13th Workshop for Rabies 15-16 June 2022, Warsaw, Poland

EFSA activities on rabies

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Current activities of EFSA on rabies

- **Rabies** chapter in the **EU One Health Annual Zoonoses Report**
- **Scientific Report** (May 2022)
- Syndromic Surveillance project: pilot project on rabies **Early Warning System** (ongoing)

SCIENTIFIC REPORT

EFSA Journal

APPROVED: 12 November 2021

doi: 10.2903/j.efsa.2021.6971

The European Union One Health 2020 Zoonoses Report

European Food Safety Authority
European Centre for Disease Prevention and Control

3. Rabies

Tables and figures that are not presented in this chapter are published as supporting information to this report and are available as downloadable files from the EFSA Knowledge Junction on Zenodo at https://doi.org/10.5281/zenodo.5682809. Summary statistics of human surveillance data with downloadable files are retrievable using ECDC's Surveillance Atlas of Infectious Diseases at http://atlas.ecdc.europa.eu/public/index.aspx

3.1. Key facts

- For 2020, EU MS and non-MS countries reported no human *Lyssavirus* infections for the first time since 2015. Travel-associated rabies cases have been reported every year in Europe since then (N = 4 in 2019, N = 1 per year 2016–2018).
- In non-flying terrestrial animals, a total of 12 cases of rabies of autochthonous origin were reported by two MS: seven cases in Poland (five foxes, one cow and one dog) and five cases in Romania (one fox, two cows and two dogs). The total number of reported indigenous rabies cases in terrestrial animals in the EU increased in 2020 (N = 5 in 2019; N = 8 in 2018; N = 6 in 2017).
- Surveillance data on *Lyssavirus* in bats were reported by 15 EU MS. Five MS reported positive results for *Lyssavirus*, mainly of the European bat 1 lyssavirus (EBLV-1) species, with a total of 31 cases in bats.
- A case of rabies was reported by France in an illegally imported dog, infected with a virus lineage (Africa 1 lineage) from North Africa. In Ireland, an imported sable (*Martes zibellina*) kept as a pet was reported positive for rabies.
- Two indigenous cats were reported positive for a bat lyssavirus [N = 1 EBLV-1 in France and N = 1 West Caucasian bat lyssavirus (WCBV) in Italy].

3.2. Surveillance and monitoring of rabies in the EU

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EU One Health 2020 Zoonoses Report

Rabies Chapter

One Health 2020 Zoonoses Report

- EFSA and ECDC in One Health report of zoonoses and zoonotic agents surveillance and monitoring activities

- Rabies is a mandatory notifiable disease at the EU level for both humans and animals

- EFSA collects, validates and analyses the data on surveillance and monitoring activities in animals from data providers in EU MS and some non-EU countries

One Health Zoonoses Report: 2020 Results

- Results of rabies surveillance and monitoring activities carried out in 2020 in 26 EU MS
- 2020 was the **first year after 2015** without reported human Lyssavirus infection in EU !
- Still some cases in animals
- Animals tested: foxes (Vulpes vulpes)
  raccoon dogs (Nyctereutes procyonoides)
  raccoons (Procyon lotor)
  dogs (Canis lupus familiaris)
  bats (order Chiroptera)
  farmed mammals

One Health Zoonoses Report: 2020 Results

- non-flying terrestrial animals

	foxes	cows	dogs
Poland	5	1	1
Romania	1	2	2

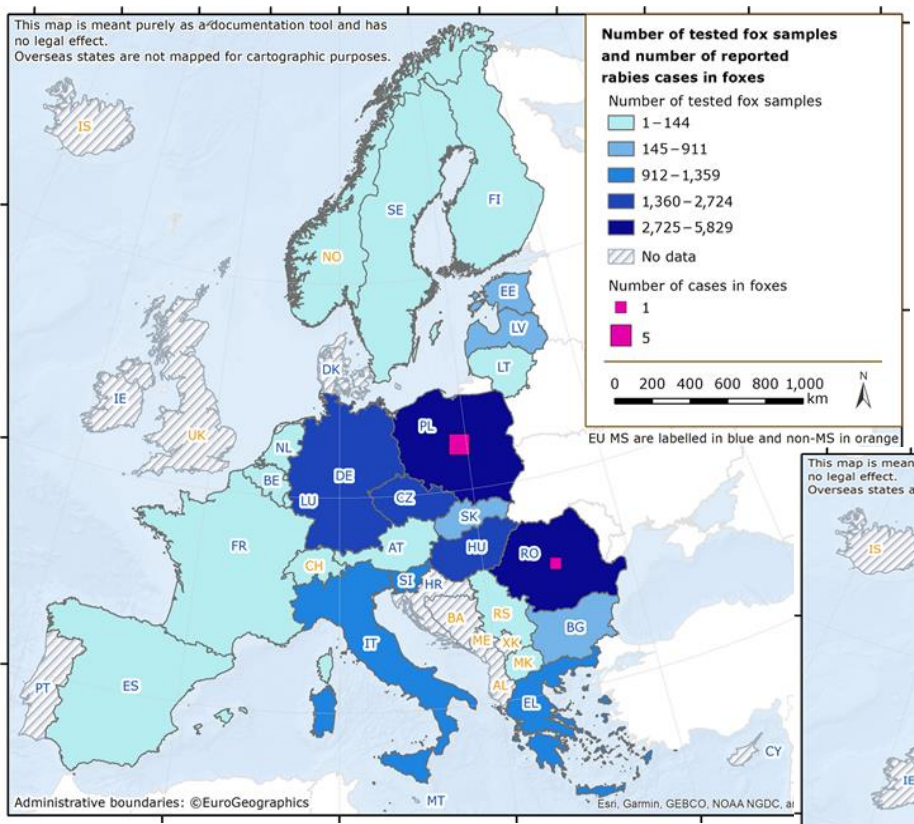
autochthonous origin:12 cases

imported cases : 1 dog in France illegally imported
1 sable (Martes zibellina) in Ireland

