27th EURL-*Salmonella* workshop

23 May 2022

# EU monitoring of *Salmonella* and of salmonellosis foodborne outbreaks, in 2020

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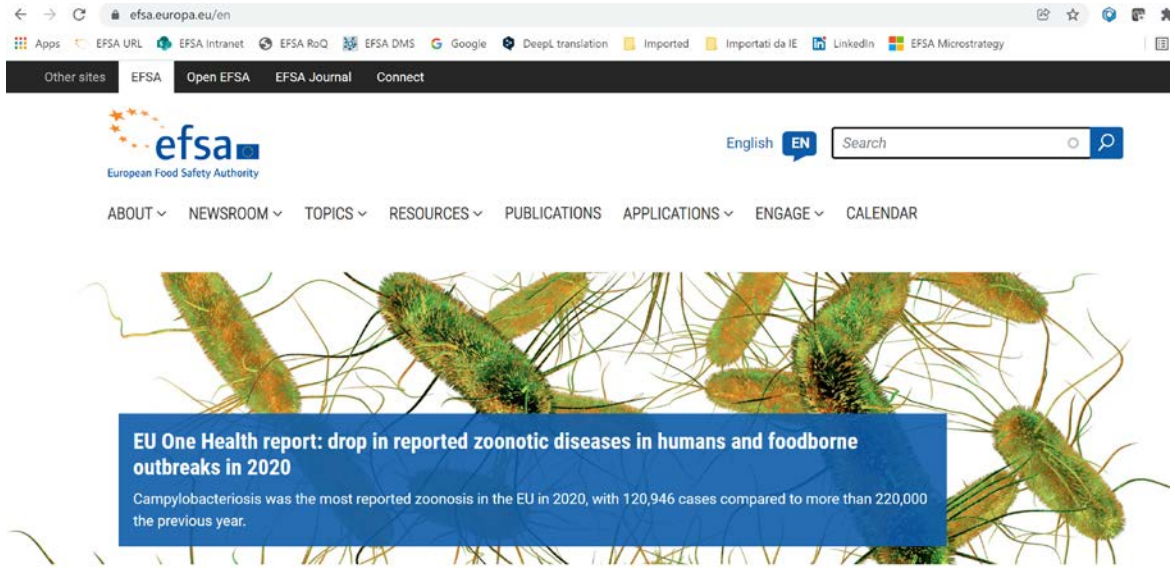
Trusted science for safe food

efsa

European Food Safety Authority

# EU One Health Zoonoses 2020 report




Joint annual EFSA-ECDC scientific report

SCIENTIFIC REPORT

EFSA Journal

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**The European Union One Health 2020 Zoonoses Report**

European Food Safety Authority
European Centre for Disease Prevention and Control

**Abstract**

This report of the EFSA and the European Centre for Disease Prevention and Control presents the results of zoonoses monitoring activities carried out in 2020 in 27 EU Member States (MS) and nine non-MS. Key

https://www.efsa.europa.eu/en/efsajournal/pub/6971

# EU One Health Zoonoses 2020 report

- The production of the **EUOHZ 2020 report** was supported by the Consortium ZOE (Zoonoses under a One health perspective in the EU), who also built **communication tools** (foodborne outbreaks dashboard and story map)

  Overall, around 75 persons with solid expertise on zoonoses, communication, data analysis and reporting
- EFSA-ECDC joint framework contract
- Consultation of MS (EFSA and ECDC networks), EC, AHAW and BIOHAZ Panels, EURLs
- 27 EU MS and 9 non-MS reported results

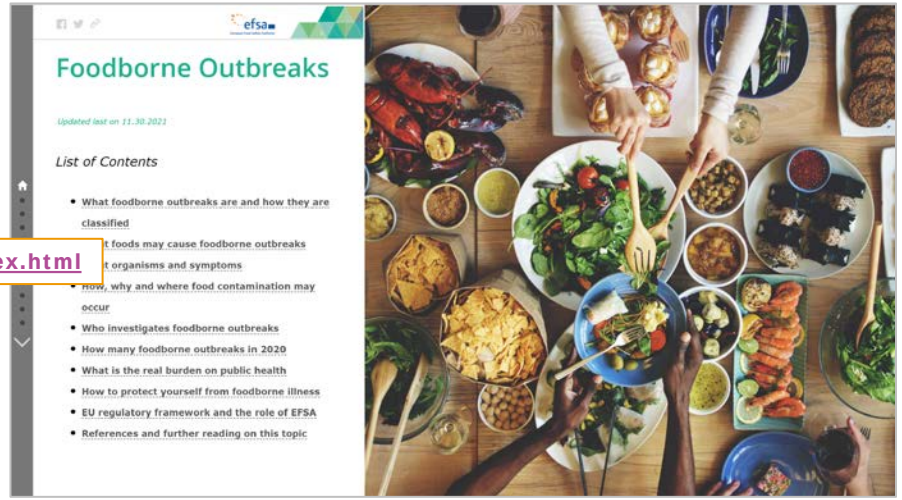
## Project Consortium

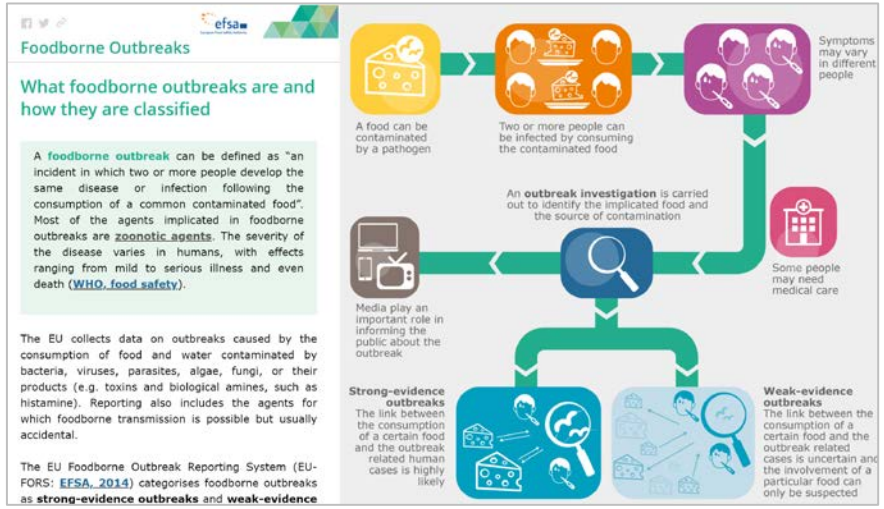
# EU One Health Zoonoses report
# → new communication tools published in 2020

European Food Safety Authority

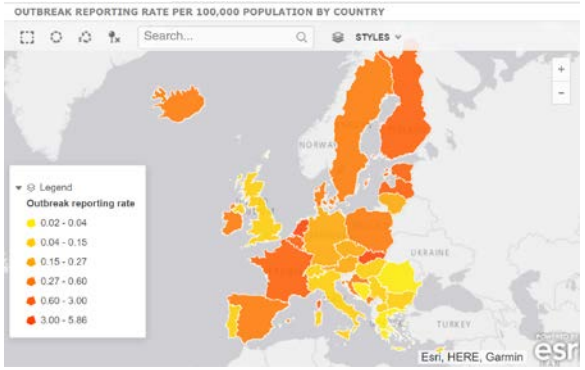
- **EFSA's story map on foodborne outbreaks**

