

## FOOD FRAUD INCIDENTS: FINDINGS FROM THE LATEST RAPID ALERT SYSTEM FOR FOOD AND FEED (RASFF) REPORT

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### Abstract

*Food fraud remains an ever-existing issue, and especially in the context of the current COVID-19 crisis. Along with the recession that followed this pandemics, as well as lacking food supplies in some regions, criminal organizations around the world are trying to further expand their financial gains by means of various forms of food fraud, either counterfeiting, labeling or lack of adequate documentation. The present paper begins with a short theorization on food fraud and finishes with an analysis of the latest Rapid Alert System for Food and Feed report, in order to capture the essence of food fraud incidents that have occurred since May 2019 until present: the most frequent subject of incidents and degree of impact, their nature, along with the products mostly affected. Our results show that food fraud incidents consisted mostly of lacking documentation pertaining to each food product. While animal hides and certain poisonous substances have been detected only in certain cases, their importance is not be ignored in terms of public health.*

**Key words:** food fraud, RASFF, illegal import, animal hides

### INTRODUCTION

The issue of food fraud continues to be one of global implications, with acknowledged effects in what concerns both the human health and the burden placed on the global economy. Recent estimations on the financial impact of food fraud show that even one shipment of unfit for consumption food can generate losses dozens of thousands of dollars [15]. Among the direct consequences of food fraud, severe forms of food poisoning are mostly mentioned in the established literature [1], [12], [13], as well as intolerances [3].

While most definitions of food fraud emphasize the contents of food and the direct of influence of public health for instance, [11], [18], other perspectives stress that the products' description, labeling, as well as other aspects concerning the pursuing documents count as food fraud in the same manner [14], [16]. Ultimately, food fraud does not

necessarily mean affecting the contents of products; but consists of implying that the product is fit for consumption or use. Equally, other food experts have indicated that the overwhelming majority of food incidents do not have any direct impact on economy whatsoever [18]. Still, this does not imply that food incidents are to be dealt with less seriously, as their influence on the long run can have significant effects. Food fraud generally refers to 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" [1]. Following the scandal on the identification of undeclared horsemeat in beef products, the European Parliament's Report on the Food Crisis, Food Chain Fraud and Control has summoned the European Commission to "provide the issue of the food fraud the full attention to it deserves and to take all necessary

measures to make the prevention and combating food fraud integrals part of the EU policy" [4]. The EU member states and the European Commission have agreed on 19 exact measures to strengthen EU action against food fraud. These measures were presented to the Council for Agriculture and Fisheries (AGRIFISH) on October 9th, 2017. The measures included a commitment to improve the interaction between the Rapid Alert System for Food and Feed (RASFF) and the Administrative Assistance and Cooperation System (AAC), along with the creation of a common contact points [8]. The EU has restated its official agri-food chain control policies to increase its overall efficiency and promote citizens' trust. As stated in the Communication "The Single Market: Europe's best asset in a changing world", the European Commission considers that "protecting consumers against fraudulent practices by unethical organizations is a challenge that requires increased cross-border cooperation between administrations" [5]. The fight against fraud should not only concern crisis management, but also a proactive attitude in preventing, detecting and exchanging information between operators and authorities [6]

Currently, although the literature on food fraud is flourishing, there is no harmonized definition of food fraud in the EU level [17]. To distinguish whether a case should be considered fraud or non-compliance, four key criteria are considered and if a case meets all four criteria, it is considered suspected fraud. These criteria correspond to the current rules in EU countries for reporting fraud:

- (i) a breach of EU law: involves a breach of one or more existing regulations in EU agri-food chain law;
- (ii) an intent: certain non-conformities do not occur accidentally (e.g. replacement of a high quality ingredient with a lower quality one);
- (iii) an economic gain: implies a form of direct or indirect economic advantage;
- (iv) a customer deceiving: involves some form of customer/ consumer misleading (for example: modified labels, which do not illustrate the true quality or, in more serious cases, even the nature of a product). The

misleading element can also appear in the form of a risk to public health, if some real properties of the product are hidden (for instance, undeclared allergens) [7].

Recent evidence shows that the current COVID-19 has deepened the existent food fraud phenomenon, with ordinary cheese ready to be sold as parmesan, lacking proper documentation, cases of food baskets that were distributed to families in need during the pandemic, lacking health marks and with deceiving labeling concerning their weight, and many others [9]. All of the illegal imports during this period were attributed to criminal organizations around the world, who are attempting to gain financial means in this manner, since they are losing terrain in other areas of their activity [2].

