

Evaluation of the performance of Belgian slaughterhouses to detect lesions during meat inspection (cattle)

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INTRODUCTION

Post-mortem inspection of cattle carcasses in Belgian slaughterhouses plays a crucial role in detecting animal diseases and protecting public health. However, the effectiveness of this system has not been thoroughly assessed, especially for zoonotic diseases such as bovine tuberculosis (bTB). This project aims to evaluate the performance of bovine disease surveillance at the slaughterhouse level in Belgium.

METHODS

- D A T A**
- Collection of data on slaughterhouses, slaughtered animals, declared suspicions and analysis results between 01/2019 and 10/2024
 - Online survey for the slaughterhouse inspectors
- WP1**
- Descriptive statistics and trend analysis of slaughtered cattle in Belgium
- WP2**
- SWOT analysis of slaughterhouse reporting in Belgium
- WP3**
- Investigation on factors influencing lesion detection by logistic regression
- WP4**
- Sensitivity evaluation of inspections per slaughterhouse using a bTB-centered model.

KEY FINDINGS

WP1 : Characterize Belgian slaughterhouses

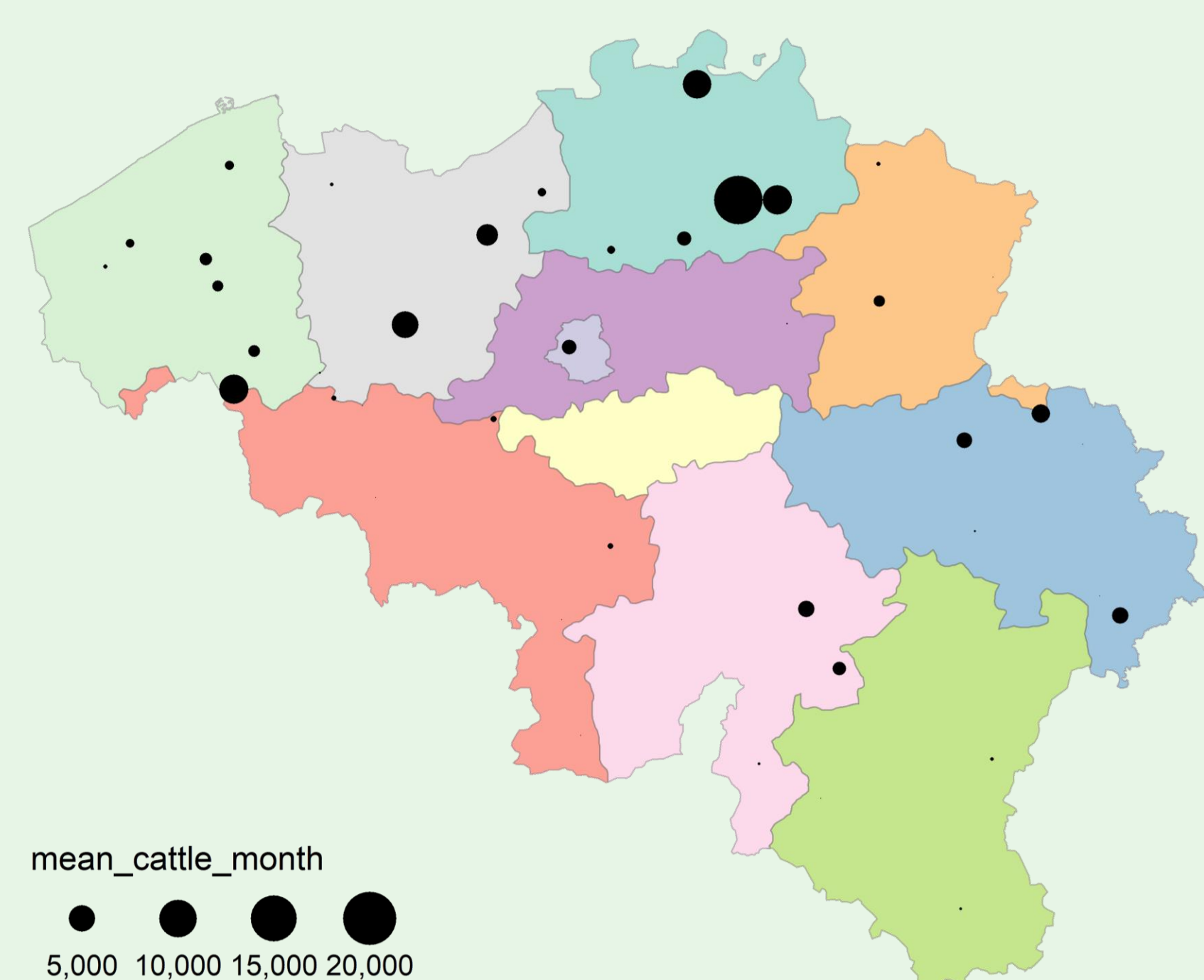


Figure 1. Geographical location and average monthly number of cattle slaughtered per Belgian slaughterhouse (with at least one bovine slaughtered), between January 2019 and September 2024