https://multimedia.efsa.europa.eu/fbo-storymaps/index.html

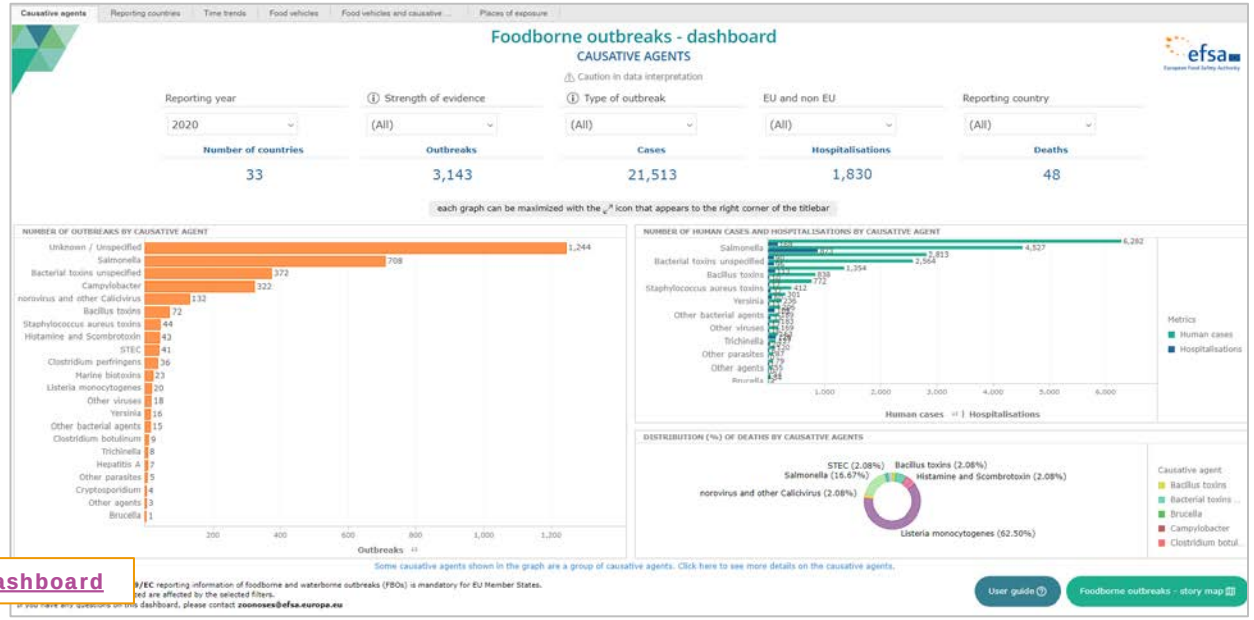


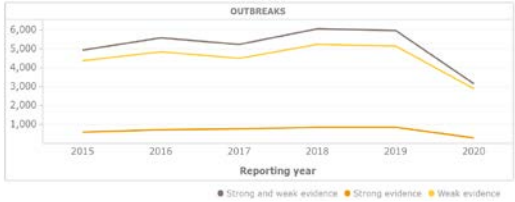



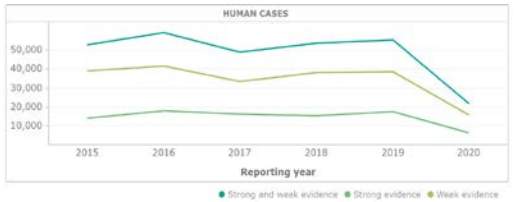

- **EFSA's dashboard on foodborne outbreaks**




https://www.efsa.europa.eu/en/microstrategy/FBO-dashboard



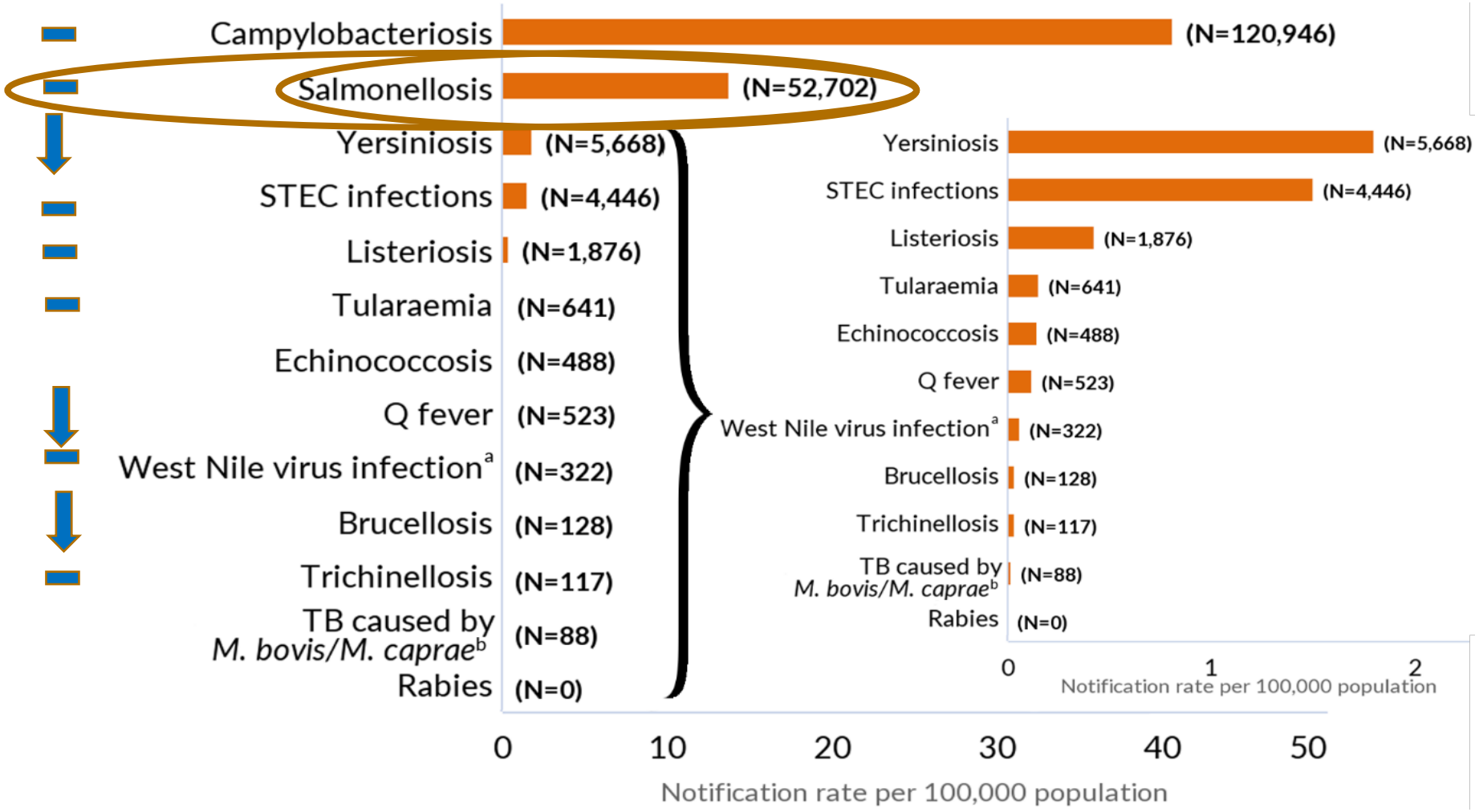



# EU One Health Zoonoses 2020 report

Challenging data analyses due to impact of

- COVID-19 pandemic
- withdrawal of United Kingdom from the EU
    - No 2020 data reporting to ECDC
    - 2020 data reporting to EFSA

# Reported numbers and notificaton rates of confirmed human zoonoses in the EU, 2020



# Reported hospitalisations and case fatalities due to zoonoses in confirmed human cases in the EU, 2020

| Disease | Number of confirmed human cases | Hospitalisation | | | | | Deaths | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Status available (N) | Status available (%) | Number of reporting MS[b] | Reported hospitalised cases | Proportion hospitalised (%) | Outcome available (N) | Outcome available (%) | Number of reporting MS[b] | Reported deaths | Case fatality (%) |
| **Campylobacteriosis** | 120,946 | 41,037 | 33.9 | 14 | 8,605 | 21.0 | 83,744 | 69.2 | 15 | 45 | 0.05 |
| **Salmonellosis** | 52,702 | 20,562 | 39.0 | 13 | 6,149 | 29.9 | 30,355 | 57.6 | 15 | 57 | 0.19 |
| **Yersiniosis** | 5,668 | 1,214 | 21.4 | 12 | 353 | 29.1 | 3,072 | 54.2 | 13 | 2 | 0.07 |
| **STEC infections** | 4,446 | 1,593 | 35.8 | 16 | 652 | 40.9 | 3,094 | 69.6 | 19 | 13 | 0.42 |
| **Listeriosis** | 1,876 | 803 | 42.8 | 18 | 780 | 97.1 | 1,283 | 68.4 | 18 | 167 | 13.0 |
| **Tularaemia** | 641 | 123 | 19.2 | 9 | 64 | 52.0 | 200 | 31.2 | 10 | 0 | 0 |
| **Echinococcosis** | 488 | 73 | 15.0 | 12 | 44 | 60.3 | 204 | 41.8 | 14 | 0 | 0 |
| **Q fever** | 523 | NA | NA | NA | NA | NA | 235 | 44.9 | 14 | 5 | 2.1 |
| **West Nile virus infection**[a] | 322 | 239 | 74.2 | 8 | 219 | 91.6 | 322 | 100 | 8 | 39 | 12.1 |
| **Brucellosis** | 128 | 56 | 43.8 | 8 | 36 | 64.3 | 55 | 43.0 | 9 | 2 | 3.6 |
| **Trichinellosis** | 117 | 22 | 18.8 | 5 | 16 | 72.7 | 24 | 20.5 | 6 | 0 | 0 |
| **Rabies** | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

MS: Member State(s); NA: Not applicable, as information is not collected for this disease.
(a): Locally acquired infections – for West Nile virus infection, the total number of cases was used (includes probable and confirmed cases).
(b): Not all countries observed cases for all diseases.

Based on severity data, **listeriosis** and **West Nile virus infection** were the two most severe diseases with the highest case fatality and hospitalisation rates. Almost all confirmed cases with available hospitalisation data for these two diseases were hospitalised. About one out of every seven, and one out of every eight confirmed listeriosis and WNV cases with known data were fatal.

# Impact of COVID-19 pandemic on surveillance and reporting of human foodborne diseases in EU, 2020

| Country | Impact on surveillance and reporting | | | | Comparability of 2020 and 2019 data | | | |
|---|---|---|---|---|---|---|---|---|
| | Yes | No | Unknown | Variable* | Low | Medium | High | Variable*/Unknown |
| Austria | | x | | | | | | x |
| Belgium | | x | | | | x | | |
| Czechia | | | X | | | x | | |
| Denmark | x | | | | x | | | |
| Estonia | | x | | | | x | | |
| Finland | | | X | | x | | | |
| France | | | | x | | | | x |
| Germany | x | | | | x | | | |
| Greece | x | | | | | | | x |
| Hungary | x | | | | | x | | |
| Ireland | x | | | | x | | | |
| Italy | | x | | | | x | | |
| Latvia | x | | | | | x | | |
| Lithuania | | | X | | | x | | |
| Luxembourg | | x | | | | x | | |
| Malta | | x | | | | | x | |
| Netherlands | | | X | | | x | | |
| Romania | x | | | | x | | | |
| Slovakia | x | | | | x | | | |
| Slovenia | x | | | | | | x | |
| Spain | x | | | | | | | x |
| Sweden | | x | | | | | x | |
| Iceland | | x | | | | | x | |
| Norway | x | | | | | x | | |

*: Varies according to the zoonosis.

## Results of the survey

### Impact of Covid-19

- 22 MS replied to the survey
- 10/22 MS: pandemic impacted their surveillance/monitoring systems
- 7/22 MS: no effects due to the pandemic
- 4/22 MS: unknown impact
- 1/22 MS: variable impact

### Data comparability for 2020/2019

- Low-medium for 15 MS
- Only 3 MS considered the 2020 and 2019 data highly comparable

*Foodborne diseases considered: brucellosis, campylobacteriosis, echinococcosis, listeriosis, **salmonellosis**, STEC infection, trichinellosis, congenital toxoplasmosis and yersiniosis*

# Impact of COVID-19 pandemic on surveillance and reporting of human foodborne diseases in EU, 2020

2020/2019 absolute difference in the number of **confirmed human cases** by zoonosis, and absolute and relative (%) difference in the **notification rates** per 100,000 population of zoonoses reported in the EU, 2020