In the light of this broad context, the purpose of our empirical analysis is to assess the frequency, forms and severity of food fraud incidents nowadays, in addition to all their pertaining variables: the items subject of fraud, their country of origin, country of destination. We argue that such an undertaking will fill some gaps concerning the (re)current food dangers in present times.

## MATERIALS AND METHODS

As outlined above, the broad purpose of our study is to explore the frequency, nature and degree of food incidents throughout the entire European Union within the past year.

The particular objectives of the analysis were:  
-to assess what food incidents were present and how frequently

-to locate the source and forms of food incidents

-to explore which food products were attempted to be sold illegally and where

-to illustrate how they were evaluated by each national customs' office and what measures were proposed if any breach was observed

Our study is based on the most recent Rapid Alert System for Food and Feed report, with food incidents reported from May 2019 to May 2020 [10]. In this period, a total of 100 incidents, with multiple subjects of food fraud per incident were present. The following subjects of food incidents were observed based

on the RASFF report, and were thenceforth narrowed down and coded in Microsoft Excel and SPSS (Statistical Package for Social Sciences):

-the presence of illegal import (Yes/ No)  
 -if illegal imports were present, in what form were they evaluated (suspected, attempted or confirmed)

-the presence of issues with the products' health certificate (Yes/ No)

-if any issues with the products' health certificate were observed, which were they? (Absence of health certificates/ Improper health certificate/ Fraudulent health certificate)

-the presence of the analytical report (Yes/ No)

-the presence of food hazards (Yes/ No). Here, a food hazard is to be understood either as a breach of numerical values implicit to a product, or as the presence of a poisonous substance. For the sake specificity, animal hides are not included here, but as a different, explicit variable in our study.

-the risk decision (serious/ not serious/ undecided)

-the product(s)' hygienic state

-the presence of a health mark (Yes/ No)

-the presence of the Common Entry Document

-if the Common Entry Document was present, was it proper? (Yes/ No/ N/A)

-the presence of animal hides (Yes/ No/ N/A)

The other variables introduced in the analysis were, as follows:

-the month and year of occurrence

-the country notifying the food incident

-the location from which the products were imported (Argentina/ China/ Ethiopia/ Ghana/ India/ Indonesia/ Iran/ Morocco/ Myanmar/ Nigeria/ Pakistan/ Philippines/ Senegal/ Serbia/ Thailand/ Turkey/ United Arab Emirates/ United States of America). One food incident regarded an online sale.

-the product category subject to food fraud (cereals and bakery products / confectionery / crustaceans and products thereof / dietetic foods, food supplements, fortified foods / fats and oils / fish and fish products / fruits and vegetables / herbs and spices / honey and royal jelly / meat and meat products (other than poultry) / milk and milk products/ nuts, nut products and seeds / other food product or mixed / poultry meat and poultry meat products

/ prepared dishes and snacks/ soups, broths, sauces and condiments)

-the classification of measures to be taken (border rejection/ information for follow-up/ information for attention/ none specified)

## RESULTS AND DISCUSSIONS

The results of our statistical analysis show that the overwhelming majority of food incidents are related to the documentation that should follow the food products, and rarely in cases pertaining to the products' intrinsic quality. Furthermore, few incidents have been marked as serious.

56% of all incidents concerned forms of illegal import (Fig. 1), 52% of which were attempts, 3% suspicions and 1% a confirmed import (n=100, Fig. 2).

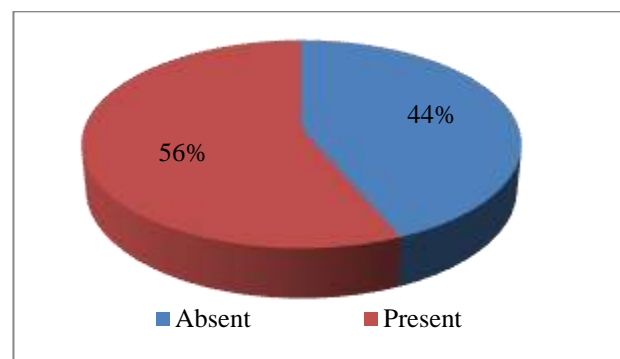


Fig. 1. Presence of illegal imports (either suspected or confirmed) in analyzed dataset (2019-2020)  
 Source: Statistics based on the last RASFF Report.

