

On-farm mortality and related risk factors in Estonian dairy cows

Kaari Reimus^a, Toomas Orro^a, Ulf Emanuelson^b, Arvo Viltrop^a, Kerli Mõtus^{a*}
^aInstitute of Veterinary Medicine and Animal Sciences, Estonian University of Life Science, Tartu, Estonia
^bDepartment of Clinical Sciences, Swedish University of Agricultural Sciences, Uppsala, Sweden



Background

On-farm mortality (unassisted death and euthanasia) reflects the health and welfare status of dairy cows. Early loss of an animal causes financial loss.

Objectives

Describe on-farm mortality and identify related risk factors.

Material & methods

- Data from Estonian Agricultural Registers and Information Board & Livestock Performance Recording
- Study period 1st of January 2013 to 31st of December 2015
- Cows calving during the study period from herds with ≥ 20 cow-years were included.
- 86 109 primiparous cows and 177 195 multiparous cows
- Weibull proportional hazard random effect model



Conclusions

- Mortality rate (MR) is associated with many herd performance indicators
 - Poor performance/management could lead to higher MR
 - MR could be used as syndromic surveillance tool to identify problem herds
- Animal level risk factors are mainly related to calving
- It is important to ensure good health of the cows at dry-off and during early lactation.

Risk factors

Primiparous cows

- Longer herd average period from calving to insemination
- High somatic cell count at first test-milking
- Low relative milk yield breeding value

Primi- & multiparous cows

- Holstein breed
- Larger herd size
- Decrease of herd size more than 15% (from 2013 to 2015)
 - Early lactation period
- Lower herd average number of lactation
 - Older age at first calving
- Birth of a male calf or twins/triplets or stillbirth or abortion
- Low milk yield at first test-milking
- High fat-protein ratio at first test-milking
- Dystocia- time-dependent effect

Multiparous cows

- High somatic cell count at last test-milking of the previous lactation
- Longer previous calving interval
- Higher herd average number of inseminations per conception
- High relative milk yield breeding value