Impact of pandemic and Britain's EU withdrawal

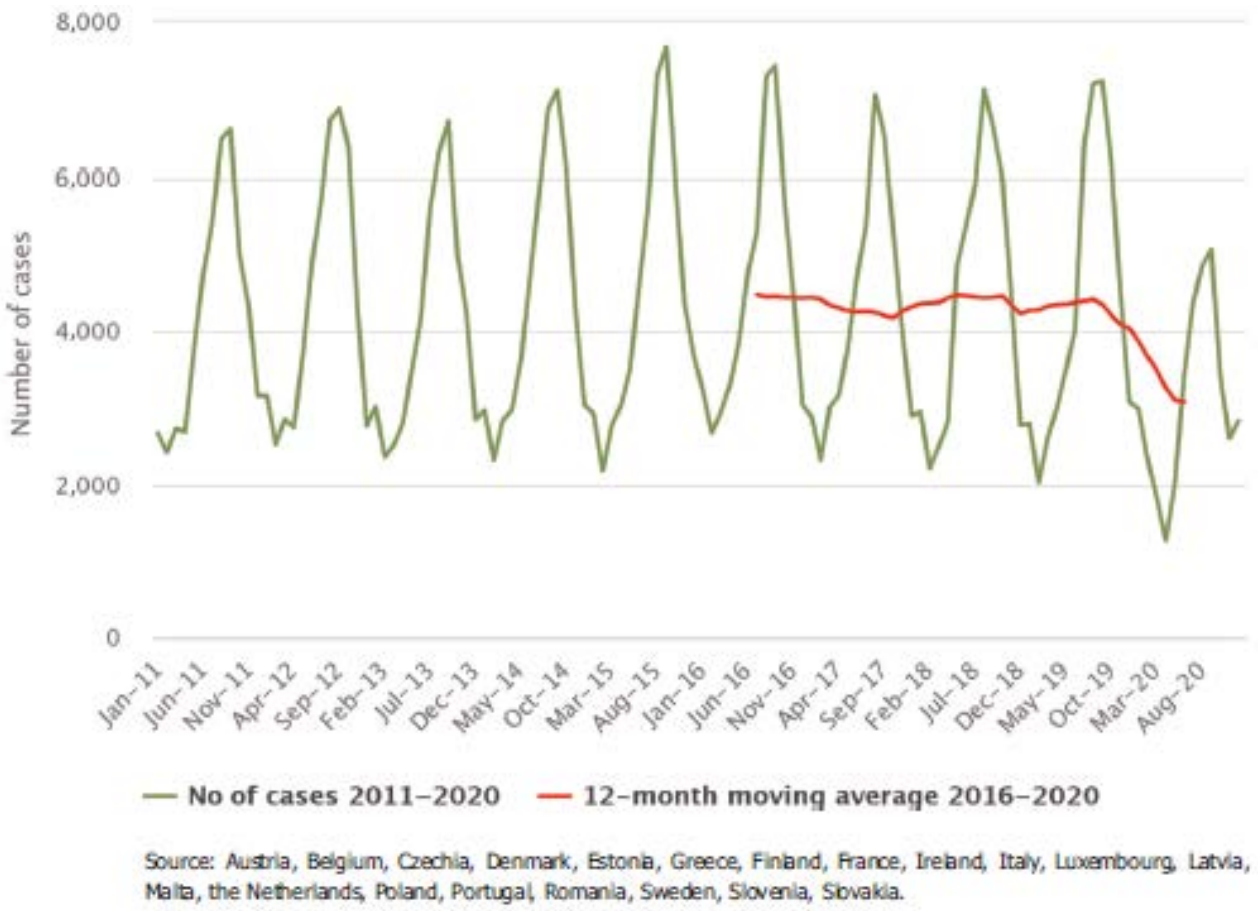
Impact of pandemic

Impact of Britain's EU withdrawal

| Zoonosis | EU level (a) | Cases (N) | | Rate | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2020-2019 Difference | 2020 | 2020-2019 difference | |
| | | | | | Absolute difference | Relative difference (% |
| Campylobacteriosis | EU | 129,946 | -99,693 | 40.3 | -20.3 | -33.4 |
| | EU-27 | | -40,975 | | -13.7 | -25.4 |
| Salmonellosis | EU | 52,702 | -35,206 | 13.7 | -5.8 | -29.7 |
| | EU-27 | | -25,488 | | -6.7 | -32.8 |
| Yersinia | EU | 5,668 | -1,299 | 1.8 | 0.10 | 6.0 |
| | EU-27 | | -1,136 | | -0.27 | -13.4 |
| STEC infection | EU | 4,446 | -3,355 | 1.5 | -0.43 | -22.4 |
| | EU-27 | | -1,768 | | -0.33 | -18.2 |
| Listeriosis | EU | 1,876 | -745 | 0.42 | -0.03 | -7.1 |
| | EU-27 | | -591 | | -0.07 | -14.2 |
| Tularemia | EU | 641 | -639 | 0.15 | -0.11 | -42.5 |
| | EU-27 | | -639 | | -0.15 | -50.0 |
| Q-fever | EU | 523 | -428 | 0.12 | -0.07 | -36.7 |
| | EU-27 | | -419 | | -0.10 | -44.6 |
| Echinococcosis | EU | 488 | -278 | 0.14 | -0.03 | -16.2 |
| | EU-27 | | -275 | | -0.06 | -28.4 |
| West Nile Virus (b) | EU | 322 | -68 | 0.06 | -0.02 | -25.8 |
| | EU-27 | | -68 | | -0.03 | -35.6 |
| Brucellosis | EU | 128 | -182 | 0.03 | -0.03 | -52.6 |
| | EU-27 | | -158 | | -0.04 | -55.3 |
| Trichinellosis | EU | 117 | 20 | 0.03 | 0.01 | 39.1 |
| | EU-27 | | 20 | | < 0.01 | 20.4 |
| Tuberculosis | EU | 88 | 64 | 0.02 | -0.011 | -32.0 |
| | EU-27 | | 29 | | -0.008 | -24.9 |

# Salmonellosis in humans, EU, 2016-2020

The overall salmonellosis trend in 2016-2020 did not show any statistically significant increase or decrease.




Estonia, Finland and Sweden reported a significantly decreasing trend ($p < 0.01$) in the last 5 years (2016–2020). An increasing trend was not observed in any MS in 2016–2020.

# Salmonellosis in humans, EU, key facts 2020

- Salmonellosis was the **second most commonly** reported foodborne gastrointestinal infection in humans after campylobacteriosis and was an important cause of foodborne outbreaks in EU MS and non-MS countries.
- In 2020, *Salmonella* reporting recorded the **lowest number of human cases since 2007**, when salmonellosis surveillance started, owing to the impacts of the withdrawal of the UK from the EU on the one hand and the COVID-19 pandemic on the other hand.
- In 2020, the number of confirmed cases of human salmonellosis was 52,702, corresponding to an EU **notification rate of 13.7** per 100,000 population. This was a **decrease** of 29.7% and 32.8% compared with the rate in 2019 (19.5 and 20.4 per 100,000 population) with and without the 2019 data from the UK, respectively.
- Notwithstanding, the overall trend for salmonellosis in 2016–2020 did **not show any statistically significant increase or decrease**.
- The proportion of hospitalised cases was 29.9%, which was lower than in 2019, with an EU case fatality rate of 0.19%.
- The **top five *Salmonella* serovars** involved in human infections overall were distributed as follows: *S*. Enteritidis (48.7%), *S*. Typhimurium (12.4%), monophasic *S*. Typhimurium (1,4, [5],12:i:-) (11.1%), *S*. Infantis (2.5%) and *S*. Derby (1.2%).

# Human cases in foodborne salmonellosis outbreaks, EU, 2020

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## Human cases in foodborne outbreaks

**694** Foodborne outbreaks

84 Strong-evidence outbreaks
610 Weak-evidence outbreaks

**3,686** Cases of illness

812 Hospitalisations
7 Deaths

**Top food vehicles causing strong-evidence outbreaks**

37 Outbreaks

Eggs and egg products

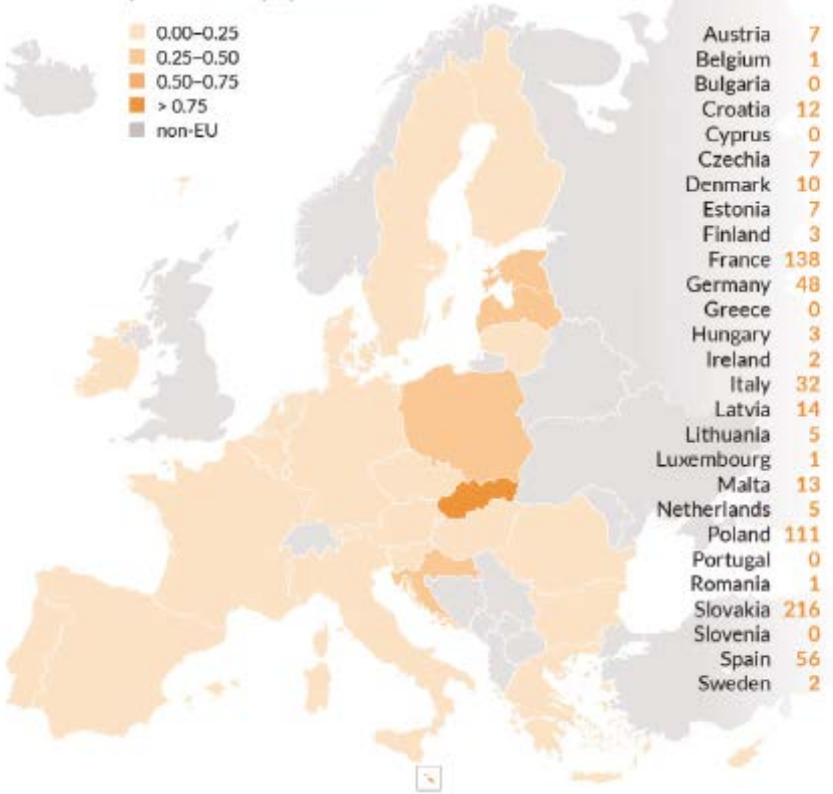
11 Outbreaks

Pig meat and products thereof

9 Outbreaks

Bakery products

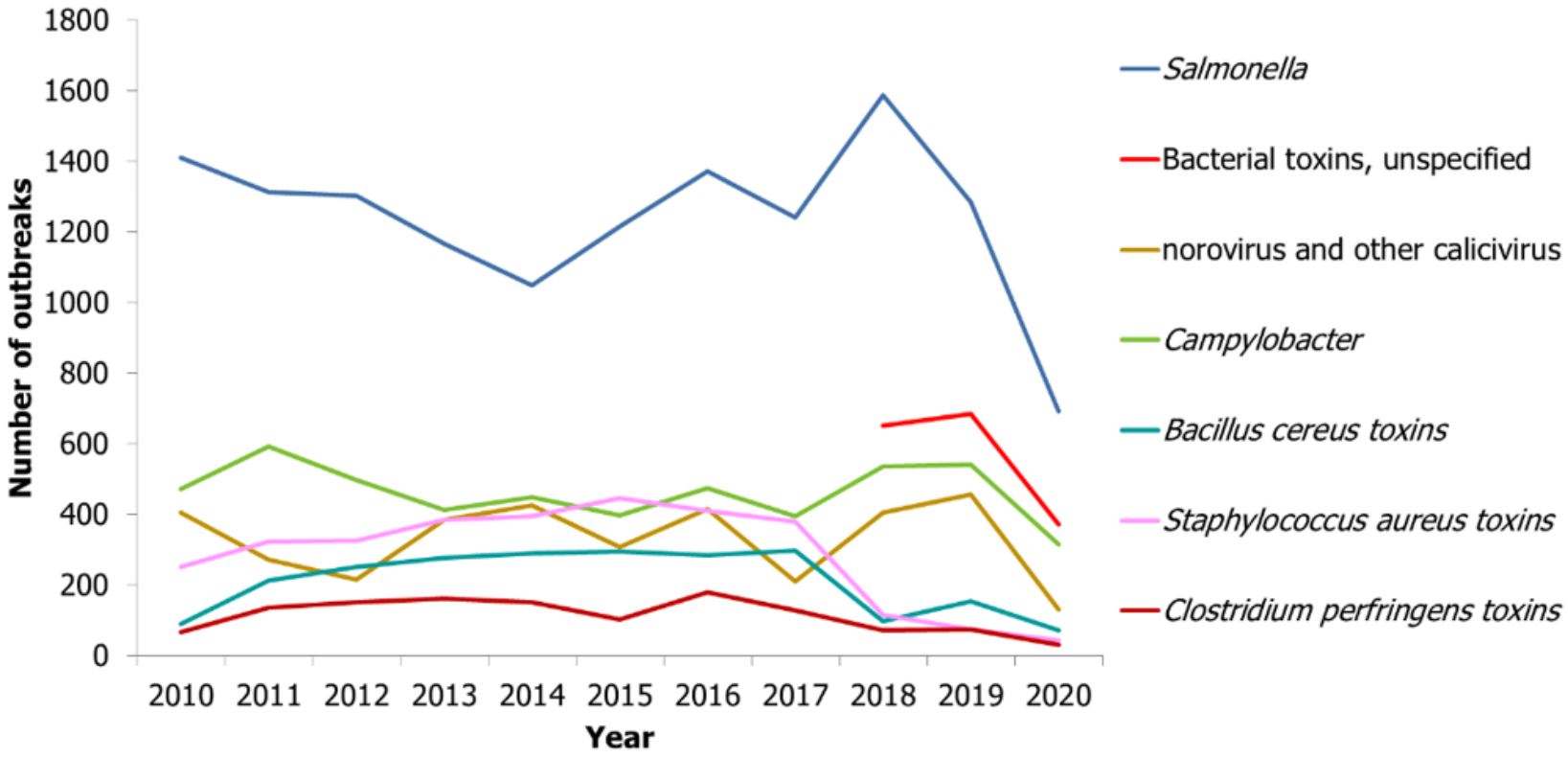
## Foodborne outbreaks in the EU




| No. of salmonellosis outbreaks | |
|---|---|
| Austria | 7 |
| Belgium | 1 |
| Bulgaria | 0 |
| Croatia | 12 |
| Cyprus | 0 |
| Czechia | 7 |
| Denmark | 10 |
| Estonia | 7 |
| Finland | 3 |
| France | 138 |
| Germany | 48 |
| Greece | 0 |
| Hungary | 3 |
| Ireland | 2 |
| Italy | 32 |
| Latvia | 14 |
| Lithuania | 5 |
| Luxembourg | 1 |
| Malta | 13 |
| Netherlands | 5 |
| Poland | 111 |
| Portugal | 0 |
| Romania | 1 |
| Slovakia | 216 |
| Slovenia | 0 |
| Spain | 56 |
| Sweden | 2 |

* Differences among countries shall be interpreted with caution as this indicator depends on several factors including the type of outbreaks under surveillance and does not necessarily reflects the level of food safety in each country.

