Estimation of paratuberculosis infection prevalence of diary herds

2025-07-31

**Input data:** sample\_hungary\_typical.csv  
**Country:** Hungary

## Priors used in stan modell

**HTP of the region:** beta(150.589, 12.25)  
**Sensitivity:** Age-dependent  
**Specificity:** 0.986  
**Mean CWHP1:** beta(65.7, 715.9)  
**Mean CWHP2:** beta(134.195, 716.1808)  
**Variance of the herd random effect:** inverse-gamma(37.03, 4.62)  
**Variance of the additive parity random effect (primiparous cows):** inverse-gamma(5.33, 0.07)  
**Variance of the additive parity random effect (multiparous cows):** inverse-gamma(6.05, 0.09)

## Estimates for the infection status of the herd

|  | Apparent prevalence | Estimate for true prevalence | Lower bound of 95% CrI | Upper bound of 95% CrI |
| --- | --- | --- | --- | --- |
| Primiparous cows | 5.9% | 9.3% | 4% | 15.9% |
| Multiparous cows | 11.8% | 17.7% | 12.1% | 24.2% |

|  | Bayes factor | Posterior probability (95% KI) |
| --- | --- | --- |
| Herd is infected |  | 100% (100, 100) |
| Herd is not infected | 6.93351811185255e+20 | 0% (0, 0) |

## Plot of the apparent and the true prevalence

Apparent prevalence: blue vertical line  
True prevalence: black vertical line  
95% CrI: green band