infected by bat lyssavirus: 2 cats in Italy

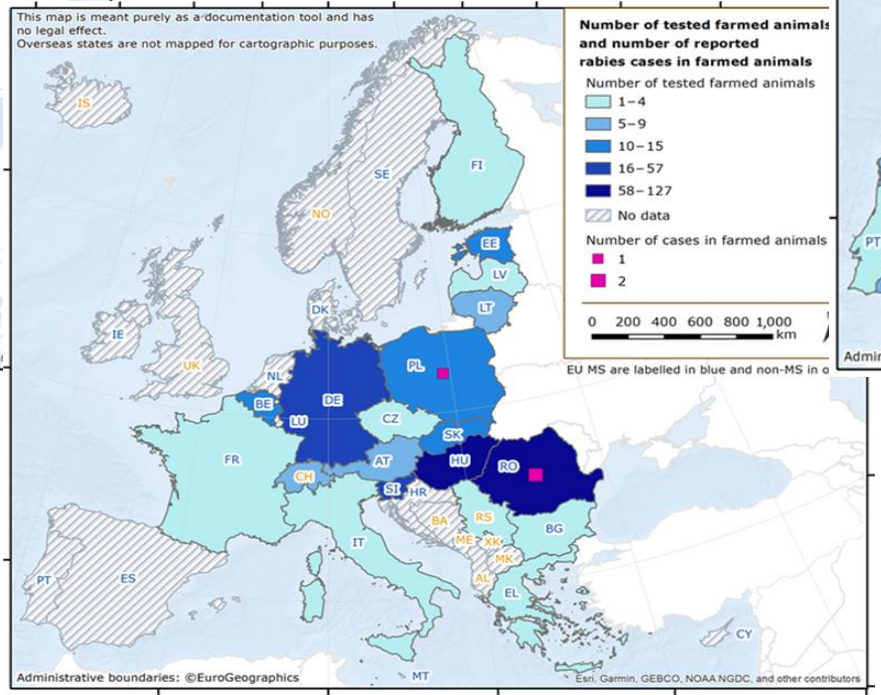
One Health Zoonoses Report: 2020 Results

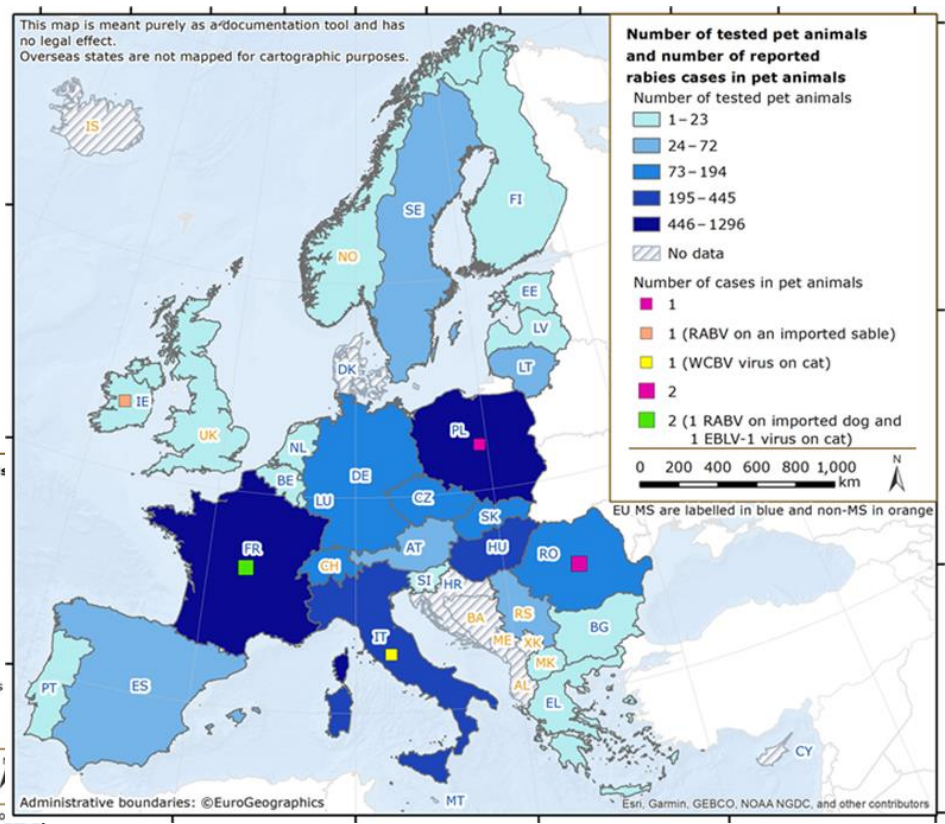
- Geographical distribution of the cases