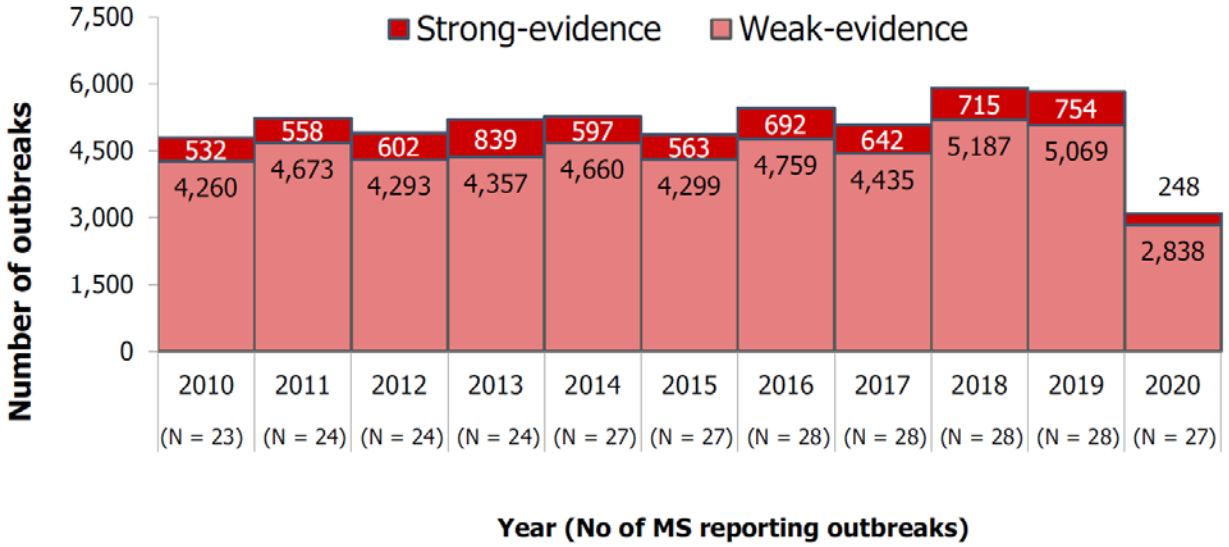
# Foodborne outbreaks, EU, 2020



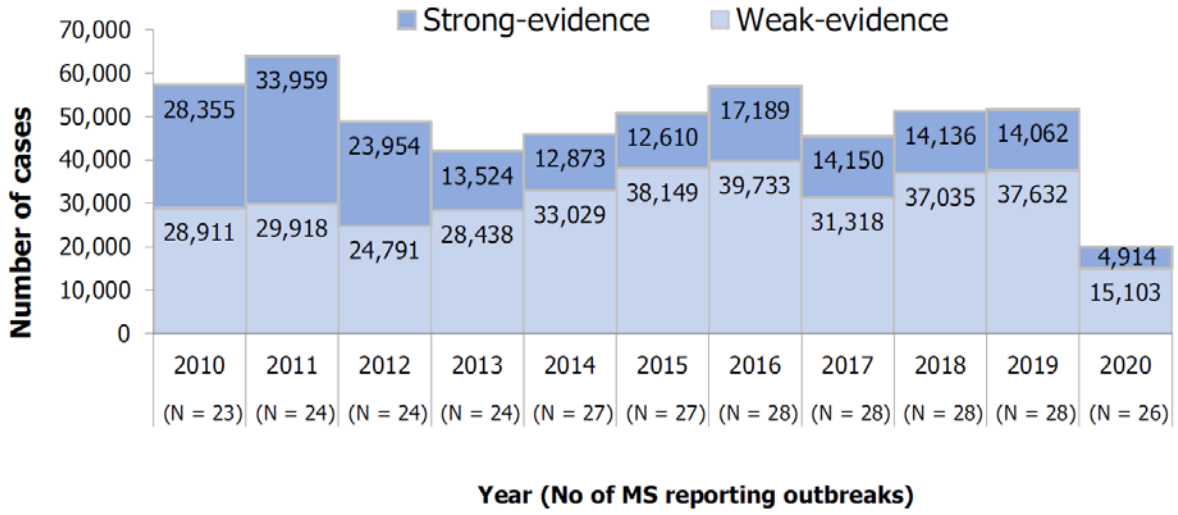

In 2020, the **number of reported outbreaks dropped by 47% compared to 2019** (5,823 in 2019), with human cases falling by 61.3% (51,694 in 2019), hospitalisations by 60.0% (4,298 in 2019) and deaths by 43.3% (60 in 2019).

- These findings are mainly attributable to the indirect consequences of the COVID-19 pandemic among EU populations leading to a **reduced exposure** of people to contaminated food and a **higher under-reporting** of outbreaks. The withdrawal of the United Kingdom from the EU contributed only marginally to the decrease.

# Foodborne outbreaks, EU, 2010-2020

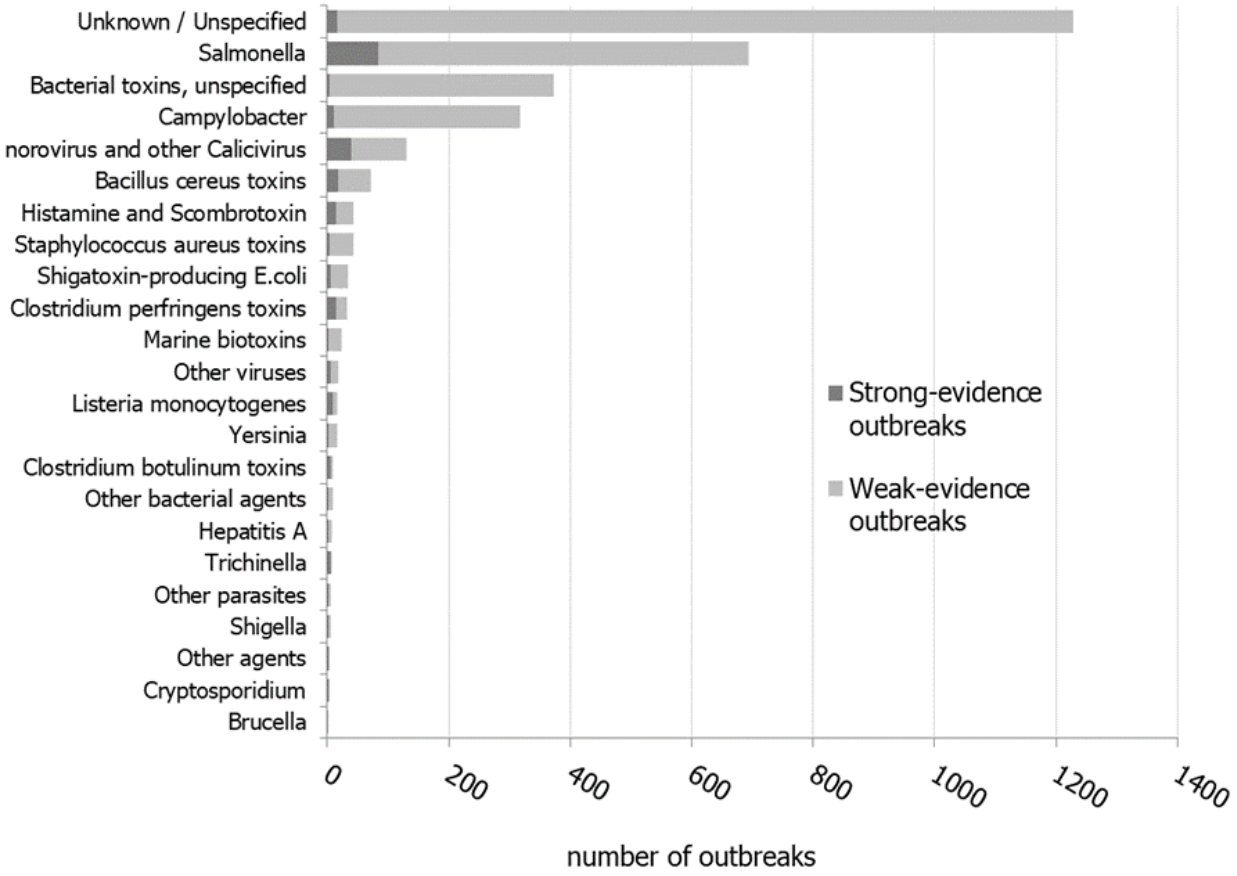



Note: the number of MS reporting outbreaks is shown at the bottom (N).
Outbreaks reported by the United Kingdom are included for the years 2010–2019.

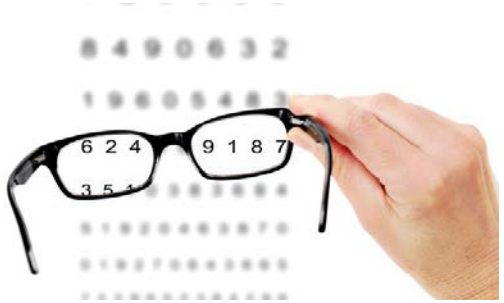



Note: the number of MS reporting outbreaks is shown at the bottom (N).
Cases involved in outbreaks reported by the United Kingdom are included for the years 2010–2019.
Cases involved in both strong-evidence outbreaks and weak-evidence outbreaks are included in the figure.