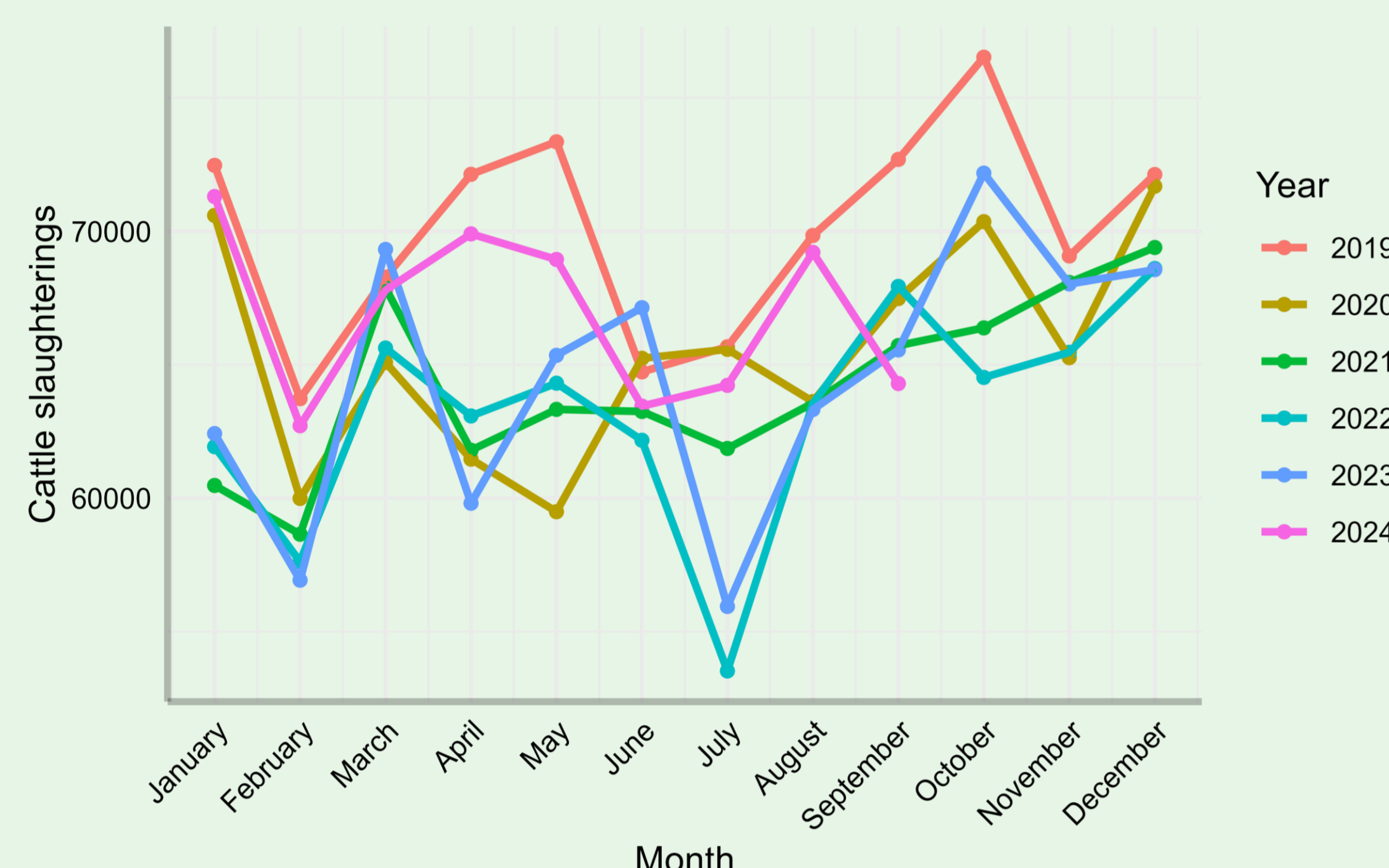


Figure 2. Number of cattle slaughtered per month in Belgium between January 2019 and September 2024.

WP2 : Improving slaughterhouse reporting

- S** Expertise
Training
Collaboration
- W** Working conditions
Lack of training
Subjectivity
- O** Technologies
Working conditions
Training