foxes

farmed animals





pets

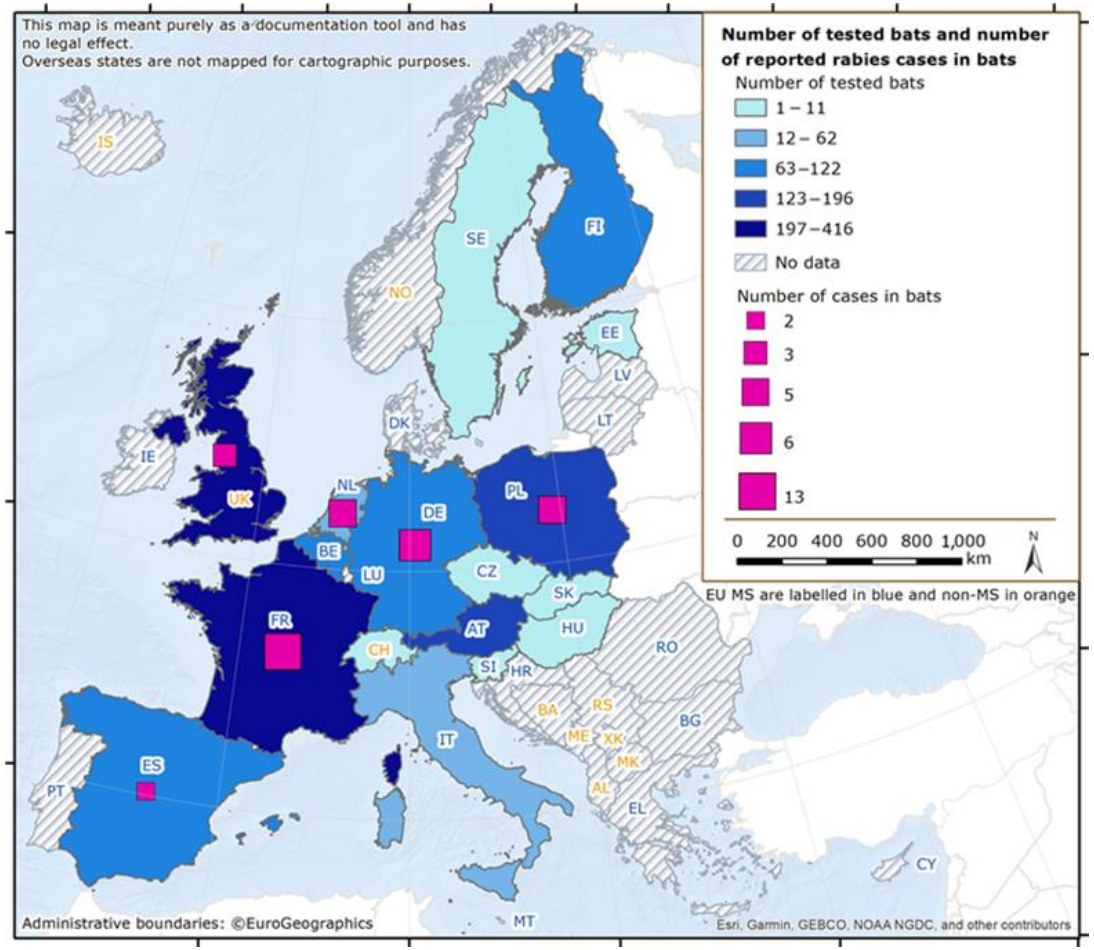
One Health Zoonoses Report: 2020 Results

- *Lyssavirus* in bats

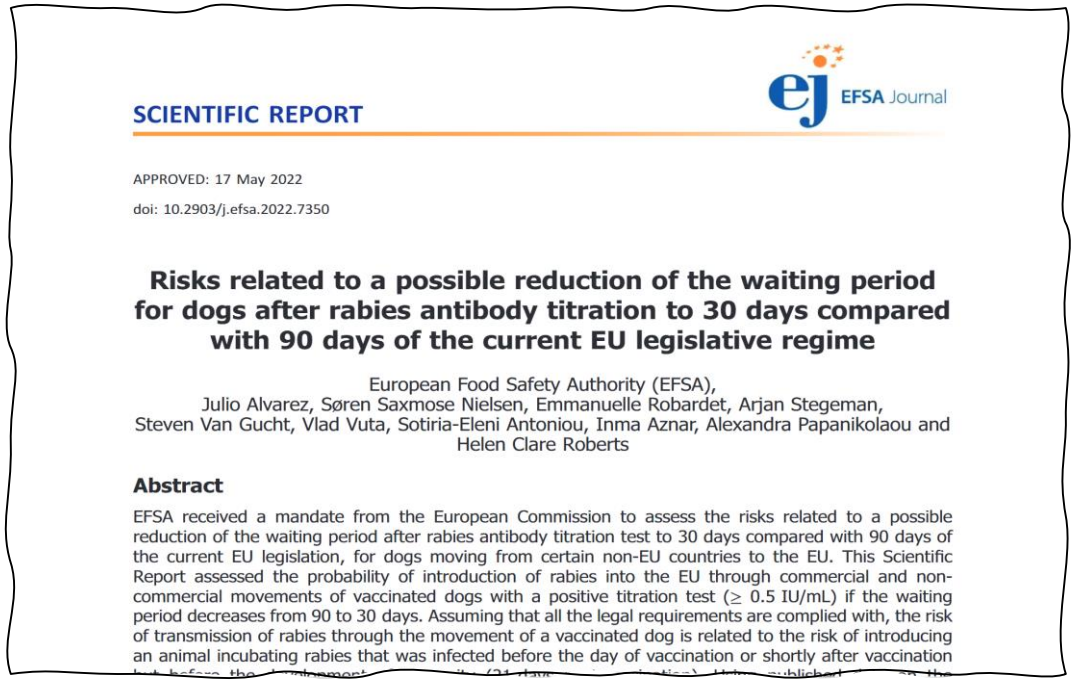
Data on surveillance from 15 MS

31 cases reported in 5 MS

2 cats in Italy infected by bat lyssavirus



Scientific Report, May 2022



SCIENTIFIC REPORT

EFSA Journal

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Risks related to a possible reduction of the waiting period for dogs after rabies antibody titration to 30 days compared with 90 days of the current EU legislative regime

European Food Safety Authority (EFSA),
Julio Alvarez, Søren Saxmose Nielsen, Emmanuelle Robardet, Arjan Stegeman, Steven Van Gucht, Vlad Vuta, Sotiria-Eleni Antoniou, Inma Aznar, Alexandra Papanikolaou and Helen Clare Roberts