# Foodborne outbreaks by causative agent, EU, 2020



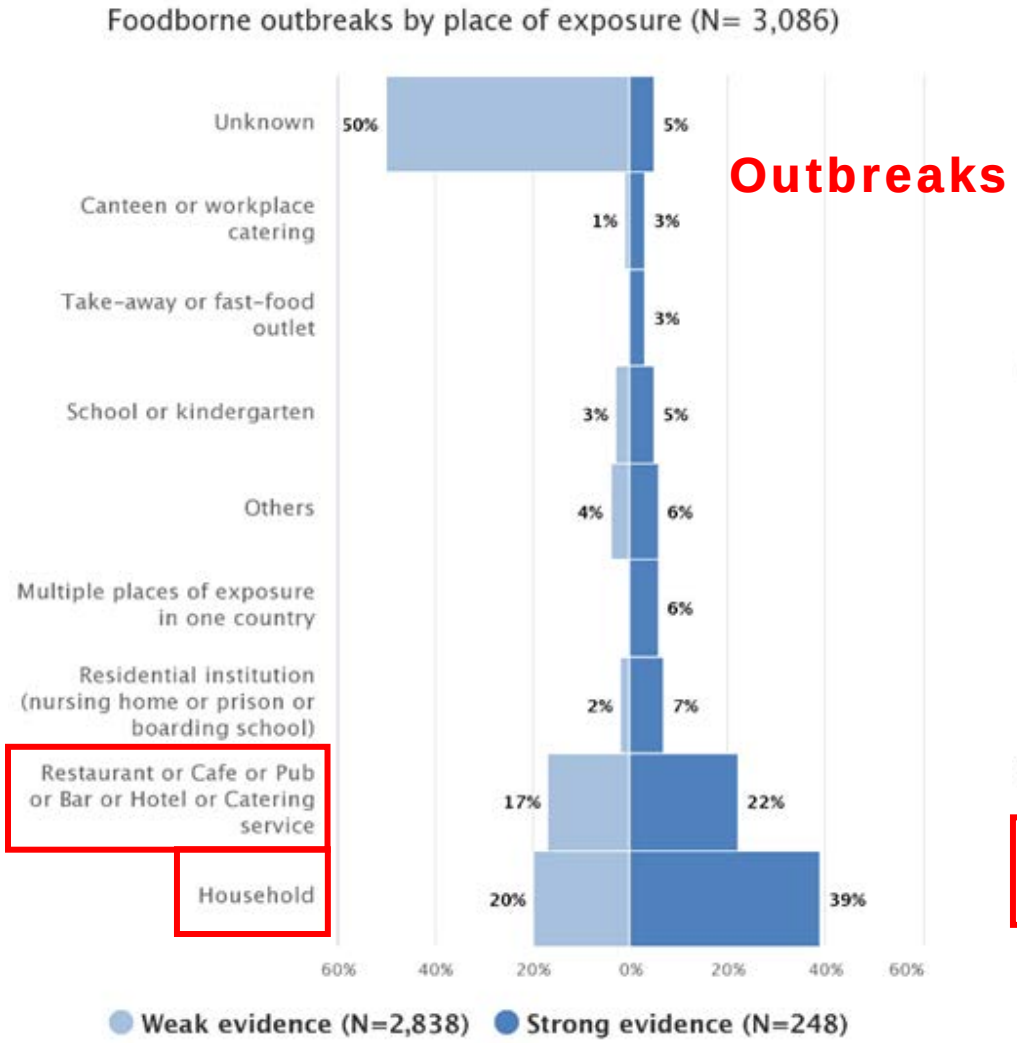

- Causative agent identified in 1,857 FBOs (60.2% of total FBOs)
- For 39,8% (N=1,229) of outbreaks the implicated causative agent was 'unspecified'

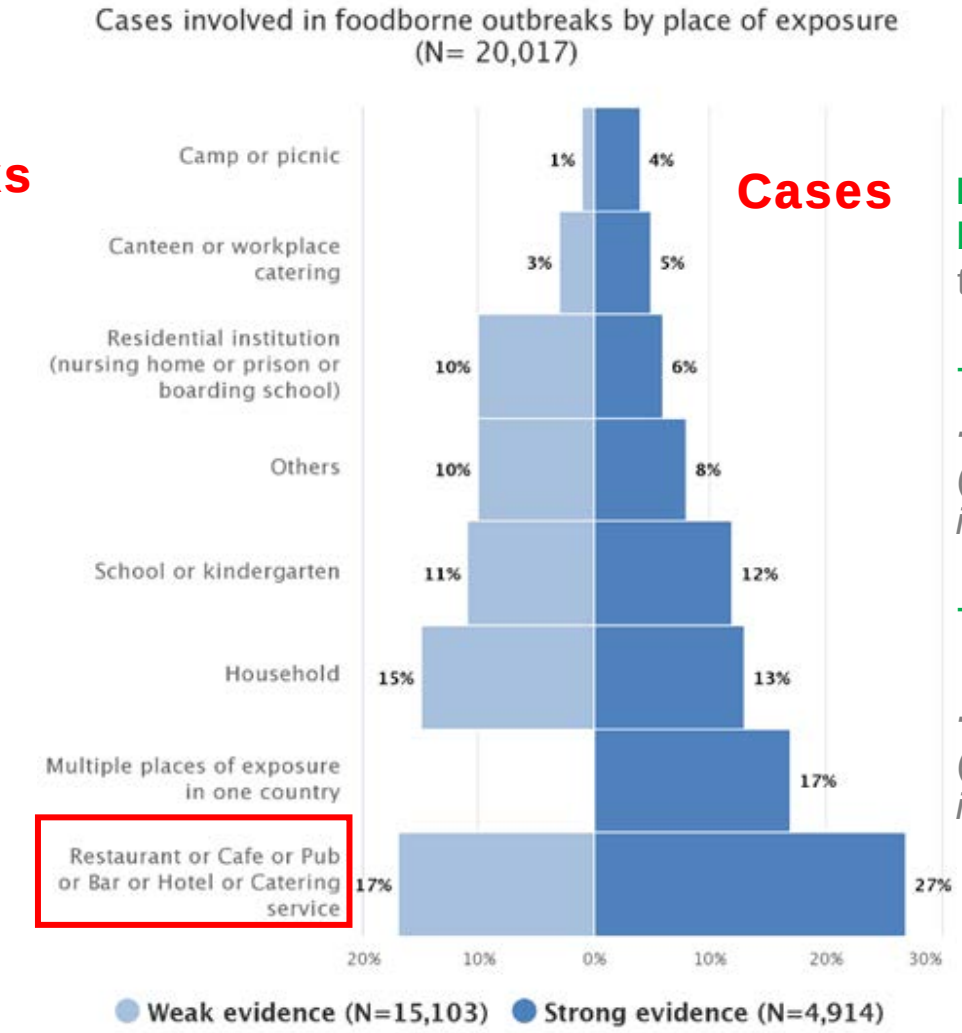


In 2020, 3,086 foodborne outbreaks, 20,017 cases of illness, 1,675 hospitalisations and 34 deaths were reported by 27 EU MS. No FBOs were notified by Slovenia.
Nineteen MS reported strong-evidence outbreaks (N = 248), accounting for 8.0% of all outbreaks overall, the lowest proportion reported since 2010, with overall 4,914 illnesses, 407 hospitalised and 15 deaths.

# Strong FBOs by place of exposure, EU, 2020

## Distribution of the number of outbreaks and cases involved in strong- and weak-evidence foodborne outbreaks, by place of exposure (setting), EU, 2020.




**Remarkable decrease between 2020 and 2019** in the number of outbreaks in:

→ **DOMESTIC setting**

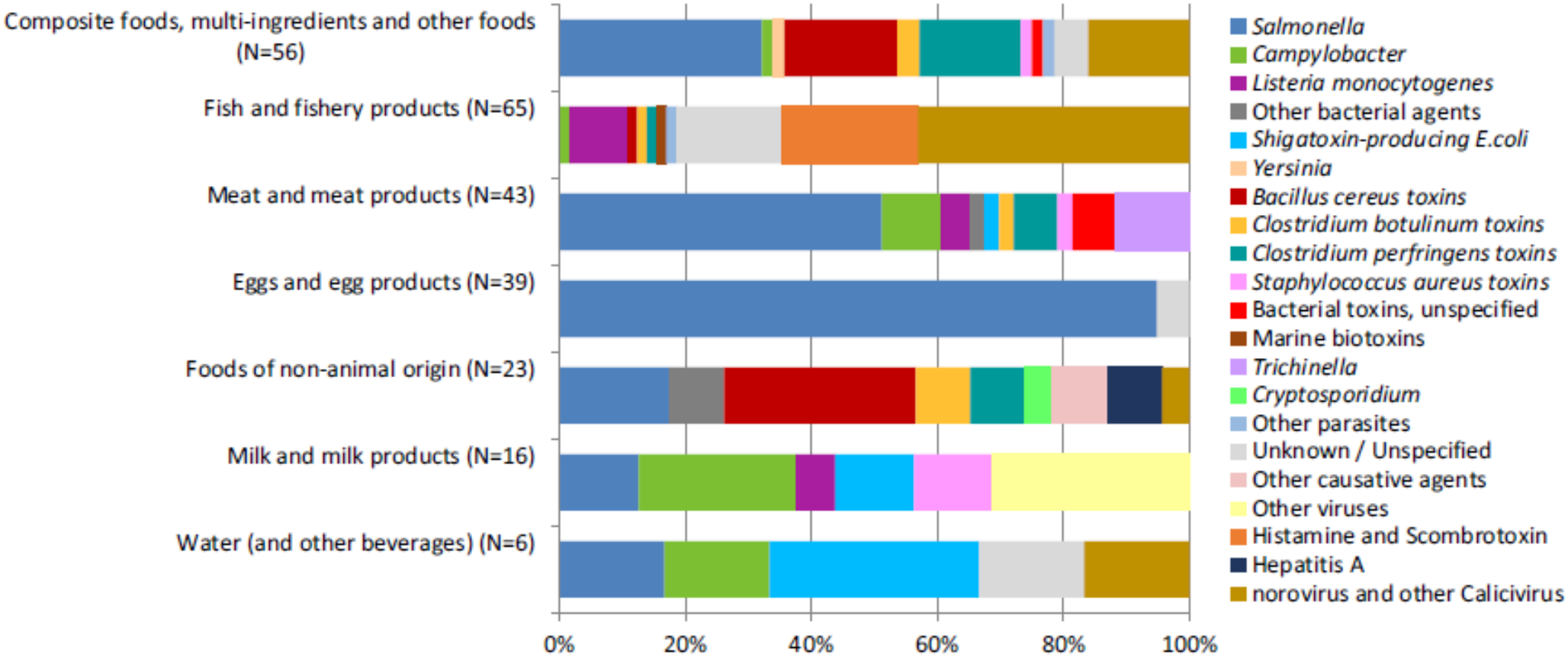
***-70.0%*** *compared with 2019 (97 outbreaks in 2020 vs 323 in 2019)*

→ **Restaurant, pub, street vendors, take away etc**

***-70.6%*** *compared with 2019 (62 outbreaks in 2020 vs 211 in 2019)*

# Food vehicles implicated in FBOs, EU, 2020

Frequency distribution (%) of causative agents associated with strong-evidence foodborne outbreaks, by food vehicle, in reporting EU MS, 2020