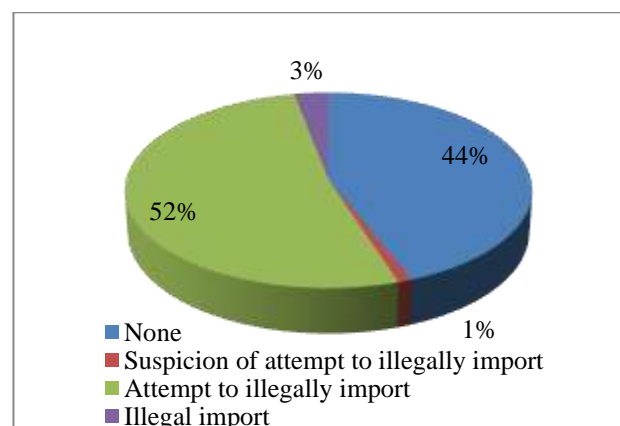


Fig. 2. Forms of illegal imports in the analyzed dataset (2019-2020)  
 Source: Statistics based on the last RASFF Report.

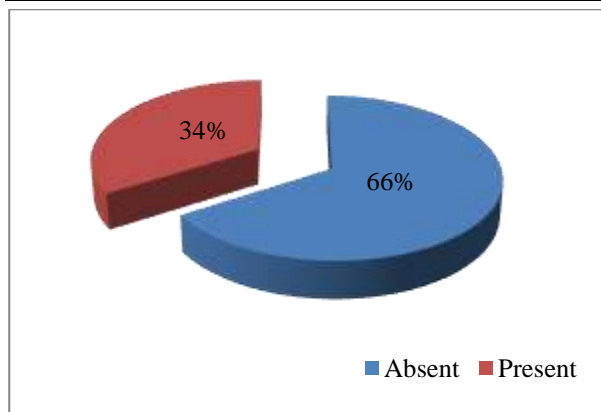


Fig. 3. Issues with health certificates in food incidents dataset (2019-2020)  
 Source: Statistics based on the last RASFF Report.

From the dataset, 34% of the incidents reported various issues with health certificates (Fig. 3), 1% of which concerned a fraudulent certificate, 9% were improper and 24% absent altogether (Fig. 4). Analytical reports were found missing in 17% of the total food incidents.

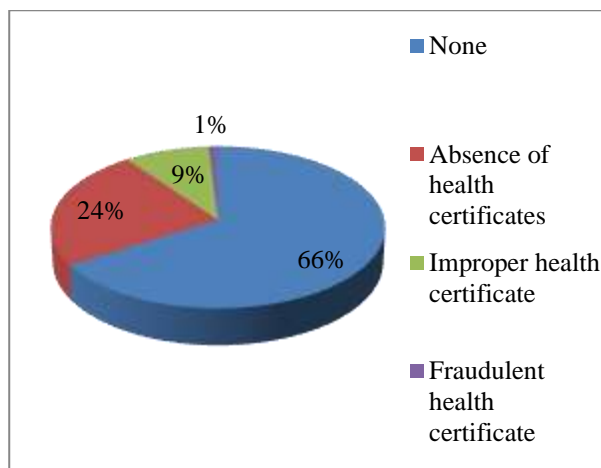


Fig. 4. Forms of issues with health certificates in the analyzed dataset (2019-2020)  
 Source: Statistics based on the last RASFF Report.

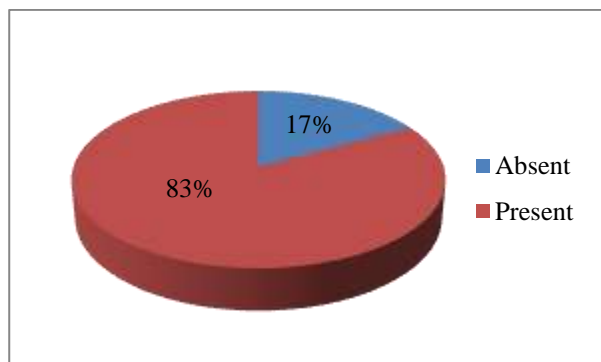


Fig. 5. Presence of the analytical reports pertaining to products  
 Source: Statistics based on the last RASFF Report.