Abstract

EFSA received a mandate from the European Commission to assess the risks related to a possible reduction of the waiting period after rabies antibody titration test to 30 days compared with 90 days of the current EU legislation, for dogs moving from certain non-EU countries to the EU. This Scientific Report assessed the probability of introduction of rabies into the EU through commercial and non-commercial movements of vaccinated dogs with a positive titration test (≥ 0.5 IU/mL) if the waiting period decreases from 90 to 30 days. Assuming that all the legal requirements are complied with, the risk of transmission of rabies through the movement of a vaccinated dog is related to the risk of introducing an animal incubating rabies that was infected before the day of vaccination or shortly after vaccination

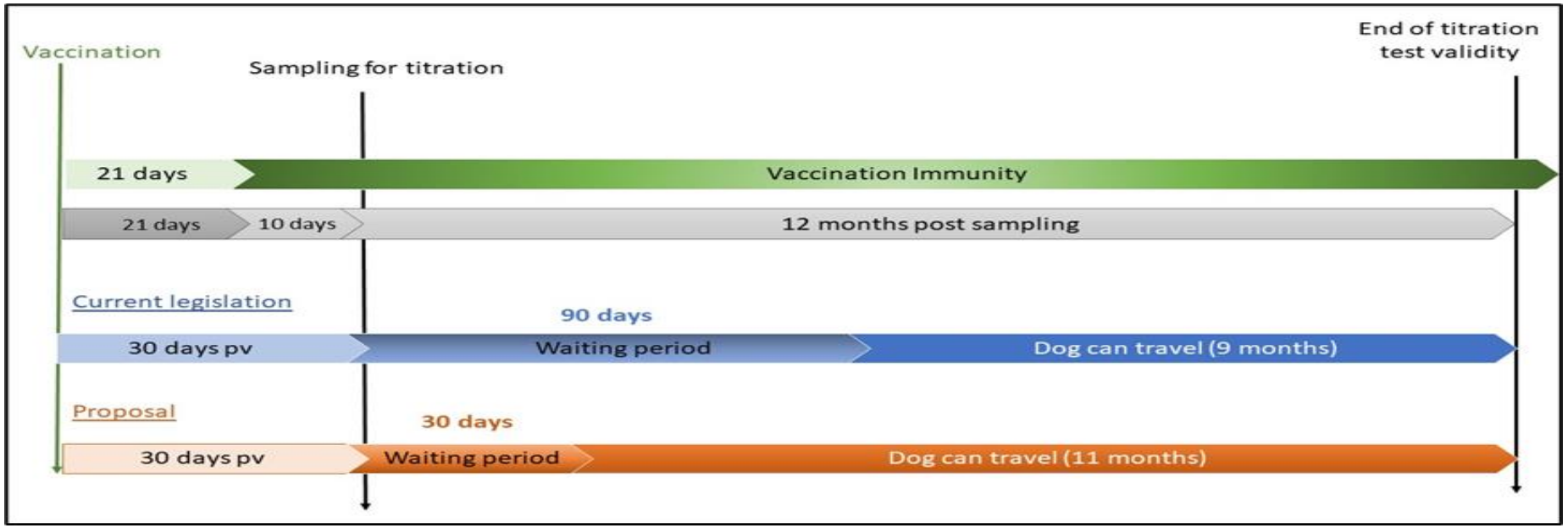
Scientific Report: EC Mandate

- Mandate by European Commission in the context of article 31 of Regulation (EC) No. 178/2002 for scientific and technical assistance.
- It concerned the provisions of the EU legislation on the waiting period after the rabies antibody titration test for the dogs intended to be imported to the EU territory from certain non-EU Countries.
- Advice on risks related to a possible reduction of the waiting period for dogs after rabies antibody titration test to 30 days compared with the current EU legislative of 90 days.

Scientific Report: Problem formulation

- **Scientific question:** How much the risk of introduction of rabies into EU increases through the movement of vaccinated dogs with a positive titration test (≥0.5 IU/mL), if the waiting period from sampling to movement decreases from 90 to 30 days?

- All other parameters were considered identical across both options.



Scientific Report: problem formulation

- The risk of transmission of rabies through the movement of a **vaccinated dog** with **positive titration test** ≥0.5 IU/mL is related to the risk of moving a vaccinated dog incubating the disease.

- The **length of the incubation period** was considered the main epidemiological parameter for the purposes of this assessment.

- Given that the dog is vaccinated with a positive titration test at least 30 dpv, the infection occurred either **before vaccination** or during **the first 21 dpv** (before the development of immunity).