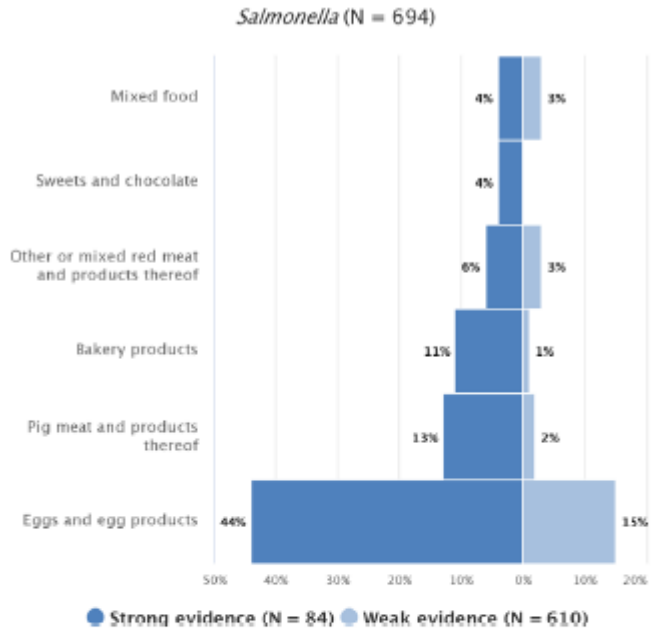
# Key findings, FBOs, EU, 2020

- The fall in foodborne outbreaks did not affect all causative agents equally. **The number of outbreaks caused by agents associated with severe clinical conditions in humans such as botulisms, listeriosis, trichinellosis and Shiga toxin-producing *E. coli* infections decreased less** than those caused by other agents or did not even decrease at all.

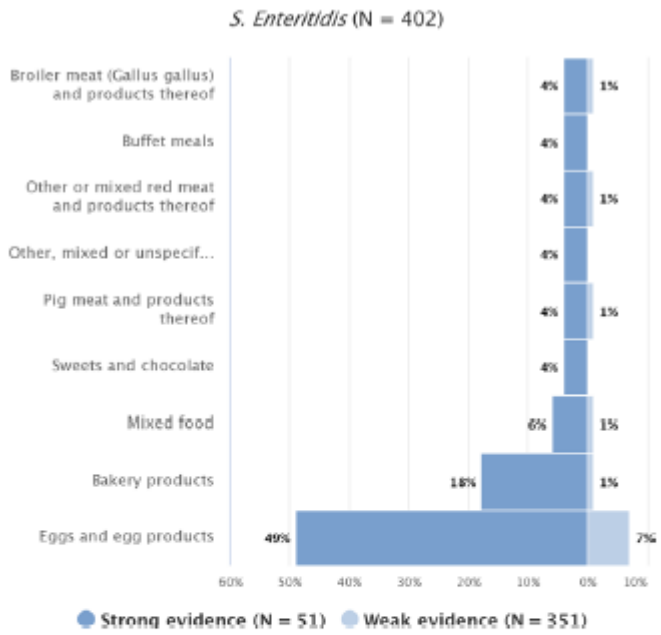
- The number of **strong-evidence outbreaks** in 2020 totalled 248 (8.0% of all reported foodborne outbreaks). **Food vehicles of animal origin** (i.e. fish, meat and products thereof, milk, cheese and dairy products, etc.) were implicated in most of these outbreaks (65.7%). The most frequently reported agent/food pairs in outbreaks caused by food of animal origin were: *Salmonella* in 'eggs and egg products' and norovirus in 'crustaceans, shellfish, molluscs and products thereof'.

- **Composite foods or multi-ingredient foods** including 'mixed food' were responsible for the highest number of illnesses in strong-evidence outbreaks (21% of all cases, one in five) and were associated with a wide range of causative agents.

# Salmonellosis FBO, by incriminated food vehicle, EU, 2020

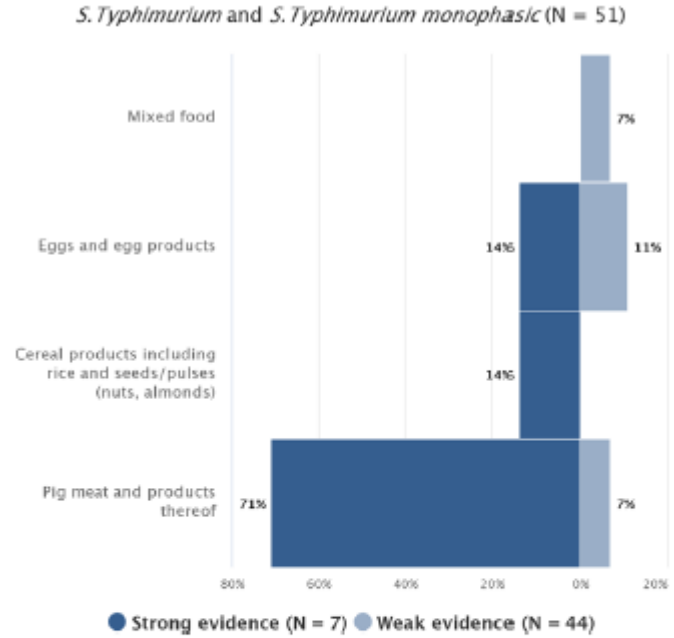



Note: Food vehicles not shown in the figure include 'unknown' food and other foods implicated in ≤2% of either strong- or weak-evidence outbreaks [these include 'broiler meat (Gallus gallus) and products thereof', 'other, mixed or unspecified poultry meat and products thereof', 'bovine meat and products thereof', 'buffet meals', 'fruit, berries and juices and other products thereof', 'dairy products (other than cheeses)', 'vegetables and juices and other products thereof', 'tap water, including well water', 'cheese', 'cereal products including rice and seeds/pulses (nuts, almonds)', 'other foods', 'fish and fish products', 'crustaceans, shellfish, molluscs and products thereof'].




Note: Food vehicles not shown in the figure include 'unknown' food and other foods implicated in ≤2% of either strong- or weak-evidence outbreaks include 'cheese', 'fruit, berries and juices and other products thereof', 'unknown', 'dairy products (other than cheeses)', 'fish and fish products', 'tap water, including well water'.

Data from 402 outbreaks are included: Austria (3), Croatia (6), Czechia (6), Estonia (5), France (39), Germany (24), Hungary (3), Ireland (1), Italy (1), Latvia (10), Lithuania (5), the Netherlands (3), Poland (95), Romania (1), Slovakia (196), Spain (4).




Food vehicles not shown in the figure include 'unknown' food and other foods implicated in ≤2% of either strong- or weak-evidence outbreaks include 'crustaceans, shellfish, molluscs and products thereof', 'dairy products (other than cheeses)', 'other, mixed or unspecified poultry meat and products thereof', 'vegetables and juices and other products thereof'.

Note: Data from 38 outbreaks are included: Austria (1), Belgium (1), Denmark (2), Estonia (1), France (11), Germany (12), Italy (1), Latvia (4), Luxembourg (1), the Netherlands (1), Poland (1), Slovakia (2).

The distribution of food vehicles associated was fairly consistent with recent years. The ranking of each food type in weak-evidence outbreaks did no show major discrepancies with the ranking for strong-evidence outbreaks.

# FBOs, agent/food pairs, top combinations, EU, 2010-2020

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## Top-3 pathogen/food vehicle pair causing the highest number of strong-evidence outbreaks, in EU MS & non-MS, 2020

| 2020 | | | | | 2010 - 2019[b] | | | Evaluation |
|---|---|---|---|---|---|---|---|---|
| Rank[a] | Causative agent | Food vehicle | Outbreaks (N) | Reporting MS (N outbreaks) | Rank[a] | Outbreaks (N/year) (range) | Reporting MS (N/year) | 2020 vs 2010-2019 |
| 1 | *Salmonella* | Eggs and egg products[d] | **37** | France (15), Poland (15), Spain (5) Italy (1), Slovakia (1) | 1 | 104.5 (77 - 141) | 10.0 | ↓↓ |
| 2 | Norovirus and other calicivirus | Crustaceans, shellfish, molluscs and products thereof[e] | **28** | France (16), Sweden (9), Denmark (2), Spain (1) | 2 | 36.2 (8 - 144) | 6.1 | stable |
| 3 | Histamine /scombrotoxin | Fish and fish products | **14** | Sweden (7), France (4), Germany (2), Belgium (1) | 3 | 31.5 (14 - 55) | 6.9 | ↓↓ |

## Top-3…of cases in strong evidence foodborne outbreaks, in EU MS and non-MS, 2020

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Norovirus and other calicivirus | Crustaceans, shellfish, molluscs and products thereof[d] | **611** | Denmark (393), Sweden (113), France (101), Spain (4) | 11 | 416.1 (104 - 1,152) | 6.1 | ↑ |
| 2 | *Salmonella* | Eggs and egg products[e] | **303** | Poland (162), France (86), Spain (48), Slovakia (5), Italy (2) | 3 | 1,175.1 (699 - 1,989) | 10.0 | ↓↓ |
| 3 | *Clostridium perfringens* toxins | Mixed food[f] | **292** | Denmark (45), Finland (42), France (41), Germany (16), Italy (128), Portugal (20) | 12 | 404.3 (157 - 835) | 4.5 | ↓ |

## Top-3…of hospitalisations in strong evidence foodborne outbreaks, in EU MS and non-MS, 2020

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | *Listeria monocytogenes* | Fish and fish products[d] | **51** | Germany (31), Netherlands (18), Austria (2) | 76 | 4.7 (0 - 21) | 0.4 | ↑↑ |
| 2 | *Salmonella* | Eggs and egg products[e] | **46** | France (19), Poland (19), Spain (8) | 1 | 285. (156 - 382) | 9.1 | ↓↓ |
| 3 | *Salmonella* | Fruit, berries and juices and other products thereof[f] | **38** | Germany (37), Poland (1) | 76 | 2.1 (0 - 8) | 0.5 | ↑↑ |

## Top-3…of deaths in strong evidence foodborne outbreaks, in EU MS and non-MS, 2020

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | *Listeria monocytogenes* | Fish and fish products[d] | **8** | Netherlands (5), Germany (3) | 34 | 0.1 (0 - 1) | 0.1 | ↑↑ |
| 2 | *Listeria monocytogenes* | Other or mixed red meat and products thereof[e] | **6** | Finland (6) | 3 | 1.6 (0 - 3) | 0.3 | ↑↑ |
| 3 | *Salmonella* | Cheese[f] | **1** | Italy (1) | 12 | 0.2 (0 - 1) | 0.2 | ↑↑ |

# Key findings foodborne salmonellosis outbreaks, EU, 2020

- In total, **694 foodborne outbreaks of *Salmonella*** were reported by 22 MS in 2020, causing 3,686 illnesses, 812 hospitalisations and seven deaths. *Salmonella* caused **22.5% of all foodborne outbreaks** in 2020. The majority (57.9%) of the reported foodborne outbreaks of *Salmonella* were caused by ***S.* Enteritidis** (which is N = 402; 82.4% of salmonellosis outbreaks with information on the serovar). The three food vehicles most commonly involved in strong-evidence foodborne salmonellosis outbreaks were 'eggs and egg products', followed by 'pig meat and products thereof' and 'bakery products'.
- *Salmonella* caused the highest number of cases (N = 3,686; 18.4% of the total) and hospitalisations (N = 812; 48.5% of all outbreak associated hospitalisations). *Salmonella* was associated with 7 (20.6%) fatal cases.
- Outbreaks caused by ***Salmonella* were reported by the largest number of countries in Europe (22 MS** and five non-MS). This agent was the main or even the sole cause of FBO in 13 MS (Croatia, Czechia, Denmark, Estonia, Hungary, Italy, Latvia, Lithuania, Luxembourg, Poland, Romania, Slovakia, Spain) and four non-MS (Serbia, Montenegro, Bosnia and Herzegovina, the United Kingdom).
- In 2020, the **numbers of outbreaks caused by *Salmonella* decreased significantly in the EU** with 590 fewer outbreaks than in 2019 (1,284 outbreaks reported in 2019; 46.0% decrease). Based on the available data, the withdrawal of the United Kingdom from the EU accounted for no more than 2.2% of this decline, since the United Kingdom had reported an average of 12.9 outbreaks per year over the previous 10 years.

