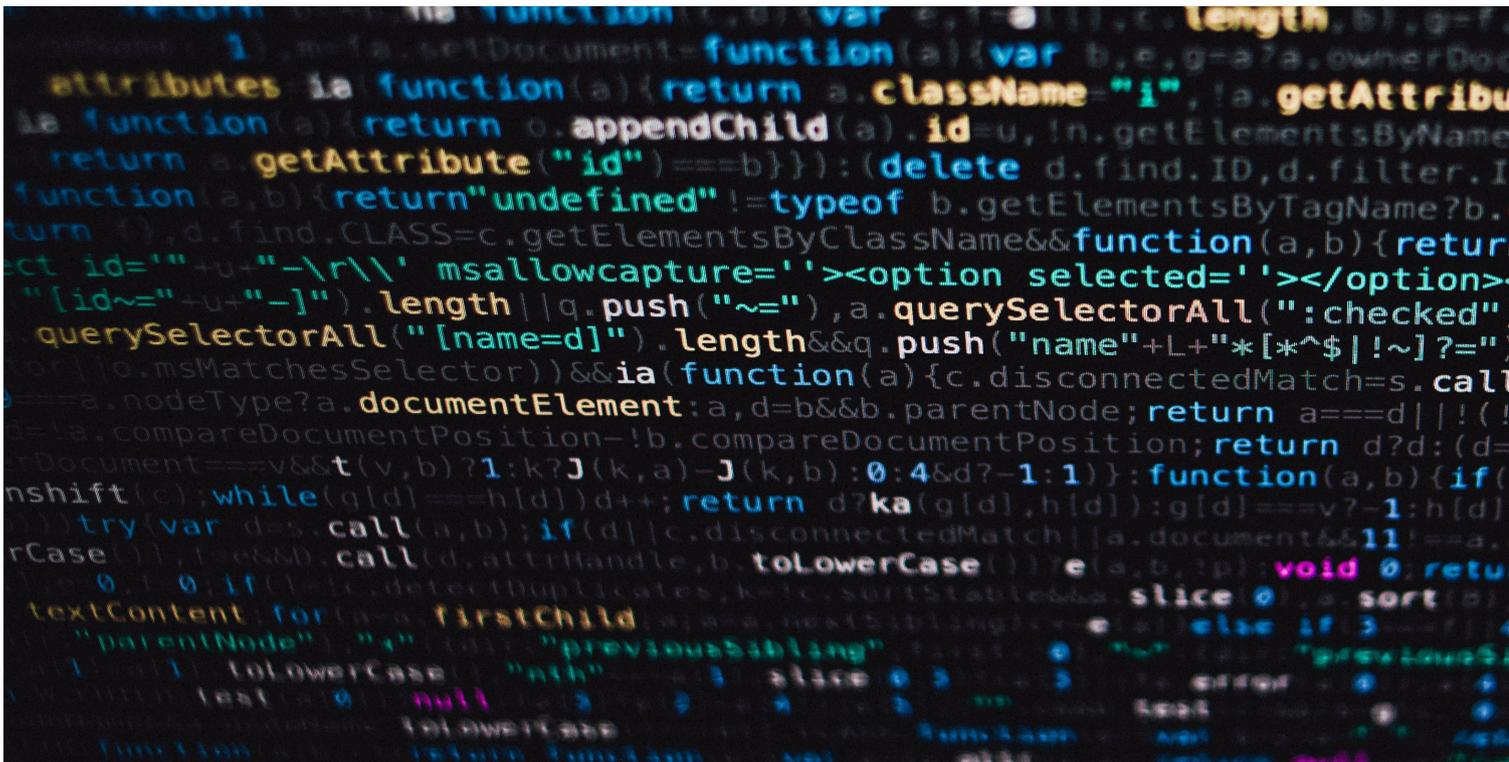


FAN concluded that the conditions created by the pandemic have increased food fraud vulnerability but that there was insufficient evidence of ‘dramatic’ increases in specific COVID-19-related food fraud incidents.

for food fraud during January to June 2020 be an indication that more local food fraud incidents are occurring that are currently not being captured due to decreased regulatory oversight? It would be useful, therefore, for horizon scanning tools to publish the origin of food fraud media reports so that an assessment can be made as to whether any observed increases pertain to global incidents or are more ‘local’ in nature.

As media sources are currently the main

source of global food fraud incidents, the observed increase in media alerts should not be ignored. The Joint Research Center’s (European Commission) October 2020 Monthly Summary of Articles on Food Fraud and Adulteration<sup>14</sup> highlighted ~38 commodity specific food fraud incidents that were compiled from ~24 media articles (removing duplication) and 2 official sources, illustrating the reliance on food fraud media reports.



It is not clear how significant the observed increases are considering the availability of a relatively small number of global official food fraud alerts and the variability in the type of data available from different countries and sources, making it difficult to undertake statistical comparisons.

