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Comparison of animal welfare indices in dairy herds based on different sources of data

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Abstract

The present study seeks to evaluate the potential of a more cost-efficient animal welfare assessment by investigating the association between animal welfare indices (AWI) based on different data sources, namely register data (AWI 1, ie routine registrations, such as treatment, reproduction and abattoir data) and resource data (AWI 2, ie barn design and equipment) validated against animal-based data (AWI 3, ie direct animal observations). AWIs were created based on data from 73 Danish dairy herds. Indices for each information source were created by a weighted linear aggregation of herd level incidence and prevalence of the given indicators. Indicator weights were assigned by expert opinion for each of the AWIs. Linear dependency between the high cost AWI 3 and the two low cost AWI 1 and AWI 2 was investigated. Additionally, different time-periods of 90, 180 and 365 days prior to the actual on-farm collection of AWI 3 measures were evaluated in order to find the most predictive time-period of AWI 1. Predictive key indicators for on-farm animal welfare were investigated in uni- and multivariable analyses. Significant associations were found between the AWI 1 based on incidences 180 days prior to the farm visit and the AWI 3. Predictive key indicators were milk yield, abattoir and mortality data. Predictive models for 180 and 365 days prior to the on-farm assessment consisted of abattoir indicators, while the model 90 days prior included mortality and milk yield. The limited associations between indices and the predictive key indicators and models suggest that these cost-effective welfare assessments are not suitable to stand alone and cannot replace the actual animal welfare assessed by on-farm collection of animal-based measures.

Keywords: *aggregation model, animal-based measures, animal welfare, dairy cattle, register data, resource-based measures*