# Key findings foodborne salmonellosis outbreaks, EU, 2020

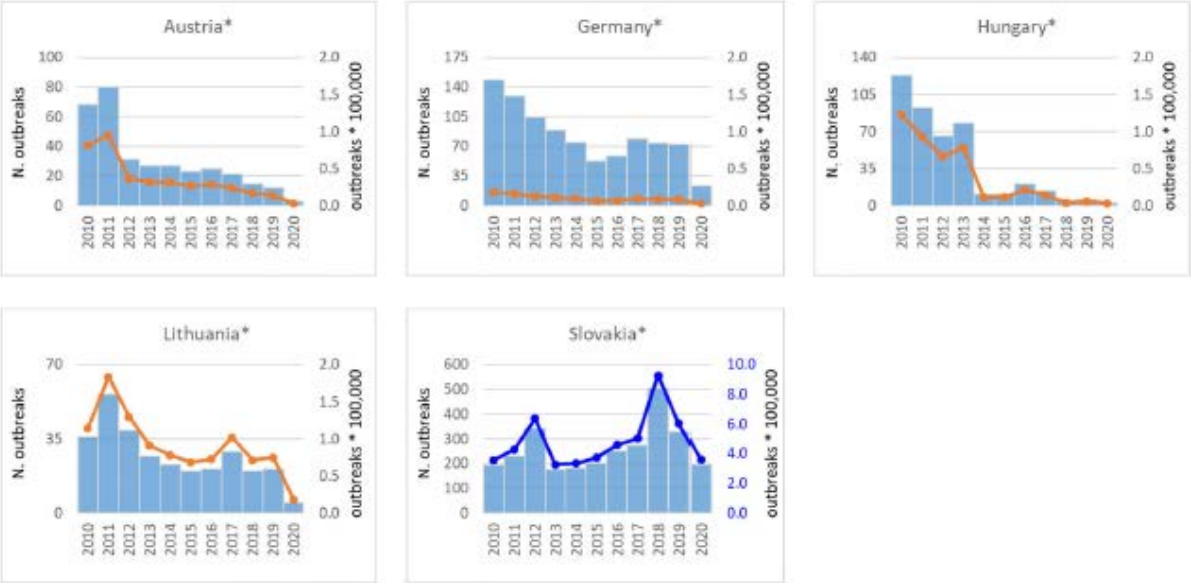
- At EU level, the number of ***S.* Enteritidis** and ***S.* Typhimurium** outbreaks also decreased in 2020 by 47.2% (761 outbreaks in 2019) and 56.8% (88 outbreaks in 2019), respectively, compared to 2019. Only outbreaks caused by **S. Typhimurium monophasic** remained stable (one outbreak more than in 2019). Overall, the *Salmonella* outbreaks caused by the most frequent serovars decreased in both number and size in 2020.

- The **average number of cases per *Salmonella* outbreak** (mean outbreak size) was **5.3 cases in 2020** compared with 9.9 cases in 2019. Interestingly, concerning these *Salmonella* outbreaks, the **% of cases involved in 'general' outbreaks decreased** by 16.3% in 2020 compared with 2019 (human cases involved in general outbreaks caused by *Salmonella* were 52.8% of total cases involved in *Salmonella* outbreaks in 2020 and 69.2% in 2019), while 'household' outbreaks, which usually are small size outbreaks, **increased** by 9.2%. **Human cases involved in 'household' outbreaks** caused by *Salmonella* were 26.4% of total cases involved in *Salmonella* outbreaks in 2020 and 17.2% in 2019. Reduced exposure to contaminated food in public settings such as restaurants and canteens whose activity in many countries was suspended during the COVID-19 pandemic is a possible reason explaining this finding.

- Overall, for **204 *Salmonella* outbreaks (29.4% of the total) the serovar was unknown**. The absence of this information gives rise to uncertainty in identifying the main sources of *Salmonella* at primary production level, given that the food vehicles implicated in *Salmonella* outbreaks differ considerably by serovar. Group B and group D *Salmonella* without full serotyping, were responsible for six and four outbreaks, respectively.

# Temporal country-specific trends in salmonellosis FBOs, EU, 2010-2020

***S.* Enteritidis**




***S.* Typhimurium**

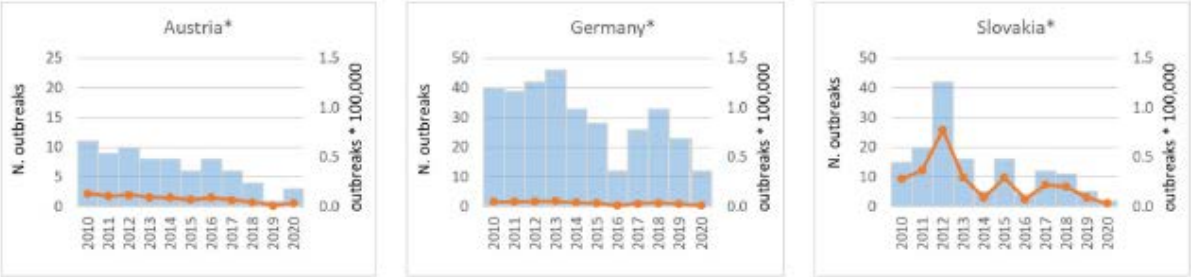



**Figure 59:** Trends in the number of outbreaks (left vertical axis) and outbreak reporting rate (per 100,000 population) (right axis), by causative agent, in reporting EU MS, 2010–2020. (Only MS and causative agents with a statistically significant temporal trend are shown)

# Sampling to verify compliance with *Salmonella* process hygiene criteria, according to Regulation (EC) No 2073/2005, EU, 2020

Comparisons of proportions (%) of *Salmonella*-positive single samples from pig carcases after dressing, but before chilling, by sampler, reporting MS, EU, 2020

Considering all data sent by the 20 MS, the overall proportion of *Salmonella*-positive samples based on **official controls** was **3.6 %** (N = 12,319) and was significantly higher than that based on **industry sampling** (**1.7 %**, N = 98,537).

The same finding was made overall for the six MS that reported data collected by the CA (3.6%) and FBOp (1.8%), as well as considering data reported by Belgium, Ireland, Italy and Spain.

| Country | Competent authority (CA) | | | Food business operator (FBOp) | | | p-value[(b)] | Interpretation |
|---|---|---|---|---|---|---|---|---|
| | N samples tested | N (%) samples positive | $CI_{95}$ | N samples tested | N (%) samples positive | $CI_{95}$ | | |
| Austria | – | – | – | 4,746 | 6 (0.13) | [0.05; 0.27] | – | – |
| Belgium | 1,069 | 56 (5.2) | [4.0; 6.8] | 3,701 | 51 (1.4) | [1.0; 1.8] | < 0.001 | CA > FBOp |
| Bulgaria | 1,781 | 2 (0.11) | [0.01; 0.41] | 226 | 0 | [0; 1.6][(a)] | NS | |
| Cyprus | 5 | 0 | [–] | – | – | – | – | – |
| Denmark | – | – | – | 11,202 | 101 (0.90) | [0.73; 1.1] | – | – |
| Estonia | – | – | – | 1,538 | 5 (0.33) | [0.11; 0.76] | – | – |
| France | – | – | – | 14,347 | 687 (4.8) | [4.4; 5.2] | – | – |
| Germany | – | – | – | 22,164 | 105 (0.47) | [0.39; 0.57] | – | – |
| Greece | – | – | – | 312 | 0 | [0; 1.2][(a)] | – | – |
| Ireland | 324 | 19 (5.9) | [3.6; 9.0] | 2,155 | 38 (1.8) | [1.3; 2.4] | < 0.001 | CA > FBOp |
| Italy | 6,149 | 241 (3.9) | [3.5; 4.4] | 13,344 | 188 (1.4) | [1.2; 1.6] | < 0.001 | CA > FBOp |
| Latvia | – | – | – | 439 | 0 | [0; 0.84][(a)] | – | – |
| Luxembourg | – | – | – | 310 | 1 (0.32) | [0.01; 1.8] | – | – |
| Malta | – | – | – | 130 | 3 (2.3) | [0.48; 6.6] | – | – |
| Netherlands | – | – | – | 5,400 | 139 (2.6) | [2.2; 3.0] | – | – |
| Portugal | – | – | – | 8,793 | 97 (1.1) | [0.9; 1.3] | – | – |
| Romania | 2,131 | 1 (0.05) | [0; 0.26] | 3,265 | 4 (0.12) | [0.03; 0.31] | NS | |
| Slovakia | – | – | – | 2,661 | 0 | [0; 0.14][(a)] | – | – |
| Slovenia | – | – | – | 933 | 21 (2.3) | [1.4; 3.4] | – | – |
| Spain | 860 | 123 (14.3) | [12.0; 16.8] | 2,871 | 186 (6.5) | [5.6; 7.4] | < 0.001 | CA > FBOp |
| **Total EU** | **12,319** | **442 (3.6)** | **[3.3; 3.9]** | **98,537** | **1,632 (1.7)** | **[1.6; 1.7]** | **< 0.001** | **CA > FBOp** |
| **Total EU providing CA and FBOp data** | **12,314** | **442 (3.6)** | **[3.3; 3.9]** | **25,562** | **467 (1.8)** | **[1.7; 2.0]** | **< 0.001** | **CA > FBOp** |

