Use of diagnostic laboratory data for event detection in Scotland SRUC

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Background:

- Endemic diseases of livestock impact animal welfare and cause significant economic losses.
- Temporal aberration detection algorithms are useful tools to identify increases in disease indicators

Objective:

• To develop an event detection system and information tool to assist the Veterinary Services (VS) in disease control in Scotland.

Figure 1. Tab of the Shiny app showing alarms due to an increase in the number of diagnoses per week.

from Veterinary Services (VS) diagnostic data.





Methods:

- Time series analysis of diagnosis count data with a combination of two Cusum and one Holt-Winters (HW) algorithms (vetsyn and surveillance R packages).
- Automatic selection of level, seasonality and trend parameters for **HW**. Optimum value by comparing the Mean Squared Error (MSE).
- Developed according to **feedback from the SRUC VS**.
- Developed in a Shiny app.

Results:

- Data analysis system detects disease in increases and generates alarms.
- **Shiny app** displays disease trends.

Figure 2. Entries for the most recent alarm and chart with last years cases

Conclusion:

• Added value to diagnostic laboratory data to support VS in disease control. • Future use for external users to upload data and analyse it.

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