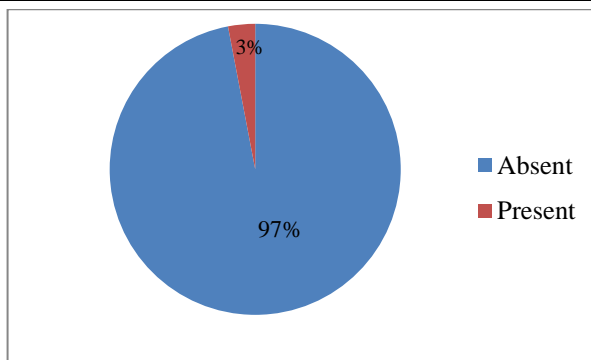


Fig. 5. Presence of food hazards  
 Source: Statistics based on the last RASFF Report.

Table 1. Risk decision per each food product category for all food incidents during May 2019-May 2020 in the analyzed dataset

Product category	Risk decision			Total
	Undecided	Not serious	Serious	
Cereals and bakery products	2%	5%	0	7%
Confectionery	0	1%	0	1%
Crustaceans and products thereof	0	3%	0	3%
Dietetic foods, food supplements, fortified foods	0	0	1%	1%
Fats and oils	0	7%	0	7%
Fish and fish products	0	15%	1%	16%
Fruits and vegetables	0	11%	0	11%
Herbs and spices	0	9%	0	9%
Honey and royal jelly	0	1%	0	1%
Meat and meat products (other than poultry)	0	2%	0	2%
Milk and milk products	0	0	1%	1%
Nuts, nut products and seeds	0	34%	0	34%
Other food product / mixed	0	2%	0	2%
Poultry meat and poultry meat products	0	2%	1%	3%
Prepared dishes and snacks	0	1%	0	1%
Soups, broths, sauces and condiments	0	1%	0	1%
<b>Total</b>	<b>2%</b>	<b>94%</b>	<b>4%</b>	<b>100%</b>

Source: Statistics based on the last RASFF Report.

Food hazards were found in 3% of all cases, were labelled as serious, and consisted of the following:

-benzo(a)pyrene (28.7 µg/kg - ppb) and polycyclic aromatic hydrocarbons (165.6, 266.1 µg/kg - ppb) in smoked poultry from

Ghana, to be imported in the UK (1%, Table 1).

-benzo(a)pyrene (62 µg/kg - ppb) and polycyclic aromatic hydrocarbons (374.6; 592.8 µg/kg - ppb) in sardines from Ghana, to be imported in the UK (1%, Table 1) [10]

-2,4-dinitrophenol (DNP- a poisonous substance usually known for its weight-loss effects) offered online for sale in the United Kingdom of Great Britain. The product's category is dietetic foods, food supplements, fortified foods (1%, Table 1).

The last serious food incident concerned the illegal import of powder milk from the United Arab Emirates to Norway (1%, Table 1).

As Table 1 outlines, 94% food incidents were considered not serious and only 4% serious – described above the Table.

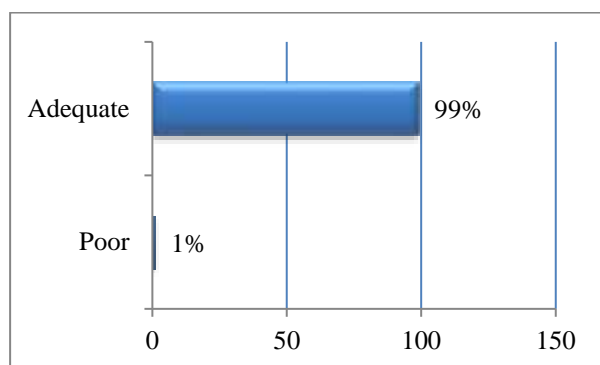


Fig. 6. The products' hygienic state  
 Source: Statistics based on the last RASFF Report.

The one case of a food item in a poor hygienic state concerned a product from Morocco, from the category „crustaceans and products thereof”.

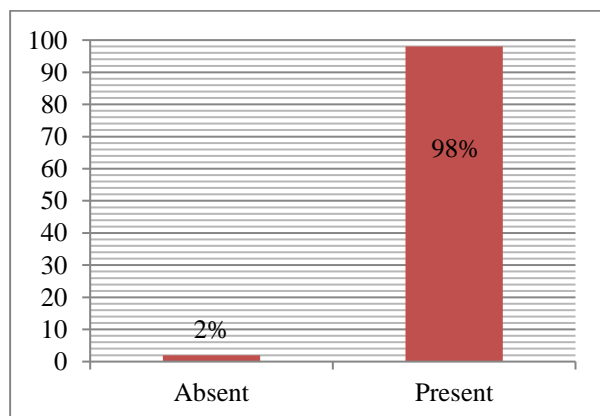


Fig. 7. Presence of health marks on the products  
 Source: Statistics based on the last RASFF Report.