# *Salmonella* in food, EU, 2020

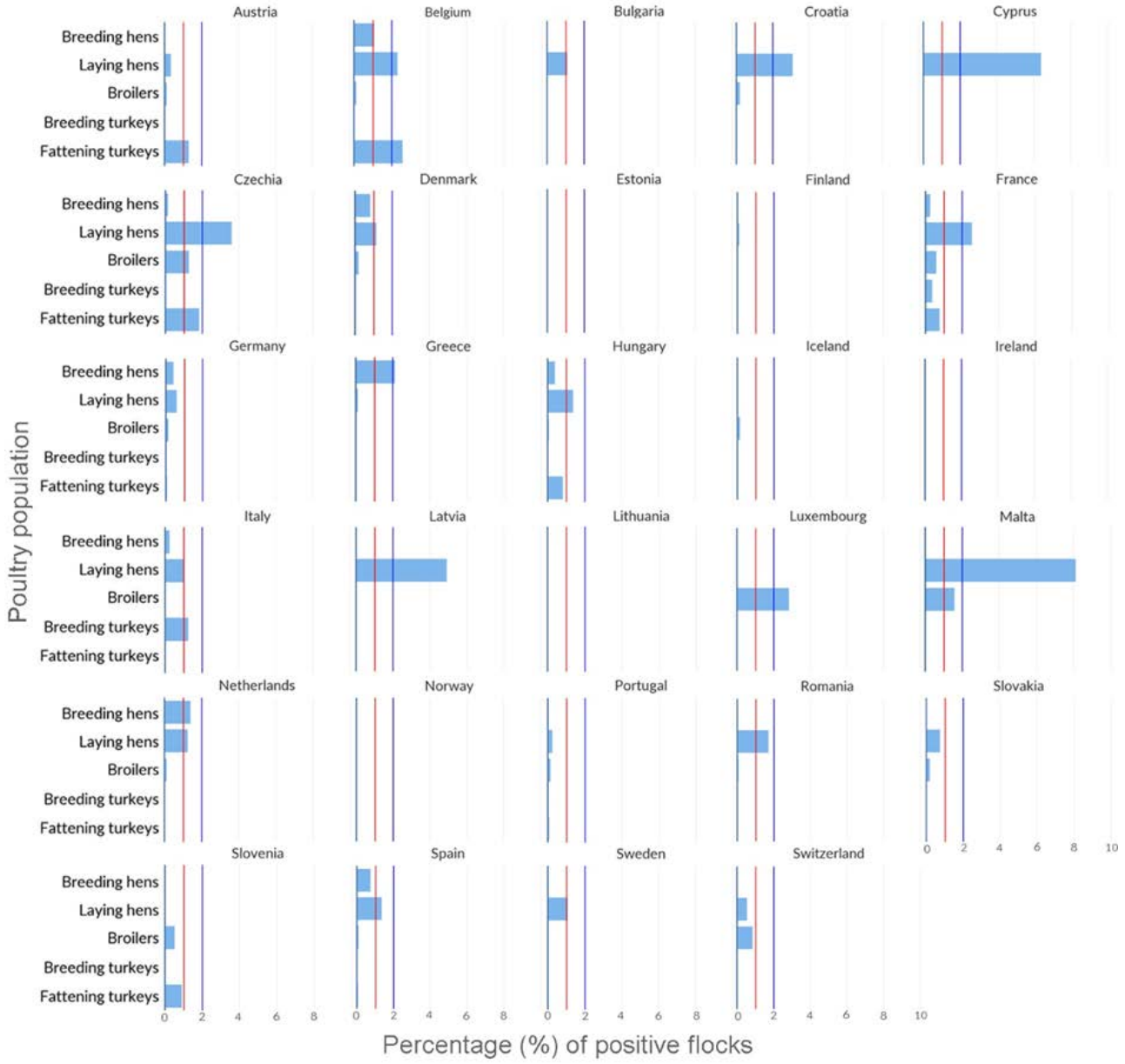
- Sampling to verify compliance with process hygiene criteria, according to Regulation (EC) No 2073/2005 found **significantly lower proportions of *Salmonella*-positive carcases of pigs, broilers, turkey and cattle in industry sampling**, compared with the official control samples at EU level.

- Official sampling to verify compliance with food safety criteria, according to Regulation (EC) No 2073/2005, at distribution level, found the following three categories with the highest proportions of *Salmonella*-positive single samples: '**meat products made from poultry meat intended to be eaten cooked**': 7.6%, '**fresh poultry meat**': 7.3% and '**minced meat and meat preparations made from poultry meat intended to be eaten cooked**': 5.7%. Next, for 'mechanically separated meat' and 'minced meat and meat preparations made from other species than poultry intended to be eaten cooked' and 'meat products intended to be eaten raw, excluding products where the manufacturing process or the composition of the product will eliminate the *Salmonella* risk', about 1% of the collected official samples was positive for *Salmonella*.

- For 2020, 69,898 **RTE food** sampling units collected according to an 'objective sampling' strategy were reported by 22 MS with **0.15% positive samples** overall. Within each food category, 1.6% of 'meat and meat products from broilers', 0.8% of 'spices and herbs', 0.6% of 'meat and meat products from pigs', 0.5% of 'meat and meat products from turkeys' and 0.5% of 'other meat and meats products' were positive for *Salmonella*.

# *Salmonella* in poultry populations, NCPs, EU, 2020

- **Fourteen** of the 26 MS reporting on *Salmonella* control programmes met the reduction targets for all poultry populations, compared to 18 in 2019
- The **prevalence of target *Salmonella*** serovars-positive broiler and fattening turkey flocks **reported by food business operators was significantly lower** than that reported by the competent authorities

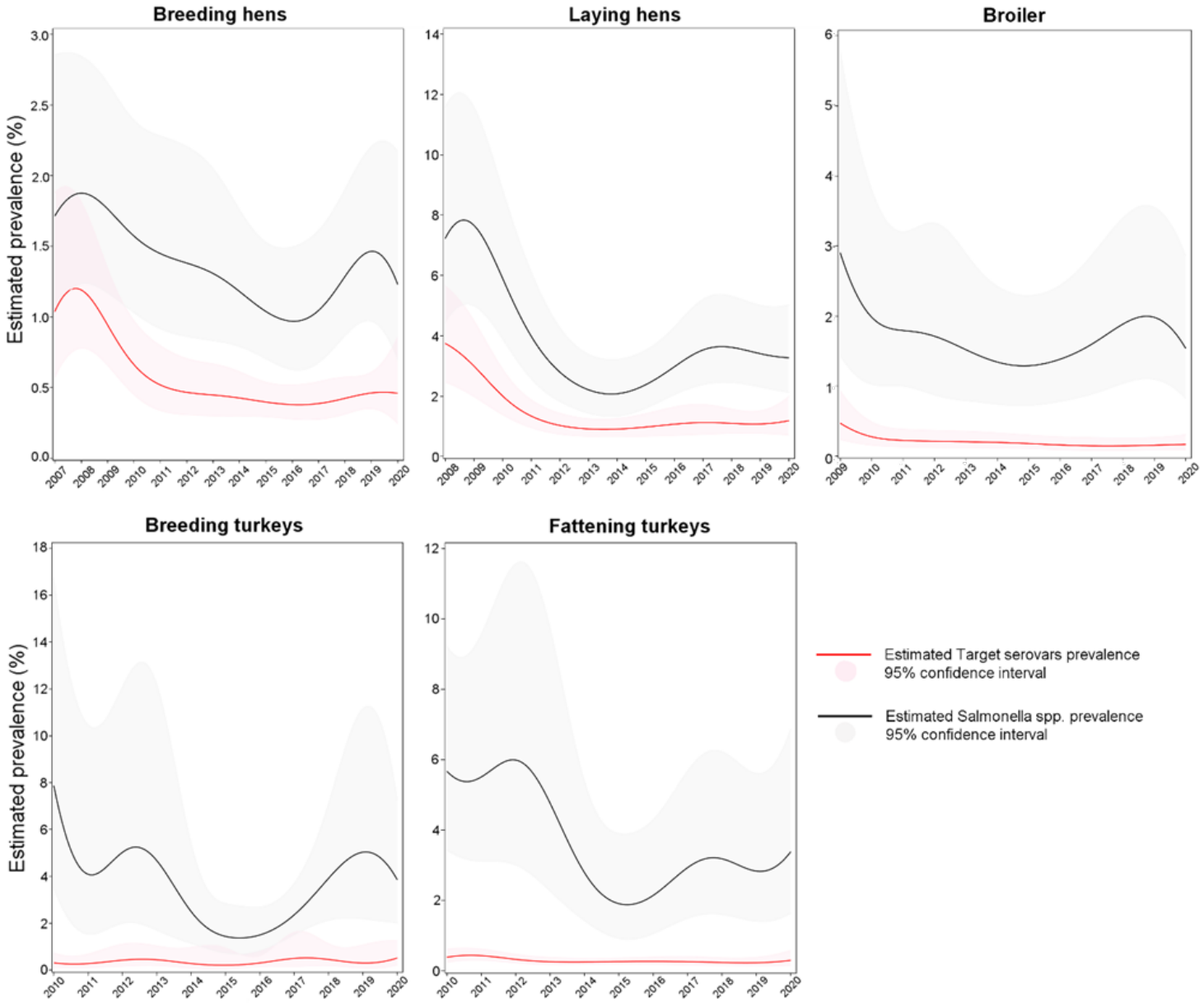



Prevalence of poultry flocks (breeding flocks of *Gallus gallus*, laying hens, broilers, breeding turkeys and fattening turkeys) positive for target *Salmonella* target serovars, EU MS and non-MS countries, 2020

# *Salmonella* in poultry populations, trends, EU, 2020

A significant **increase** in the **estimated prevalence of *Salmonella*** was noted for laying hens and breeding turkeys in 2020 compared with 2014 and 2015, respectively, when prevalence reached the lowest level in these poultry populations.

Flock **prevalence** trends for **target *Salmonella* serovars** were, in contrast, fairly **stable** over the last few years for all poultry populations.



# *Salmonella* in poultry, EU, 2020

- **Fourteen of the 26 MS reporting on *Salmonella* control programmes met the reduction targets** for all poultry populations, compared to 18 in 2019. The number of MS that did not meet the *Salmonella* reduction targets was three for breeding flocks of *Gallus gallus*, seven for laying hen flocks, three for broiler flocks, one for breeding flocks of turkeys and three for fattening turkey flocks.

- In the context of *Salmonella* control programmes in poultry, the **EU-level flock prevalence of target *Salmonella* serovars in broiler and fattening turkey flocks reported by food business operators was significantly lower** than that reported by the Competent Authorities.

- A **significant increase in the estimated prevalence of *Salmonella* was noted for laying hens and breeding turkeys** in 2020 compared with 2014 and 2015, respectively, when prevalence reached the lowest level in these poultry populations. **Flock prevalence trends for target *Salmonella* serovars were, in contrast, fairly stable over the last few years for all poultry populations**.

- Considering the top five serovars responsible for human infections and the major putative sources (broilers, cattle, turkeys, laying hens and pigs, isolated from both animals and food thereof), a panel of 17,877 serotyped isolates from food and food-producing animals was reported. *S.* Enteritidis was primarily related to broiler sources and to layers and eggs. *S.* Typhimurium was mainly linked with broiler and pig sources. Monophasic *S.* Typhimurium (1,4,[5],12:i:-) was related mainly to pig and secondly to broiler sources. S. Infantis was strictly related to broiler sources, whereas *S.* Derby was primarily linked with pigs.

# Thank you for your attention

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ECDC Food and Waterborne Diseases and Zoonoses Network, Emerging and Vector-borne Diseases Network and the Tuberculosis Network

**AHAW Panel** **BIOHAZ Panel** **DG SANTE D4, G2 and G4**

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