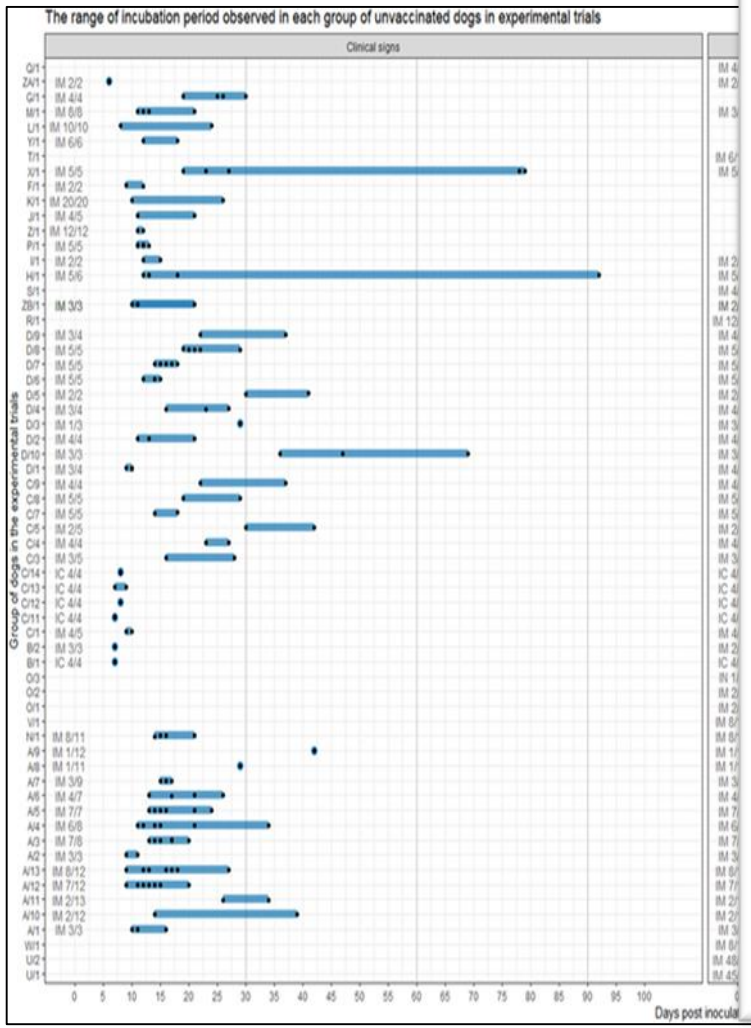
Scientific Report: assumptions

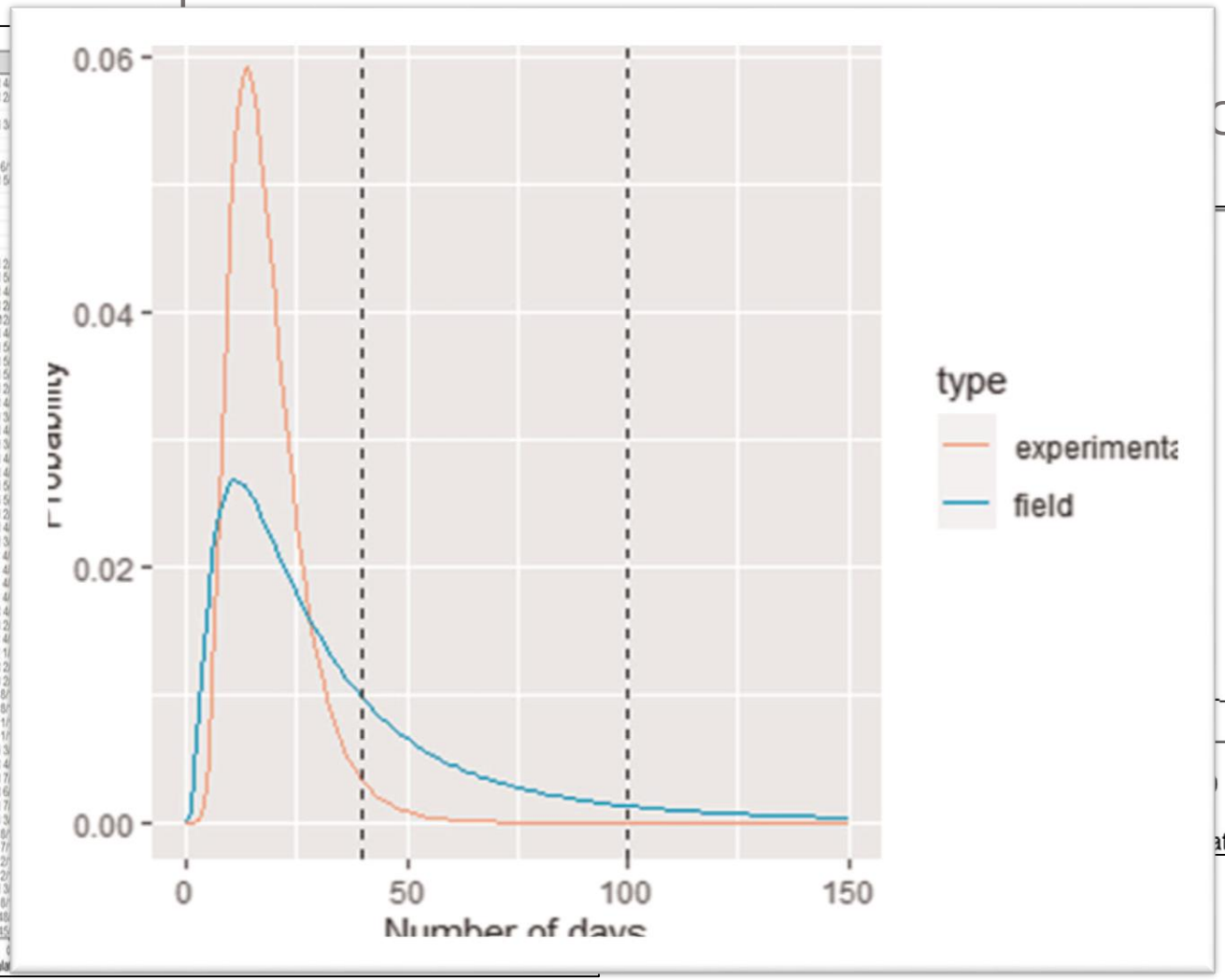
- all the legal requirements + good veterinary practice were implemented:
  - ✓ vaccinated with a vaccine that complies with the OIE requirements
  - ✓ vaccinated by an authorised veterinarian
  - ✓ remain within the immunity period of the vaccine
  - ✓ first vaccination >12 weeks old
  - ✓ neutralising antibody titration test >= 0.5 IU/ml (at least 30 days post primary vaccination) and no more than 12 months before movement
  - ✓ sampling by an authorized veterinarian, the test analysed at an authorized laboratory (by the EURL)
- vaccinated dogs without clinical signs and neutralising antibody titres ≥ 0.5 IU/mL at least 30 dpv, are fully protected from day 21 dpv onwards
- the risk of getting infected before 21dpv is similar to an unvaccinated dog
- the Incident Rate of rabies in a region was assumed to be constant
- $Se_{clinical\ examination}$=100% and Sp_{VNT}=100%