Only 2 % of food incidents regarded products with no health mark (Fig. 7).

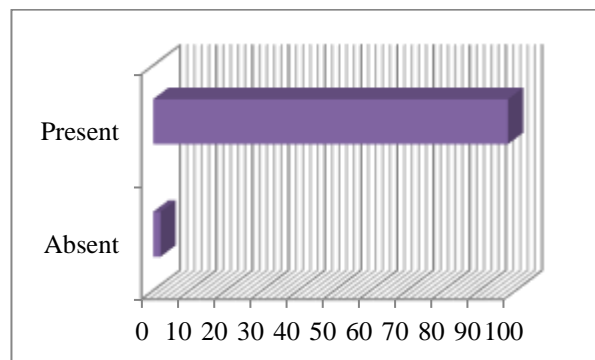


Fig. 8. The presence of the Common Entry Document  
 Source: Statistics based on the last RASFF Report.

The Common Entry Document was found missing only in 1 case (Fig. 8) and another case regarded an improper such document.

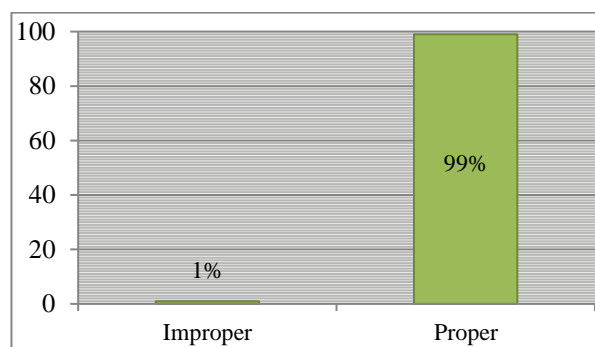


Fig.9. Properness of the Common Entry Document  
 Source: Statistics based on the last RASFF Report.

Animal hides were found in 6% of all food incidents (Fig. 10), 3% in the fats and oils category, and 3% in nuts, nut products and seeds. All products with animal hides originated from Ghana, were about to be imported in the United Kingdom of Great Britain and were categorized as not serious.

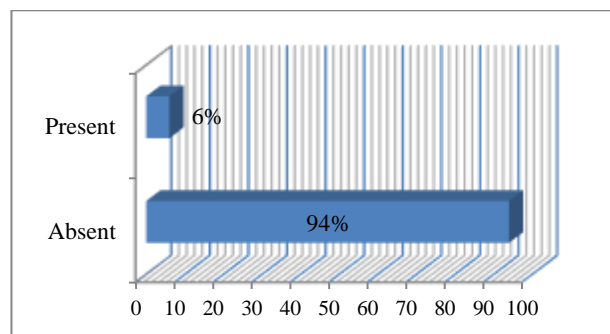


Fig. 10. Presence of animal hides  
 Source: Statistics based on the last RASFF Report.

Border rejection represented the main measure and classification for food incidents (96%), with Ghana (40%), India (14%) and Nigeria (12%) as most prevalent countries of import with food incidents (Table 2).

Table 2. Classification of food incidents per import country and overall, in the dataset (2019-2020)

Location of import/sale	Classification			Total
	information for follow-up	information for attention	border rejection	
Argentina	0	0	1%	1%
China	1%	0	5%	6%
Ethiopia	0	0	1%	1%
Ghana	0	0	40%	40%
India	0	0	14%	14%
Indonesia	0	0	2%	2%
Iran	0	0	3%	3%
Morocco	0	0	1%	1%
Myanmar	0	0	2%	2%
Online	0	1%	0	1%
Pakistan	0	0	1%	1%
Philippines	0	1%	0	1%
Senegal	0	0	2%	2%
Serbia	0	0	1%	1%
Thailand	0	0	1%	1%
Turkey	0	0	7%	7%
U. Arab Emirates	0	0	1%	1%
USA	0	1%	1%	2%
none specified	0	0	1%	1%
<b>Total</b>	<b>1</b>	<b>3%</b>	<b>96%</b>	<b>100%</b>

Source: Statistics based on the last RASFF Report.

The product categories most frequently attempted to be sold illegally were “nuts, nut products and seeds” (27%), „fish and fish products” (13%), as well as „fruits and vegetables” (8%) with UK as the destination country (Table 3). Every each other product category could be found in 1 or 2% of the dataset, in each of the countries included in the report. The UK also represented the country with most food incidents in the analyzed period.