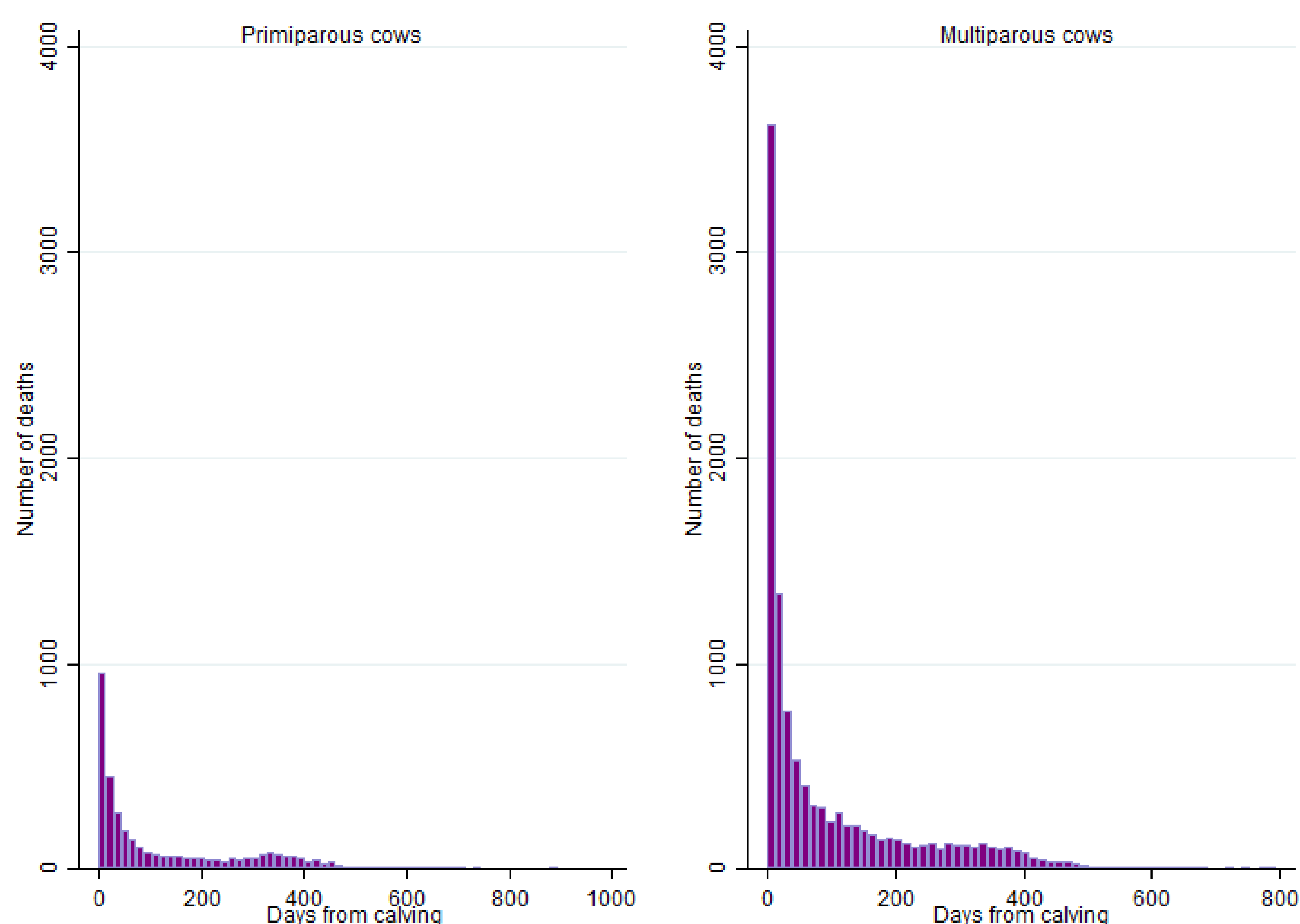


Figure 1. Number of deaths from calving to next calving/right censoring

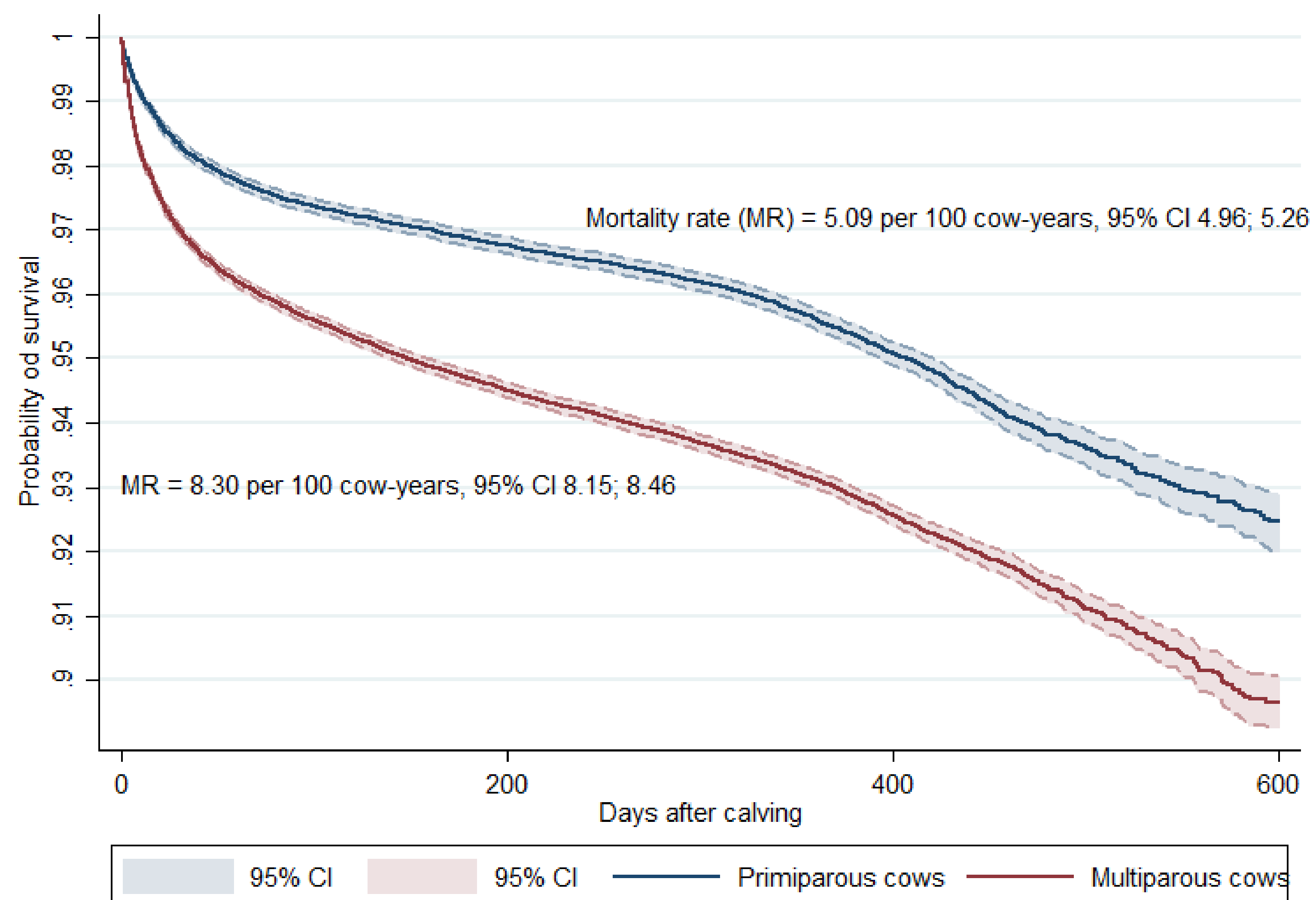


Figure 2. Kaplan-Meier curve for survival probability in primiparous and multiparous cows from the day of calving up to 600 days post calving



Acknowledgements

The authors thank Olle Antson (EARIB) and Inno Maasikas (ELPR) for data inquiry. This project was funded by the Estonian University of Life Sciences Strategic Development Fund.



*Corresponding author:
 Kaari Reimus
 Kaari.Reimus@emu.ee