Scientific Report: data, methodology

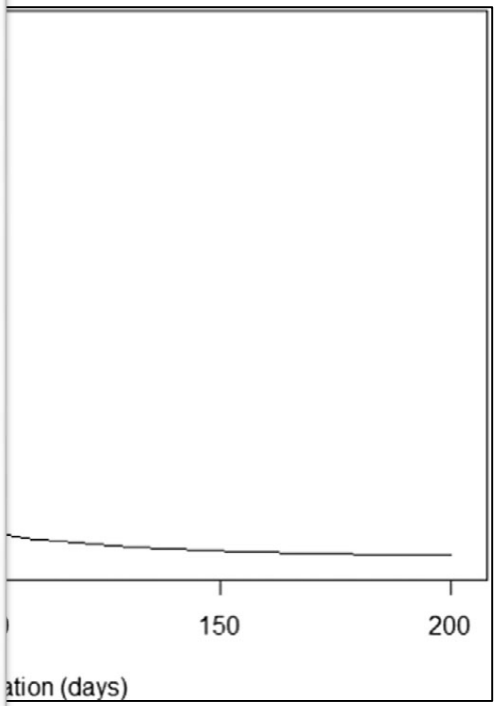
- estimation of incubation period → Extensive Literature Review

groups of unvaccinated dogs from experimental trials





Crozet et al; 2022)



Scientific Report: data, methodology

- Incidence Rate (IR) in the non-EU country of origin:

  IR=500 cases/100,000 dogs per year (high risk area)

  IR=250 cases/100,000 dogs per year (medium risk area)

  IR=100 cases/100,000 dogs per year (low risk area)

  IR= 5 cases/100,000 dogs per year (very low risk area)

- Number of dogs imported from non-EU countries
  - no available data for dog movements for non-commercial purposes
  - 1,780 the average number of dogs imported per year for commercial purposes (TRACES data) from countries for which the titration test is mandatory

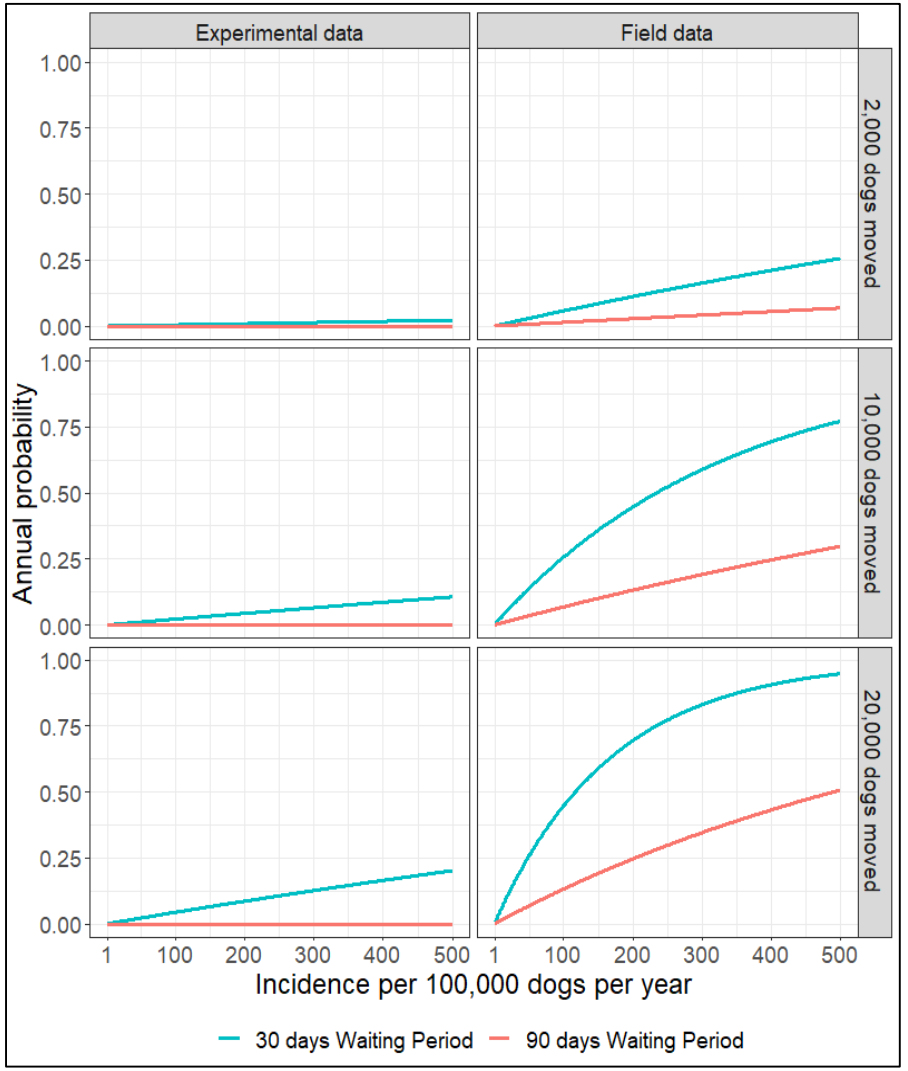
Scientific Report: assessment

For both waiting periods under different combinations of IRs in non-EU country of origin and number of dogs imported it was estimated:

- the probability of importing at least one RABV-infected dog was estimated
- the overall (annual) probability of RABV introduction per year
- the average time (in years) it takes to introduce one RABV-infected dog have been calculated for both waiting periods (30and 90 days)

Scientific Report: assessment

- the overall **probability** of RABV introduction through dog movements from non-EU countries depends on the **number of dogs** and the **incidence rate of rabies** in the country of origin.
- the increase is higher when assuming an incubation period as derived from **field data** compared to the one from **experimental data**.
- the probability is increasing in both waiting periods (30, 90 days) but **the increase is higher in a 30-day waiting period**.
- the **average time** to import a RABV-infected dog will **decrease by a 4.2 factor** when reducing the waiting period from 90 to 30 days.