- T** Pressure from line speed
Veterinarian shortages
Lack of training and support
- Based on the 50 responses to the online survey

WP3 : Risk factors influencing lesion detection

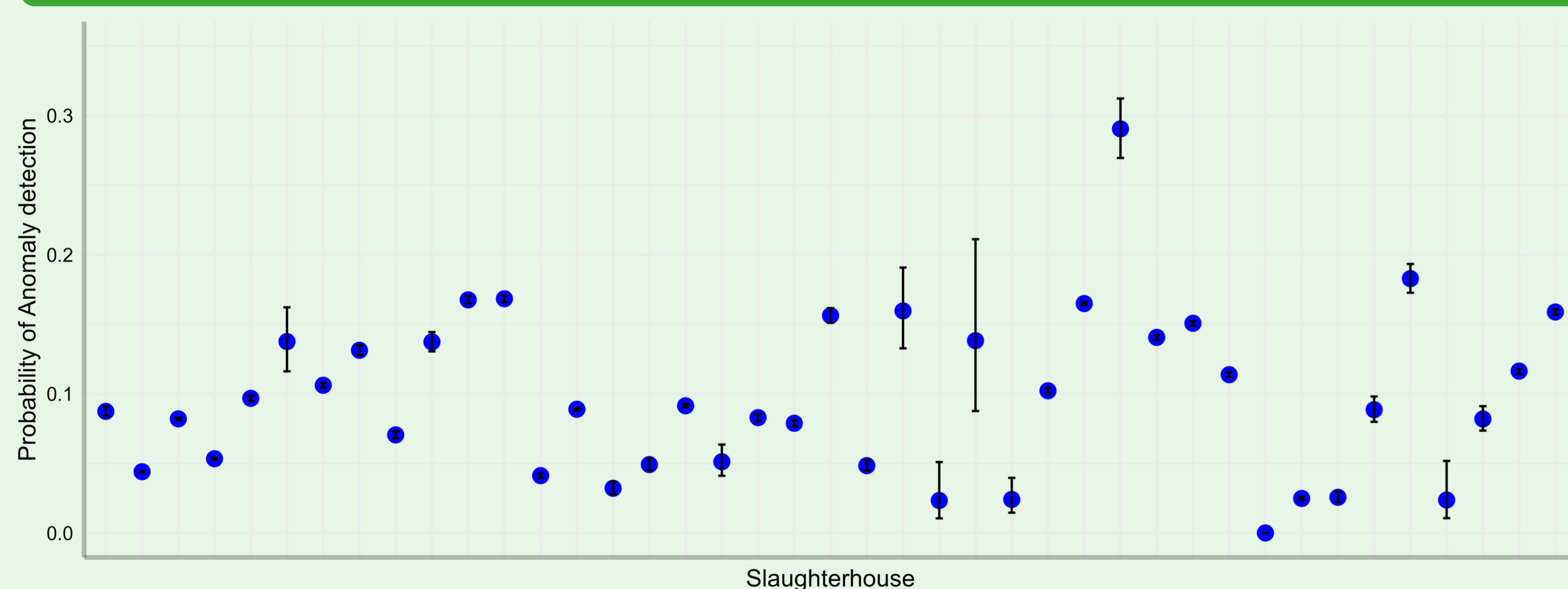


Figure 3. Estimated probabilities of anomaly detection and corresponding 95% confidence intervals per slaughterhouse.