Summarizing, the main food incidents observed during the past year were mostly a result of illegal imports and improper or lacking documentation:

- 56% of all incidents concerned forms of illegal import: 52% - attempts, 3% - suspicions, 1% - a confirmed import
- 34% of the incidents reported various issues with health certificates: 24 - absent, 9 – improper, 1- fraudulent certificate
- 17% of the total food incidents concerned lacking analytical reports
- 2% of food incidents regarded products with no health mark
- 2% of food incidents regarded issues with the Common Entry Document: 1 lacking, and 1 improper.

Table 3. Product categories attempted to be sold illegally in each of EU countries reported by RASFF

Product category	Countries notifying the food incidents										
	UK	France	Slovenia	Latvia	Italy	Cyprus	Norway	Sweden	Poland	Greece	Spain
cereals and bakery products	2%	1%	1%	0	0	0	0	0	3%	0	0
confectionery	1%	0	0	0	0	0	0	0	0	0	0
crustaceans and products thereof	2%	0	0	0	0	0	0	1%	0	0	0
dietetic foods, food supplements, fortified foods	1%	0	0	0	0	0	0	0	0	0	0
fats and oils	7%	0	0	0	0	0	0	0	0	0	0
fish and fish products	13%	0	0	0	1%	2%	0	0	0	0	0
fruits and vegetables	8%	1%	0	0	0	0	0	0	1%	1%	0
herbs and spices	5%	0	1%	0	2%	0	0	0	1%	0	0
honey and royal jelly	0	0	0	0	0	1%	0	0	0	0	0
meat and meat products (other than poultry)	0	0	0	0	2%	0	0	0	0	0	0
milk and milk products	0	0	0	0	0	0	1%	0	0	0	0
nuts, nut products and seeds	27%	3%	0	1%	0	0	0	0	1%	2%	0
other food product / mixed	1%	0	0	0	0	0	1%	0	0	0	0
poultry meat and poultry meat products	3%	0	0	0	0	0	0	0	0	0	0
prepared dishes and snacks	0	0	0	0	0	0	0	0	0	0	1%
soups, broths, sauces and condiments	0	0	0	0	1%	0	0	0	0	0	0
<b>Total</b>	<b>70%</b>	<b>5%</b>	<b>2%</b>	<b>1%</b>	<b>6%</b>	<b>3%</b>	<b>2%</b>	<b>1%</b>	<b>6%</b>	<b>3%</b>	<b>1%</b>

Source: Statistics based on the last RASFF Report.

Issues with the inner composition of products were found in a lesser extent, as follows:

-94% food incidents were considered not serious and only 4% serious: food hazards were found in 3% of all cases, labelled as serious

-animal hides were found in 6% of all food incidents, 3% in the fats and oils category, and 3% in nuts, nut products and seeds. All products with animal hides originated from Ghana, were about to be imported in the United Kingdom of Great Britain and were categorized as not serious.

-1 case of a food item in a poor hygienic state concerned a product from Morocco, from the category „crustaceans and products thereof”. Border rejection represented the main measure and classification for food incidents (96%), with Ghana (40%), India (14%) and Nigeria (12%) as most prevalent countries of import with food incidents.

The product categories most frequently attempted to be sold illegally were “nuts, nut products and seeds” (27%), „fish and fish products” (13%), as well as „fruits and vegetables” (8%) with UK as the destination country.

## CONCLUSIONS

The results of this research indicates that products of all types were the subject of food fraud, with “nuts, nut products and seeds”, „fish and fish products”, ”fruits and vegetables” as most visible product categories. Most food incidents concerned forms of illegal imports and improper or lacking documentation, all of which were considered not serious. Very few reports concerned serious food hazards, as well as animal hides and lacking proper hygiene conditions. Most products attempted to be sold illegally originated from Ghana, India and Nigeria and the vast majority of their destination was the UK. Border rejection represented the main measure and classification for food incidents. What comes as striking is that only 18 countries and 1 online sale reported various attempts of food fraud. Surely, the results of this research would be different if more cases would be reported or if more online scanning of fraudulent activity would be performed. While the algorithm of country reporting to the RASFF is unknown, future studies should assess better ways for citizens to identify and flag online food fraud. This would definitely

enhance the finding and sanctioning of more cases of food fraud worldwide.

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