Scientific Report: conclusions

- no cases of RABV-infected dogs have been associated with legal well-prepared movements. The imported cases were illegal non-commercial movements of dogs not well prepared for travel.
- in experimental infections with intramuscular inoculation, the onset of clinical signs and deaths varied from 6 to 92 and 3 to 257 days post inoculation respectively.
- in infected dogs imported from non-EU countries (not meeting EU requirements) the onset of clinical signs varied from 2 to 179 days after the arrival at the country of destination.
- the uncertainty sources were related to the duration of the incubation period, the number of imported dogs, and the disease incidence in some countries.
- the WG concluded with a 95% certainty that the maximum number of rabies-infected imported dogs complying with the regulations in a 20-year period could increase from 5 to 20 when decreasing the waiting period from 90 to 30 days.
- the introduction of RABV-infected dogs has an impact on the public health sector (PET).

Syndromic Surveillance project

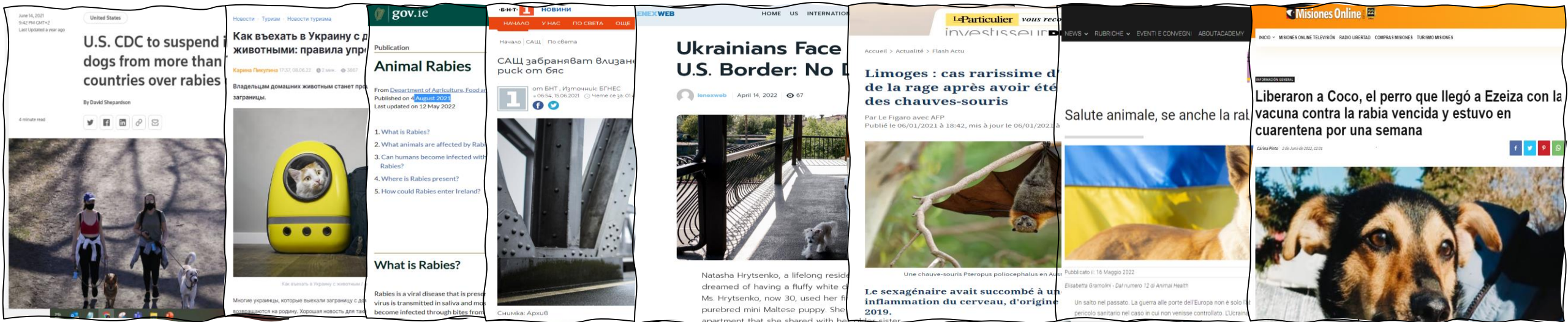
Early Warning system

TIM News tool for Rabies

(ongoing activity)

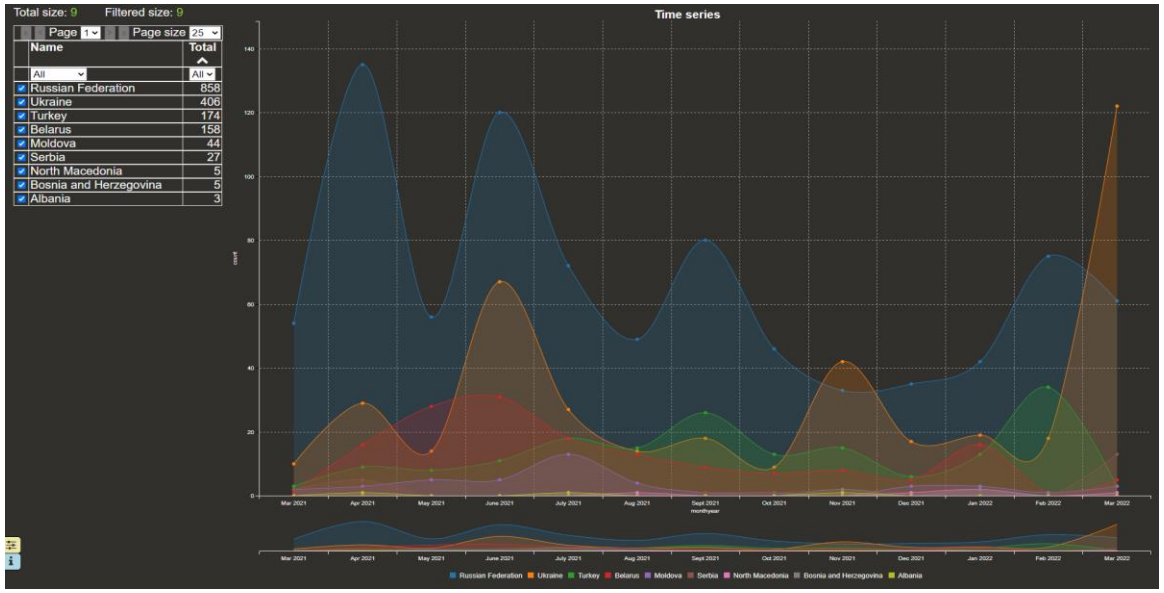
Syndromic Surveillance project: TIM News tool