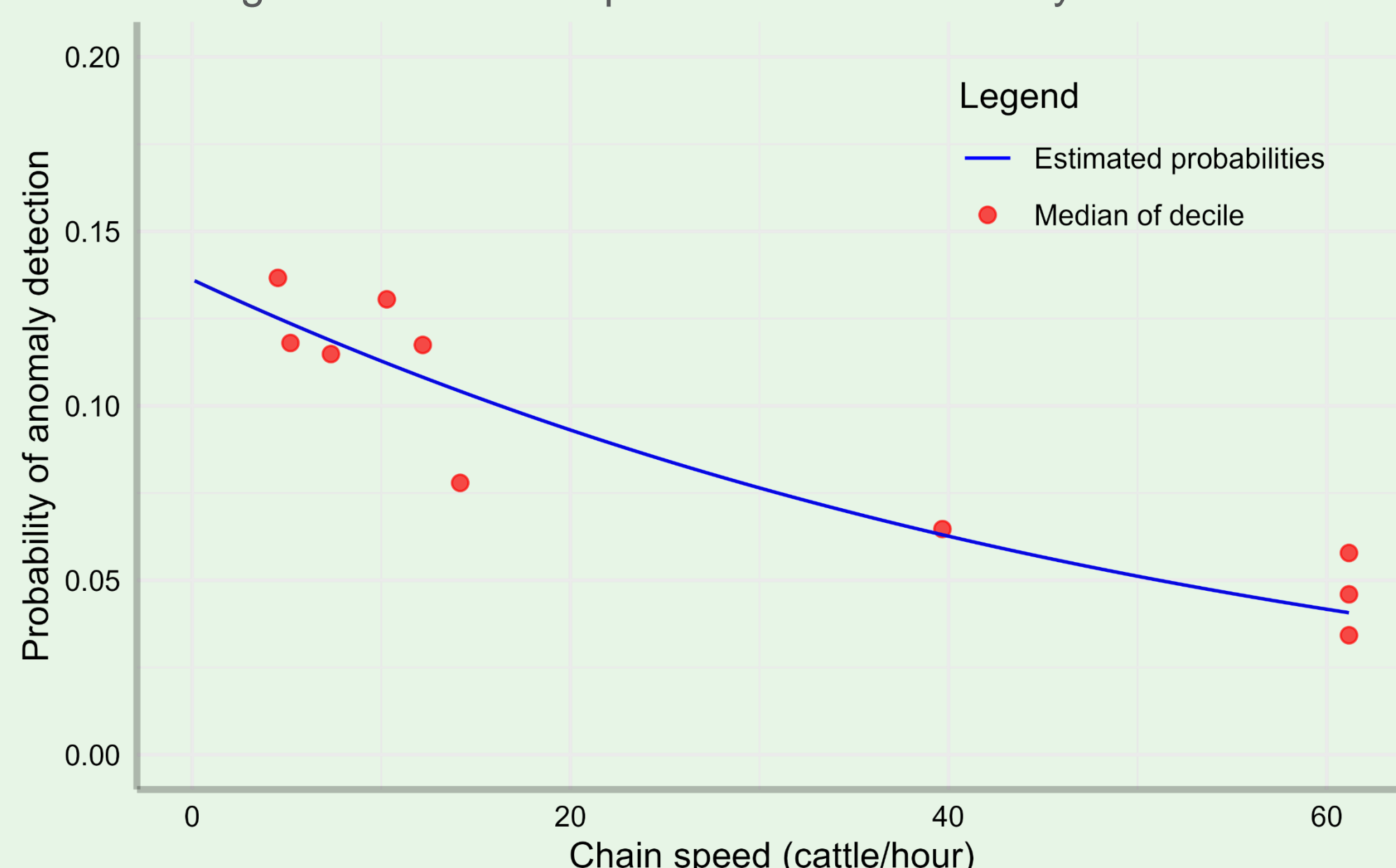


Figure 4. Effect of slaughter line speed on lesion detection, modeled by logistic regression