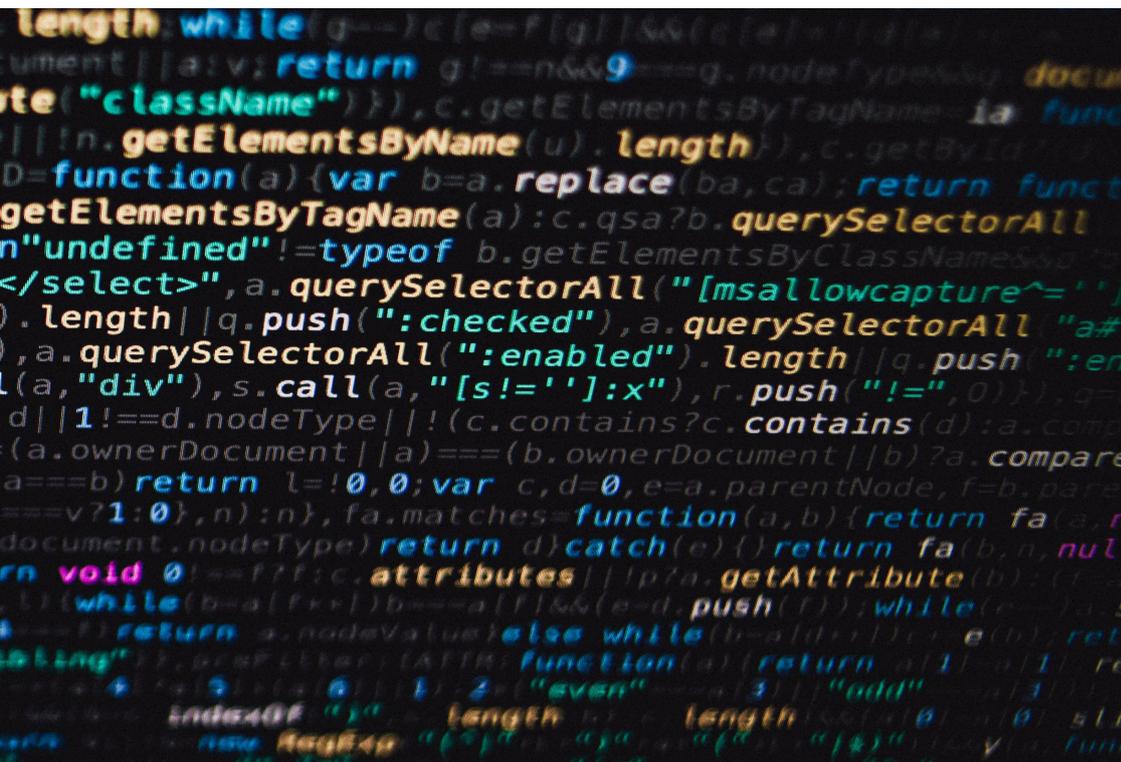
Following extraordinary meetings of its Advisory Board in May and July 2020, FAN concluded that the conditions created by the pandemic have increased food fraud vulnerability but that there was insufficient evidence of ‘dramatic’

increases in specific COVID-19-related food fraud incidents. This study supports that conclusion. However, it is likely that the true impact of COVID-19 on the incidence of global food fraud will not be known until full resumption of regulatory surveillance world-wide and at this point, it is possible that more evidence concerning pandemic-related factors may emerge. This is the view of Professor Chris Elliott, Director of the Institute for Global Food Security and author of the [Elliott Review](#), who recently said “Currently, the report (UK Food Crime

Strategic Assessment<sup>15</sup>) states that criminal exploitation of Covid has been minimal in the UK, however, I believe that 2021’s assessment will tell a different story”<sup>16</sup>.

In the meantime, the Food Authenticity Network recommends that due to the heightened vulnerability of food to fraud, the food industry be extra vigilant and use the available existing best practice authenticity control measures and tools ([COVID-19 Resource Base](#)) to mitigate any potential emerging threats. Database based horizon scanning tools can provide valuable

information to support food fraud mitigation plans so that users can take action to protect their products, food supply chains and ultimately consumers. However, going forward, it is recommended that data is reported in terms of actual numbers of food fraud incidents and not percentage increases alone to assist interpretation of causes and trends. Also, as media currently is the main source of food fraud reports, it is recommended that the country of origin of the media reports is identified wherever possible, so that an assessment of ‘local’ vs global issues can be



made. In order for database based horizon scanning tools to undertake robust food fraud incident data analysis, they need more data to improve analysis of causes and trends. Currently, worldwide monitoring of food fraud incidents is in its infancy, when compared to the reporting of food safety issues, and database based tools are managing relatively small amounts of data. As food fraud incidents can also impact food safety, greater emphasis on food fraud prevention has, more recently, been introduced into

country-specific legislation<sup>17</sup> and in the Global Food Safety Initiative<sup>18</sup>. Thus, it is anticipated that these changes coupled with the growing awareness of the devastating impact food fraud issues can have on consumers, businesses and a country's economy, will mean that more food fraud incident data will be published by regulatory agencies in the future.

**Key words**

COVID-19, SARS-CoV-2, Food Fraud, Increases, Food Authenticity, Food supply chain, Food Authenticity Network, Horizon Scanning Tools, Database.

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