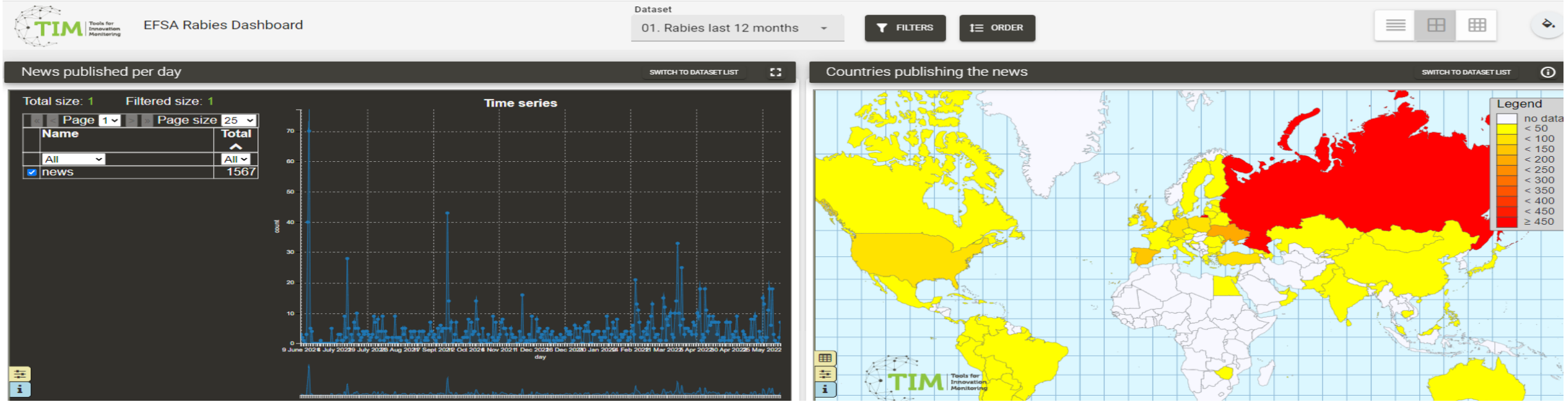
- Early Warning system: rabies as pilot (ongoing activity)
- TIM News tool already developed by the Joint Research Center (JRS) for other purposes
- Search on the WEB for news related to rabies
- Key words to include or exclude articles



Syndromic Surveillance project:Rabies Dashboard

- Visualises the results
- Trends of the number of publications overtime
- Link to TIM News [EFSA Rabies Dashboard]





Syndromic Surveillance project: Early Warning

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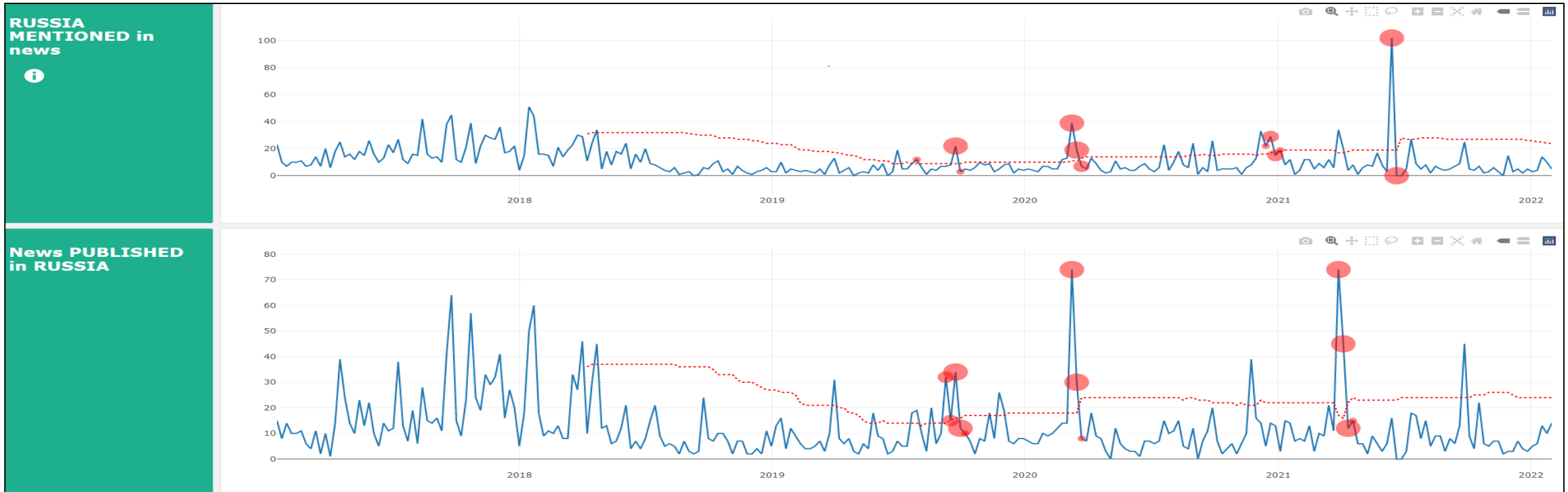
- Investigate if there is any correlation between the trends in published news and the rabies cases.

- News can work as an alert to allow the authorities to increase awareness and implement preventive measures to reduce the risk of rabies introduction.



Useful links

- The European Union One Health 2020 Zoonoses Report
- Scientific Report on the risks related to possible reduction of the waiting period for dogs after rabies antibody titration
- TIM News tool, Rabies Dashboard (pilot)
- EFSA's work on Animal Health Law

Thank you very much for you attention !

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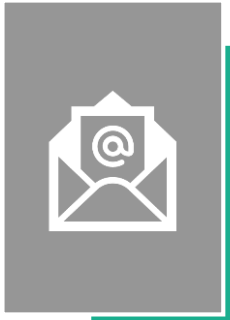

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