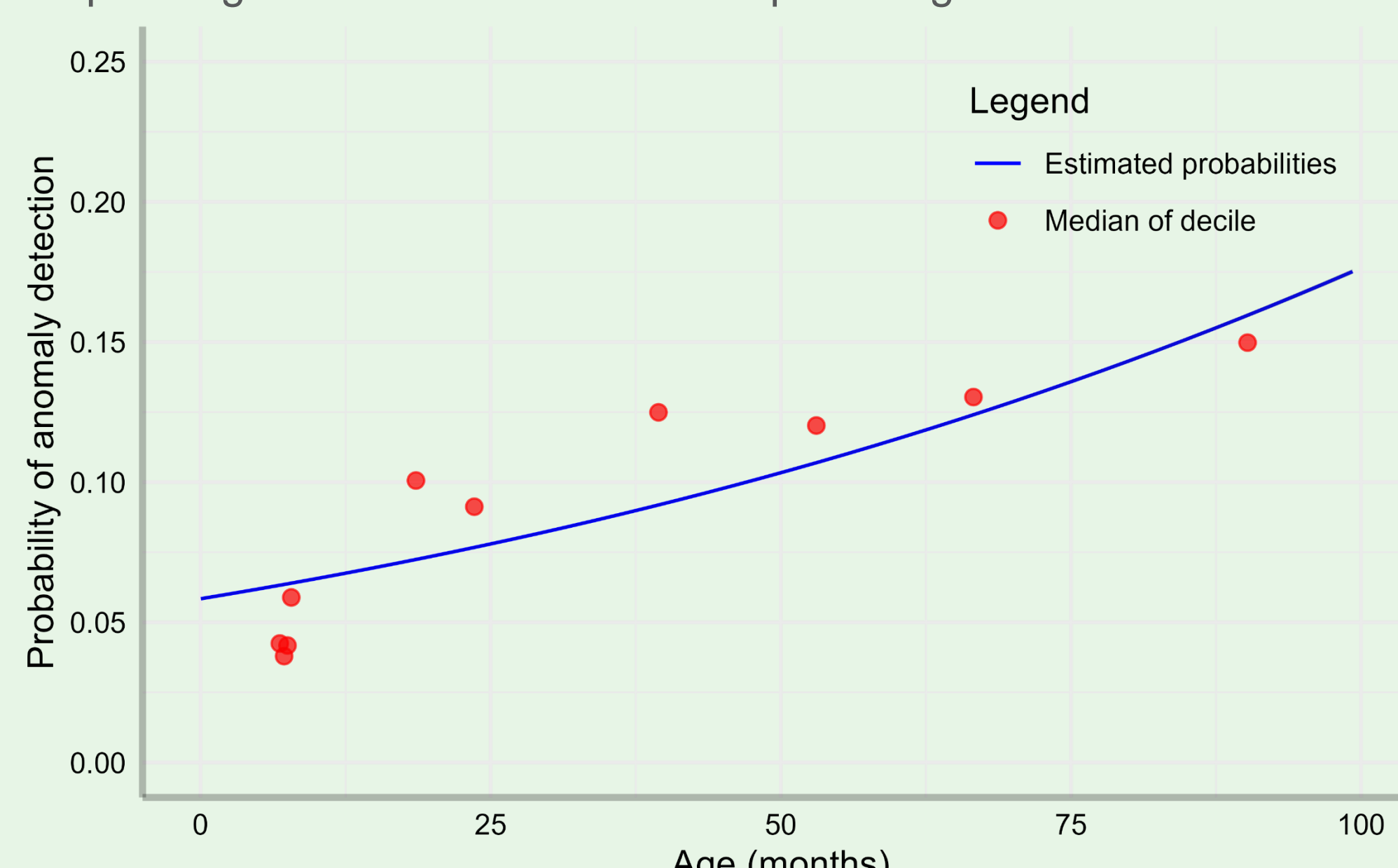


Figure 5. Effect of the age of the slaughtered cattle on lesion detection, modeled by logistic regression

WP4 : Evaluation of the sensitivity of slaughterhouses to detect Bovine tuberculosis

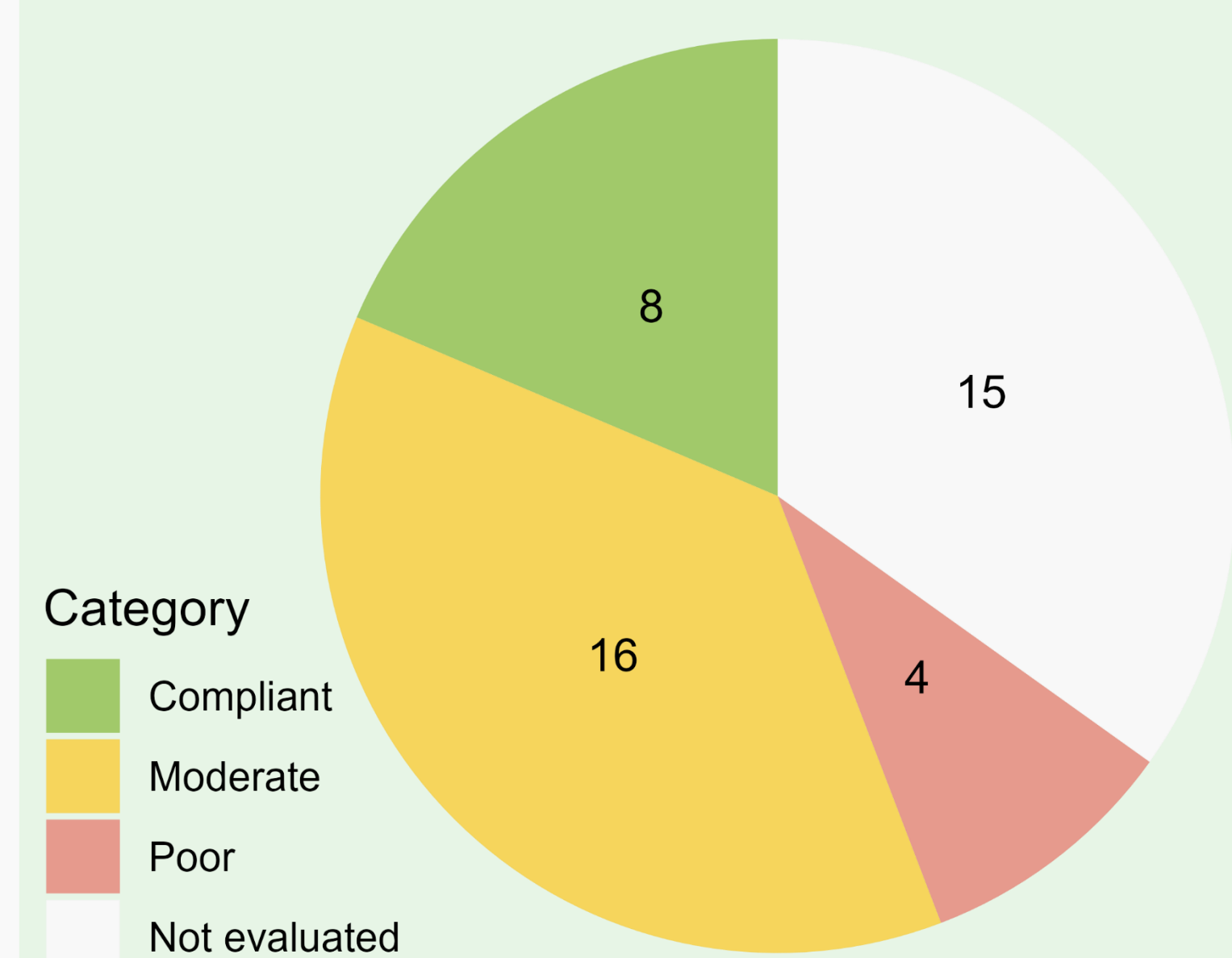


Figure 6. Distribution of slaughterhouses by performance category for bTB anomaly reporting ratios (reported vs. expected)

Slaughterhouse with less than 1 expected bTB anomaly are not evaluated

Conclusions

- Heterogeneity in the reporting of suspicions between and within slaughterhouses
- Working conditions (specifically slaughter line speed) and expertise as main risk factors for under-reporting

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